

# TOSHIBA

PRODUCT GUIDE

# Power Transistors

# Toshiba Power Transistors

Thank you for purchasing Toshiba semiconductor products.

As you may already know, semiconductor products are used in a wide range of fields, both domestic and industrial.

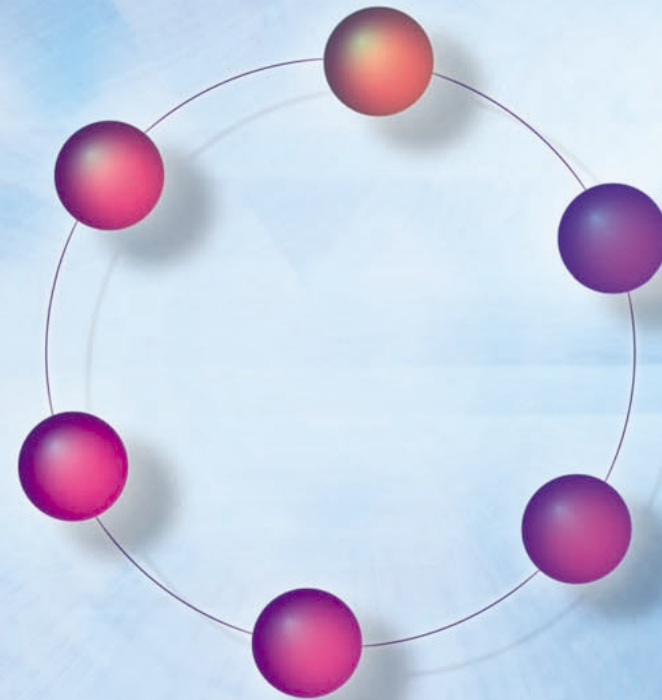
This product guide includes a list of products categorized by function and application, a list of package line-ups, tape packaging information, a list of lead-formed products, an overall list of devices and a set of package diagrams. We hope that this guide will assist you in selecting products. For further details of specific devices, please refer to the relevant technical datasheets.

## Power transistors for audio power amplifiers

Using a minute pattern and a high-density MET design, Toshiba has achieved high levels of current efficiency. Package type can be selected to yield collector power output ranging from 60 W to 220 W. A wider selection of packages, including the TO-3P(N) and TO-3P(L), is now available.

## Power transistors for switching power supplies

Using a crystal mesh pattern, Toshiba has reduced the storage time (tstg) and fall time (tf) of 400-V and 800-V power transistors for switching power supplies. In addition, we have developed power transistors in a low-profile package. These types of transistor are suitable for low-output AC adapters and ballast lamp applications.



## Power transistor SMD Series

With smaller and thinner electronic devices fuelling demand for SMD-type power transistors, Toshiba provides the following packages to meet manufacturers' needs.

- PW-Mini • PW-Mold • TO-220SM
- DP • TSM • VS-6 • PS-8 (new package)

## IS (isolation package) Series

Toshiba has developed IS packages which make easy to isolate a device and heatsink. The entire TO-126 packages are available in the IS type as standard. We recommend the TO-220NIS(new IS) package, which is 2 mm thinner than the previous package, the TO-220IS.

## Low $V_{CE(sat)}$ Transistor Series

Toshiba power transistors feature a  $V_{CEO}$  of 10 V to 100 V and an  $I_C$  of 1 A to 5 A, with various surface-mount packages. Ultra-high-speed switching transistors and multichip transistors with SBDs and S-MOSes are also available.

## Standard Tape Packaging for Automated Pick-and-Place Assembly

Products in the TO-126 and TO-220 packages are packed on tape: TPS(1.3 W) and TPL(1.8 W). These tape-packed packages can be mounted using a surface mounter, and automated pick-and-place system reduces assembly costs.

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# Selection Guide by Functions and Applications

## 2SA\*\*\*\* / 2SC\*\*\*\* for High-Frequency Devices

V <sub>ceo</sub> (V) I <sub>c</sub> (A)	10/(15)		(18)/20		(25)/30		40		45		50/(60)	
0.2									2SA1483	2SC3803	⊙	
0.8					2SA1426 2SA1204	2SC2884 2SC2703 2SC3666	(§) (⊙) (*) (§)	2SA1356	2SC3419	(@)		
1												2SA1735 2SA2070 TPC6701 2SC5810 TPC6901 TPC8901 ■S3C83 ■S3F57 ■S3C82 ■S3F59
1.2			TPC6D03	[#][V]	2SA1734 ■TPC8801	2SC4539	(⊙) (Δ)[P]					
1.5	2SA2058 ★TPC6D02 (15 V)	[T] [#][V]	2SA2065 2SA2069 ■S3F56	[T] [T] [V]	2SC5784 2SC5819 TPC6503	[T] [V]	2SA966 2SA1203	2SC2236 2SC2883	(*) (⊙)			
2	2SA1160 2SA1430 2SA1314 2SA2066 2SC5755 2SC5785 TPC6501 TPC6602 TPC8504	(*) (§) (⊙) (⊙) [T] (⊙) [V] [V] [P]						2SC3225 2SC3673 2SC3964	(*) (§) (@)			2SA1213 2SA1020 2SA1241 2SA1382 2SA2056 TPC6601 TPC8701 2SA2060 2SA1428 2SA1680 2SA1681 2SA1891
2.5			2SA2061	[T]								2SC5692 2SC6033 TPC8602
3	2SA1802 2SC4681 2SC4682 (15 V) 2SC4683 (15 V)	(◇) (*) (§)	2SA2059 TPC8F01 TPC6603	(⊙) [P] [V]		2SC5976 TPC8H02	[T] [P]	2SA1359	2SC3422	(@)		2SA1761 2SA1869 2SA1892 2SA1736 2SC5712 TPC6502 TPC8505
3.5			2SC5738	[T]								
4	2SC4781 2SC5713 ■S3F61	(*) (⊙) [V]	TPC8601	[P]	2SC5714 ■S3F62	[V] [P]	2SC5906	[T]				2SC5703
5			2SA1242 2SA1357 2SA1431 2SA1893 2SC3072 2SC3420 2SC3671 2SC4684 2SC4685 2SC5030 ★2SC6052	(◇) (@) (§) (□) (◇) (@) (§) (◇) (@) (□) (◇)		★2SC6062	[T]					2SA1244 2SA1905 2SA1931 2SA1933 2SA2097 2SC3074 2SC5076 2SC4881 2SC5175 2SC5886 2SC5886A TPC8H01 ■S3H32 ★2SA2183 (60 V)
7												2SC6000
10			2SA1327A	(▲)								2SA1887 2SA1451A
12												2SC5000 2SC3709A

Part number **XXXXXXX** signifies a new product.  
 ★: Under development ■: Under planning (indicating prototype part number)

### Legend

(*) LSTM	(§) MSTM	(@) TO-126	(▲) TO-220NIS	(○) TO-220FL	(●) TO-220SM	(〒) TO-220SIS	(◇) DP
(▽) TO-3P(N)	(▼) TO-3P(N)IS	(※) TO-3P(L)	(□) TPS	(■) TPL	(⊙) PW-Mini	(◇) PW-Mold	[T] TSM
[V] VS-6	[P] PS-8	(△) 2-in-1	[#] 2-in-1 (Transistor + Diode)	(!) NPN + PNP	(\$) Transistor + S-MOS		

Product number in italic signifies built-in damper diode      2SA\*\*\*\* / 2SC\*\*\*\*: complementary

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V <sub>CEO</sub> (V) I <sub>C</sub> (A)	80			100			120			(140)/150			160		
0.05										2SA1145	2SC2705	(*)			
										2SA1360	2SC3423	(@)			
										2SA1200	2SC2880	(◎)			
										2SA949	2SC2229	(*)			
0.1													2SC2230	(*)	
0.2													2SC3963	(@)	
0.4	2SA817A	2SC1627A	(*)												
	2SA1202	2SC2882	(◎)												
0.8							2SA965	2SC2235	(*)						
							2SA1201	2SC2881	(◎)						
							2SA1425	2SC3665	(§)						
1							TPCP8603	TPCP8507	[P]				2SA1013	2SC2383	(*)
							2SA1358	2SC3421	(@)						
							★2SC6061		[T]						
1.5										2SA940A	2SC2073A	(▲)	2SA1225	2SC2983	(◇)
										2SA1408	2SC3621	(@)	2SC5154	(□)	
2	2SA1315	2SC3328	(*)		TPCP8501	[P]									
	2SA1429	2SC3669	(§)												
		2SC3474	(◇)												
3	2SA1926		(§)												
4	★2SA2187	★2SC6066	(〒)												
5	2SA1934	2SC5176	(■)												
		2SC3303	(◇)												
6	2SA1803	2SC4688	(▽)												
	2SA1939	2SC5196	(▽)												
8							2SA1804	2SC4689	(▼)						
							2SA1940	2SC5197	(▽)						
10										2SA1805	2SC4690	(▼)			
										2SA1941	2SC5198	(▽)			
											(140 V)				
											(140 V)				
12	2SA1452A	2SC3710A	(▲)										2SA1942	2SC5199	(※)
	2SA1771		(▲)												

Part number **XXXXXXX** signifies a new product. ★: Under development

### Legend

(*) LSTM	(§) MSTM	(@) TO-126	(▲) TO-220NIS	(○) TO-220FL	(●) TO-220SM	(〒) TO-220SIS	(◆) DP
(▽) TO-3P(N)	(▼) TO-3P(N)IS	(※) TO-3P(L)	(□) TPS	(■) TPL	(◎) PW-Mini	(◇) PW-Mold	[T] TSM
[V] VS-6	[P] PS-8	(△) 2-in-1	[#] 2-in-1 (Transistor + Diode)	(!) NPN + PNP	(\$) Transistor + S-MOS		
Product number in italic signifies built-in damper diode				2SA**** / 2SC****: complementary			

V <sub>CE0</sub> (V) I <sub>C</sub> (A)	(180)/200		230		250		300			400(370)		
0.05						2SC3334 (*)						2SC5122 (*) 2SC5307 (◎)
0.1	2SC2230A (180 V) (*)						2SA1432 2SC3672 (\$) (S) 2SC2482 (*) (S) 2SC3619 (@) (S) 2SC3620 (@) (S) 2SC4544 (▲) (S) 2SC5027 (□) (S) 2SC3515 (◎) (S) 2SA1384					
0.15									2SC5360 (▲) (S)			
0.5										2SA1923 2SA1924 2SA1925 2SA1971 2SA1972		(◇) (S) (◎) (S) (□) (S) (◎) (S) (*) (S)
0.8											2SC3075 (◇) (S) 2SC3425 (@) (S) 2SC5208 (◇) (S) 2SC5458 (◇) (S)	
1			2SA1837 2SA2182	2SC4793 2SC5174 2SC6060	(▲) (S) (■) (S) (▮) (S)			2SC5930 (285 V) (\$) (S) 2SC6010 (285 V) (\$) (S) 2SC6034 (285 V) (\$) (S)		2SA1822	2SC5549 (▲) (S) 2SC5550 (*) (S) 2SC5550 (@) (S) 2SC6042 (375 V) (\$) (S) 2SC6040 (410 V) (\$) (S)	
2	2SA1930 *S3K96	2SC5171 (180 V) (▲) (S) *S3K95 (▮) (S)								2SC5279	2SC4754 (○) (S) 2SC5075 (□) (S) 2SC5548 (370 V) (◇) (S) 2SC5548A (◇) (S)	
3										2SA2034	2SC5459 (▲) (S)	
5											2SC5172 (▲) (S) 2SC5266A (■) (S) 2SC5355 (◆) (S)	
10											2SC5352 (▽) (S)	
12	*2SA2120 2SA2121	*2SC5948 2SC5949										
15			2SA1943 2SA1962 2SA1986 2SA1987	2SC5200 (*) (S) 2SC5242 (▽) (S) 2SC5358 (▽) (S) 2SC5359 (*) (S)								

V <sub>CE0</sub> (V) I <sub>C</sub> (A)	450		600/(550)		800		1000/(1200)			1500		
0.02												2SC5563 (▲) (S)
0.05				2SC5201 (*) (S) *TPCP8503 [P]		2SC5460 (@) (S) 2SC5466 (▲) (S)		2SC4686 (▲) (S) 2SC4686A (1200 V) (▲) (S)				
0.5			2SA1937 2SA2142		(◇) (S) (◇) (S)							
0.8						2SC3405 (◇) (S) 2SC5465 (◇) (S) 2SC5562 (□) (S) 2SC5684 (■) (S)						
1			*2SA2184 (550 V)		(◇) (S)							
2		2SC5351 (□) (S) 2SC5368 (@) (S)										
3						2SC5353 (▲) (S) 2SC5361 (○) (S) 2SC5356 (◆) (S)						
4						2SC3657 (▽) (S)						
5						2SC5354 (▽) (S)						
8		2SC5439 (▲) (S)										
9												
10		2SC4157 (▽) (S)					2SC3307 (*) (S)					

Part number **XXXXXXX** signifies a new product. ★: Under development

**Legend**

(*) LSTM	(§) MSTM	(@) TO-126	(▲) TO-220NIS	(○) TO-220FL	(●) TO-220SM	(▮) TO-220SIS	(◆) DP
(▽) TO-3P(N)	(▼) TO-3P(N)IS	(※) TO-3P(L)	(□) TPS	(■) TPL	(◎) PW-Mini	(◇) PW-Mold	[T] TSM
[V] VS-6	[P] PS-8	(△) 2-in-1	[#] 2-in-1 (Transistor + Diode)	(!) NPN + PNP	(\$) Transistor + S-MOS		

Product number in italic signifies built-in damper diode  
2SA\*\*\*\* / 2SC\*\*\*\*: complementary



2SB\*\*\*\* / 2SD\*\*\*\* for Low-Frequency Devices

V <sub>CEO</sub> (V) I <sub>c</sub> (A)	20			30			40			50			60			
1															2SD2686 (¥)(%) (◎)	
1.5				2SD1140 (%) (*) 2SD1224 (%) (◇) 2SD1508 (%) (@) 2SD1631 (%) (§) 2SD1784 (%) (◎) 2SD2481 (%) (□)												
2		2SD1160 (◇)													2SD1658 (¥)(%) (@) 2SD2088 (¥)(%) (*) 2SD2695 (¥)(%) (*) 2SD2352 (▲)	
3							2SB907	2SD1222 (%) (◇)						2SD2461 (□) 2SB906 2SD1221 (◇) 2SB1375 2SD2012 (▲) 2SD2462 (□) 2SB1640 2SD2525 (■) 2SD2353 (▲) 2SB1667 (●)		
4															2SB1642 2SD2531 (▲) 2SD2130 (¥)(%) (@) 2SD2204 (¥)(%) (▲) (65 V)	
5															2SD2131 (¥)(%) (▲)	
6															2SD2440 (▼)	
7												2SD1412A (▲)				

V <sub>CEO</sub> (V) I <sub>c</sub> (A)	80			100/(120)			140			150/(160)			200				
1.5										2SB905	2SD1220 (◇)						
2	2SB1067	2SD1509 (%) 2SD2248 (¥)(%) (*)		2SB1411 (@)(%) (▲) 2SB1457 2SD2206 (%) (*) 2SD2206A (120 V) (%) (*) ★TPCP8L01 (120 V) (%) (H) [P] 2SB1617 2SD2480 (%) (□) 2SD2536 (¥)(%) (*)													
3				2SB1495 2SD2257 (%) (▲) 2SD2092 (▲) 2SD2129 (%) (▲)													
4	SB908	2SD1223 (%) (◇) 2SD2406 (▲)		2SB1481 2SD2241 (%) (▲)													
5				2SB1381 2SD2079 (%) (▲) 2SD2526 (%) (■) 2SB1016A 2SD1407A (▲) 2SD2604 (¥)(%) (▲)													
7	2SD2414(SM) (●) 2SB1018A 2SD1411A (▲)			2SB1020A 2SD1415A (%) (▲) 2SD2584 (%) (◆)			2SB1555 2SD2384 (%) (※) 2SB1557 2SD2386 (%) (▼)										
8							2SB1556 2SD2385 (%) (※) 2SB1558 2SD2387 (%) (▼)				2SB1682 2SD2636 (160 V) (%) (▼)						
10						2SD1947A (▲)							2SB1594 2SD2449 (160 V) (%) (※)				
12																	
15						2SD1662 (%) (▼)									2SD2271 (%) (▲)		
30						2SD1525 (%) (※)											

V <sub>CEO</sub> (V) I <sub>c</sub> (A)	250			350			400			450		
6			2SD1410A (%) (▲)						2SD1409A (%) (▲)			
15												2SD1314 (%) (※)

Part number XXXXXX signifies a new product. ★: Under development

Legend

(*) LSTM	(§) MSTM	(@) TO-126	(▲) TO-220NIS	(○) TO-220FL	(●) TO-220SM	(〒) TO-220SIS	(◆) DP
(▽) TO-3P(N)	(▼) TO-3P(N)IS	(※) TO-3P(L)	(□) TPS	(■) TPL	(◎) PW-Mini	(◇) PW-Mold	(¥) Built-in zener diode
(%) Darlington	[P] PS-8	(H) Built-in HED	Product number in italic signifies built-in damper diode			2SA**** / 2SC****: complementary	

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## Audio Power Amplifiers

### High-speed Darlington Transistors

#### Using new pattern

Pattern design for better current balance

**Current**      **New**

Comb type    ➔    Crystal-mesh type

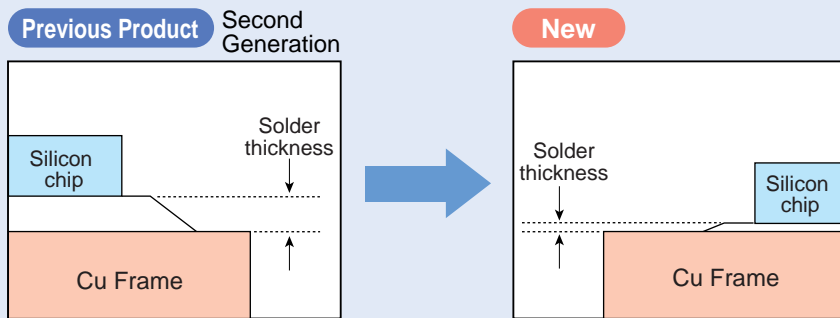
- Even distance between emitter and base contacts
- High integration

- High-current density
- Area optimization for power and driver stages
- RBE optimization

— **Products** —  
**2SB1682**  
**2SD2636**

### Transistors with collector power dissipations of 200 W and 220 W

#### Die Mount Solder



- Improved Thermal Conductivity

— **Products** —  
**★2SA2120**  
**★2SC5948**  
**2SA2121**  
**2SC5949**  
 ★: Under development



### Single Transistors

Pc (W)	Maximum Ratings		Polarity	New Product	Discontinued Product		Package
	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)					
60	80 (100)	6	NPN	<b>2SC5196</b>	2SC3180N	2SD716	TO-3P(N)
			PNP	<b>2SA1939</b>	2SA1263N	2SB686	
80	120	8	NPN	<b>2SC5197</b>	2SC3181N	2SD718	TO-3P(N)
			PNP	<b>2SA1940</b>	2SC1264N	2SB688	
100	140	10	NPN	<b>2SC5198</b>	2SC3182N	2SD1148	TO-3P(N)
			PNP	<b>2SA1941</b>	2SA1265N	2SB863	
120	160	12	NPN	<b>2SC5199</b>	2SC3280		TO-3P(L)
			PNP	<b>2SA1942</b>	2SA1301		
130	230 (180)	15 (12)	NPN	<b>2SC5242</b>	2SC3907		TO-3P(N)
			PNP	<b>2SA1962</b>	2SA1516		
150	230	15	NPN	<b>2SC5358</b>			TO-3P(N)
			PNP	<b>2SA1986</b>			
150	230 (200)	15	NPN	<b>2SC5200</b>	2SC3281		TO-3P(L)
			PNP	<b>2SA1943</b>	2SA1302		
180	230	15	NPN	<b>2SC5359</b>			TO-3P(L)
			PNP	<b>2SA1987</b>			
200	200	12	NPN	<b>★2SC5948</b>			TO-3P(N)
			PNP	<b>★2SA2120</b>			
220	200	15	NPN	<b>2SC5949</b>			TO-3P(L)
			PNP	<b>2SA2121</b>			

★: Under development


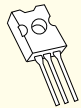
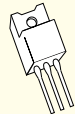
( ): Maximum rating of discontinued products

	Driver Amplifier				Output Amplifier					
	Pc (W)	NPN	PNP	Package	Pc (W)	NPN	PNP	Package		
Single Bipolar Transistor	0.8	<b>2SC1627A</b>	<b>2SA817A</b>	LSTM	Non-isolation type	60	<b>2SC5196</b>	<b>2SA1939</b>	TO-3P(N)	
	0.9	<b>2SC2235</b>	<b>2SA965</b>			80	<b>2SC5197</b>	<b>2SA1940</b>		
	1	<b>2SC3665</b>	<b>2SA1425</b>	MSTM		100	<b>2SC5198</b>	<b>2SA1941</b>		
	1.8	<b>2SC5174</b>	<b>2SA1932</b>	TPL		120	<b>2SC5199</b>	<b>2SA1942</b>	TO-3P(L)	
	5	<b>2SC3423</b>	<b>2SA1630</b>	TO-126		130	<b>2SC5242</b>	<b>2SA1962</b>	TO-3P(N)	
		<b>2SC3421</b>	<b>2SA1358</b>			150	<b>2SC5358</b>	<b>2SA1986</b>		
	15	<b>2SC2983</b>	<b>2SA1225</b>	PW-Mold		150	<b>2SC5200</b>	<b>2SA1943</b>	TO-3P(L)	
		<b>2SC4793</b>	<b>2SA1837</b>	TO-220NIS			180	<b>2SC5359</b>		<b>2SA1987</b>
	20	<b>2SC5171</b>	<b>2SA1930</b>			TO-220SIS	200	<b>★2SC5948</b>	<b>★2SA2120</b>	TO-3P(N)
		<b>★2SC6060</b>	<b>★2SA2182</b>				220	<b>2SC5949</b>	<b>2SA2121</b>	TO-3P(L)
		<b>★S3K95</b>	<b>★S3K96</b>							
		NPN	PNP	Ratings		isolation type	55	<b>2SC4688</b>	<b>2SA1803</b>	TO-3P(N)IS
			V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	70		<b>2SC4689</b>	<b>2SA1804</b>		
	<b>★2SC6060</b>	<b>★2SA2182</b>	230	1	80		<b>2SC4690</b>	<b>2SA1805</b>		
	<b>★S3K95</b>	<b>★S3K96</b>	180	2						
S3K** signifies a prototype part number.										
Bipolar Darlington Transistor					Non-isolation type	70	<b>2SD2386</b>	<b>2SB1557</b>	TO-3P(N)	
						80	<b>2SD2387</b>	<b>2SB1558</b>		
						100	<b>2SD2636</b>	<b>2SB1682</b>		
						100	<b>2SD2384</b>	<b>2SB1555</b>	TO-3P(L)	
						120	<b>2SD2385</b>	<b>2SB1556</b>		
						150	<b>2SD2449</b>	<b>2SB1594</b>		


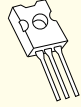
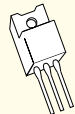
★: Under development



## Vertical-Deflection Outputs

Characteristics \ Package	TO-92MOD	TO-126	TO-220NIS
$V_{CE0} = 160\text{ V}$ , $I_c = 1\text{ A}$	<b>2SC2383</b> <b>2SA1013</b>	—	—
$V_{CE0} = 150\text{ V}$ , $I_c = 1.5\text{ A}$	—	<b>2SC3621</b> <b>2SA1408</b>	<b>2SC2073A</b> <b>2SA940A</b>
Package Shape			

## Sound Outputs

Characteristics \ Package	TO-92MOD	TO-126	TO-220NIS
$V_{CE0} = 160\text{ V}$ , $I_c = 1\text{ A}$	<b>2SC2383</b> <b>2SA1013</b>	—	—
$V_{CE0} = 150\text{ V}$ , $I_c = 1.5\text{ A}$	—	<b>2SC3621</b> <b>2SA1408</b>	<b>2SC2073A</b> <b>2SA940A</b>
$V_{CE0} = 160\text{ V}$ $I_c = 0.1\text{ to }0.2\text{ A}$	<b>2SC2230</b> ×2	<b>2SC3963</b> ×2	—
$V_{CE0} = 180\text{ V}$ $I_c = 0.1\text{ to }0.2\text{ A}$	<b>2SC2230A</b> ×2	—	—
Package Shape			

## Speed Modulations

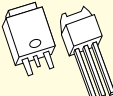



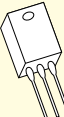


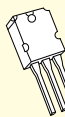


Part Number		$I_c$	$V_{CE0}$	$P_c$	$h_{FE}$			$V_{CE(sat)}\text{ Max}$			$f_T\text{ Typ.}$		$C_{ob}\text{ Typ.}$		Package	
NPN	PNP	(A)	(V)	(W)	$V_{CE}$ (V)	$I_c$ (A)	(V)	$I_c$ (mA)	$I_B$ (mA)	(MHz)	$V_{CE}$ (V)	$I_c$ (A)	(pF)	$V_{CB}$ (V)		
<b>2SC4793</b>	—	1.0	230	20	100 to 320	5	0.1	1.5	500	50	100	10	0.1	20	10	TO-220NIS
—	<b>2SA1837</b>										70					

## Dynamic Focuses

Part Number	$I_c$	$V_{CE0}$	$V_{CB0}$	$P_c$	$h_{FE}$			$V_{CE(sat)}\text{ Max}$			$f_T\text{ Typ.}$		$C_{ob}\text{ Typ.}$		Package	
	(mA)	(V)	(V)	(W)	$V_{CE}$ (V)	$I_c$ (mA)	(V)	$I_c$ (mA)	$I_B$ (mA)	(MHz)	$V_{CE}$ (V)	$I_c$ (mA)	(pF)	$V_{CB}$ (V)		
<b>2SC4686</b>	50	1000	1500	10	15 to 60	5	3	1.5	10	2	5.5	10	3	2.2	100	TO-220NIS
<b>2SC4686A</b>		1200														
<b>2SC5460</b>	50	800	800	10	15 min	5	7	1.0	20	4	—	—	—	—	—	TO-126
<b>2SC5466</b>																
<b>2SC5563</b>	20	1500	1500	10	10 to 60	5	1	5.0	10	2	—	—	—	2.0	100	TO-220NIS

Power Supplies

(V<sub>CEO</sub> = 285 to 450 V)

Package I <sub>c</sub> (A)	PW-Mold (SC-63/64)	DP (SC-63/64)	TPS	TO-126	TPL	TO-220NIS	TO-220SM	TO-3P(N)	TO-3P(L)	MSTM
0.8	<b>2SC5458</b> <b>2SC5465#</b>		<b>2SC5208</b> <b>2SC5562#</b>	<b>2SC3425</b>						
1										<b>2SC5930</b> <b>2SC6010</b> <b>2SC6034</b> <b>2SC6042</b> <b>2SC6040</b>
2	<b>2SC5548</b> <b>2SC5548A</b>		<b>2SC5075</b> <b>2SC5351</b>	<b>2SC5368</b>	<b>2SC5279</b>					
3		<b>2SC5356#</b>				<b>2SC5459</b> <b>2SC5353#</b>	<b>2SC5361#</b>			
4								<b>2SC3657#</b>		
5		<b>2SC5355</b>			<b>2SC5266A</b>	<b>2SC5172</b>		<b>2SC5354#</b>		
8						<b>2SC5439</b>				
10								<b>2SC5352</b>	<b>2SC3307#</b>	
Package Shape										

Part number **XXXXXXX** signifies a new product.

#: 800 V series

V<sub>CEO</sub> and I<sub>c</sub> Rating List

I <sub>c</sub> (A)	V <sub>CEO</sub> (V)			
	285	400	450	800
0.8 to 1	<b>2SC5930</b> <b>2SC6010</b> <b>2SC6034</b>	<b>2SC3425</b> <b>2SC5208</b> <b>2SC5458</b> <b>2SC6042</b> (375 V) <b>2SC6040</b> (410 V)		<b>2SC5465</b> <b>2SC5562</b>
2 to 3		<b>2SC5075</b> <b>2SC5279</b> <b>2SC5459</b> <b>2SC5548</b> (370 V) <b>2SC5548A</b>	<b>2SC5351</b> <b>2SC5357</b> <b>2SC5368</b>	<b>2SC5353</b> <b>2SC5356</b> <b>2SC5361</b>
4 to 5		<b>2SC5172</b> <b>2SC5266A</b> <b>2SC5355</b>		<b>2SC3657</b> <b>2SC5354</b>
10		<b>2SC5352</b>		<b>2SC3307</b>

Part number **XXXXXXX** signifies a new product.

# Switching Power Supplies

## AC-DC converters

Application	Part Number	Maximum Ratings (Ta = 25°C)				Package	
		V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	I <sub>C</sub> (A)	P <sub>C</sub> (W) (T <sub>C</sub> = 25°C *Ta = 25°C)		
Switching regulators	2SC3425	500	400	0.8	10	TO-126	
	2SC5075			2	1.3*	TPS	
	2SC5548	600	400	2	15	PW-Mold(SC-63/64)	
	2SC5548A			2	15	PW-Mold(SC-63/64)	
	2SC5208			0.8	1.3*	TPS	
	2SC5458			0.8	10	PW-Mold(SC-63/64)	
	2SC5279			2	1.8*	TPL	
	2SC4917			2	10	TO-126	
	2SC5459			3	25	TO-220NIS	
	2SC5266A			5	1.8*	TPL	
	2SC5355			5	25	DP	
	2SC5172			5	25	TO-220NIS	
	2SC5352			10	80	TO-3P(N)	
	2SC5351			450	2	1.3*	TPS
	2SC5368	2	10		TO-126		
	2SC5465	900	800	0.8	20	PW-Mold(SC-63/64)	
	2SC5562			0.8	1.3*	TPS	
	2SC5353			3	25	TO-220NIS	
	2SC5356				25	DP	
	2SC5361			40	TO-220FL		
	2SC3657			4	80	TO-3P(N)	
	2SC5354			5	100	TO-3P(N)	
	2SC3307			10	150	TO-3P(L)	
2SC5439	1000			450	8	30	TO-220NIS

Selection Guide by Functions and Applications

Recommended Transistors for Various Application Circuits

Product List by Packages

Standard Tape Packaging for Automated Pick-and-Place Assembly

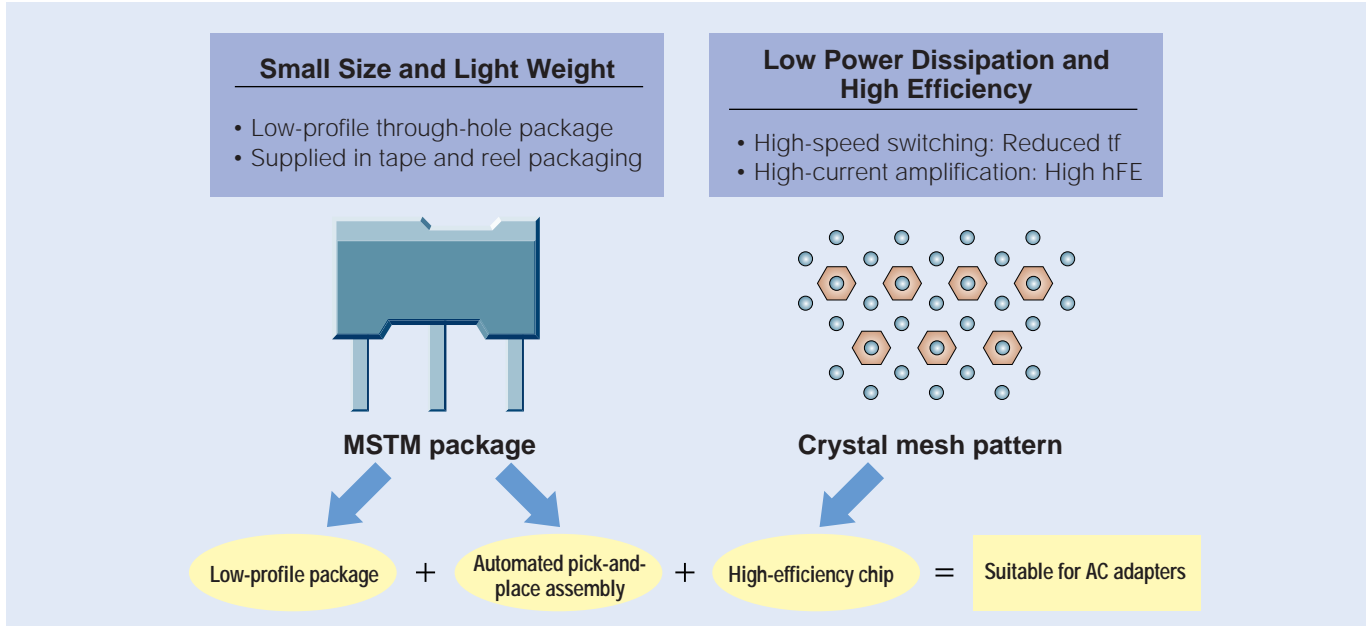
Standard Lead-Formed Product List

Package List

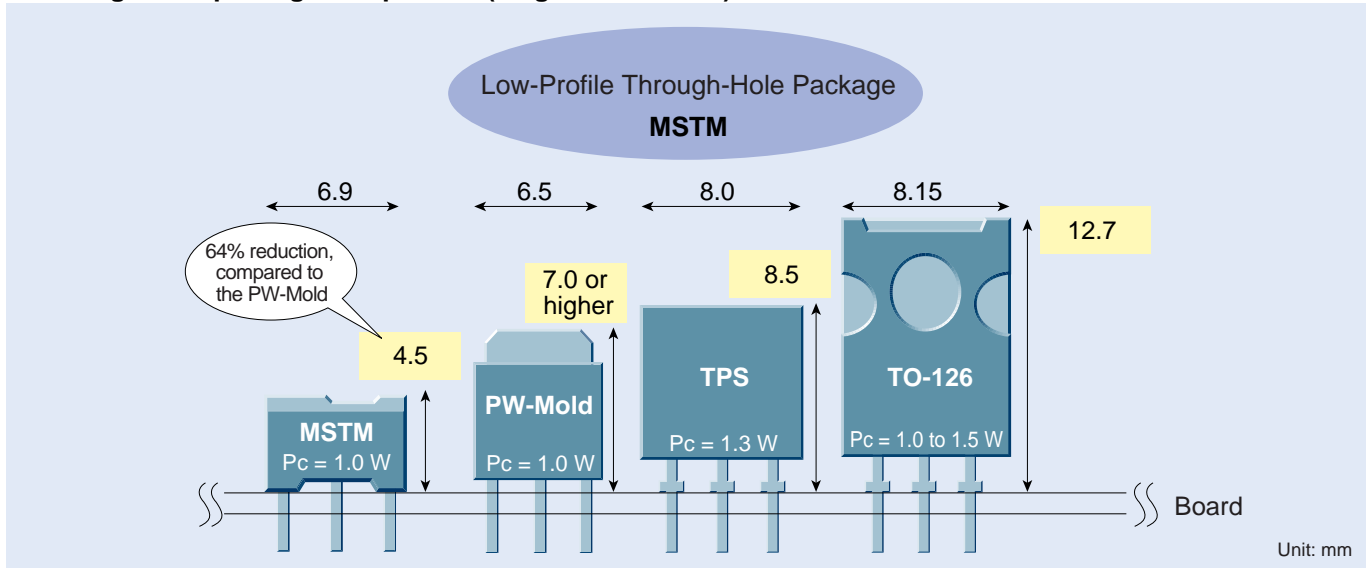
Product List

## Switching Transistors in Low-Profile Through-Hole Package

### Characteristic



### Through-hole package comparison (height above PCB)



### Electrical Characteristic

Part Number	Maximum Ratings			Package	DC characteristics									Switching Characteristics		
	V <sub>CB0</sub> (V)	V <sub>CE0</sub> (V)	I <sub>c</sub> (A)		h <sub>FE</sub> (1) Min			h <sub>FE</sub> (2) Min			V <sub>CE(sat)</sub> Max (V)			tr Max	tstg Max	tf Max
					V <sub>CE</sub> (V)	I <sub>c</sub> (A)	1 m	V <sub>CE</sub> (V)	I <sub>c</sub> (A)	0.2	V <sub>CE</sub> (V)	I <sub>c</sub> (A)	I <sub>B</sub> (A)			
<b>2SC5930</b>	600	285	1	MSTM	20	5	1 m	40	5	0.2	1.0	0.4	0.05	0.5	3.0	0.3
<b>2SC6010</b>	600	285	1	MSTM	80	5	1 m	100	5	0.1	1.0	0.8	0.075	0.4	3.0	0.24
<b>2SC6034</b>	600	285	1	MSTM	100	5	1 m	125	5	0.1	1.0	0.8	0.075	0.4	3.5	0.24
<b>2SC6042</b>	800	375	1	MSTM	80	5	1 m	100	5	0.1	1.0	0.8	0.1	0.5	4.5	0.2
<b>2SC6040</b>	800	410	1	MSTM	50	5	1 m	60	5	0.1	1.0	0.8	0.1	0.5	4.0	0.2

Part number XXXXXX signifies a new product.

Selection Guide by Functions and Applications

Recommended Transistors for Various Application Circuits

Product List by Packages

Standard Tape Packaging for Automated Pick-and-Place Assembly

Standard Lead-Formed Product List

Package List

Product List

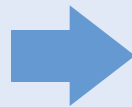
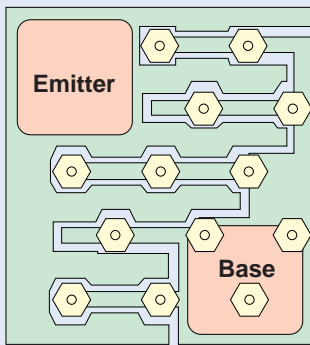
## Low $V_{CE(sat)}$ Series

### ■ Features

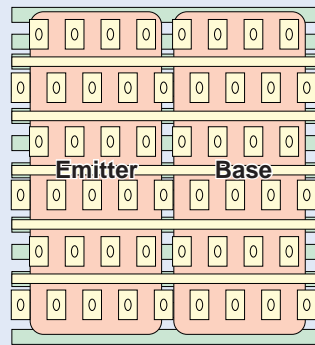
- Ultra-high-speed switching
- New package development

#### Low withstanding voltage Super Hi-Met design

#### Low withstanding voltage Hi-Met III



#### Super Hi-Met



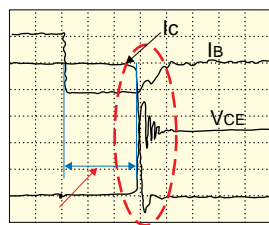
- Fine pattern
- Multi-layer wiring
- Ultra high speed

### ■ Switching time comparison

#### Ultra-high-speed product

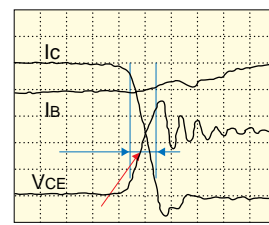
#### Super Hi-Met

2SC5906  
(30 V/4 A/TSM)



tstg = 280 ns    100 ns/div

Enlarged View

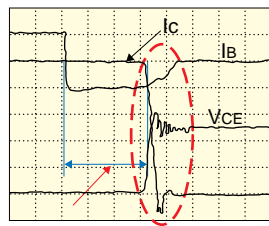


tf = 28 ns    25 ns/div

#### Previous product

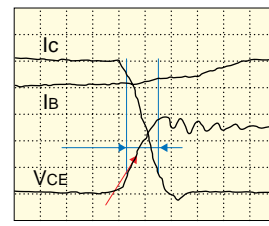
#### Low withstanding voltage Hi-Met III

I<sub>B</sub>: 50 mA/div  
I<sub>C</sub>: 320 mA/div  
V<sub>CE</sub>: 5 V/div



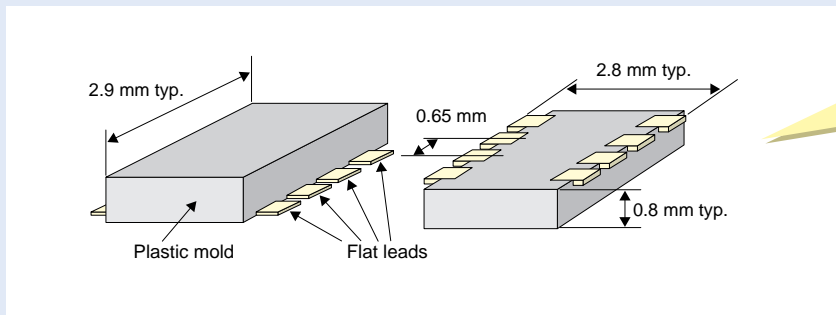
tstg = 310 ns    100 ns/div

Enlarged View

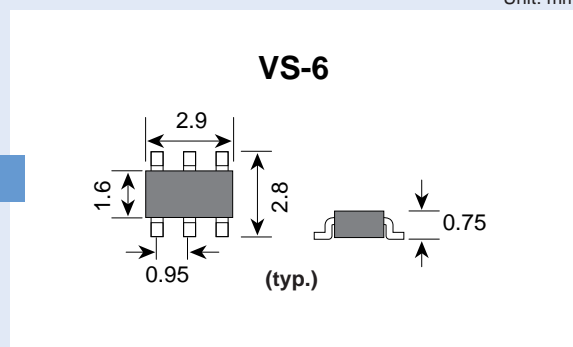
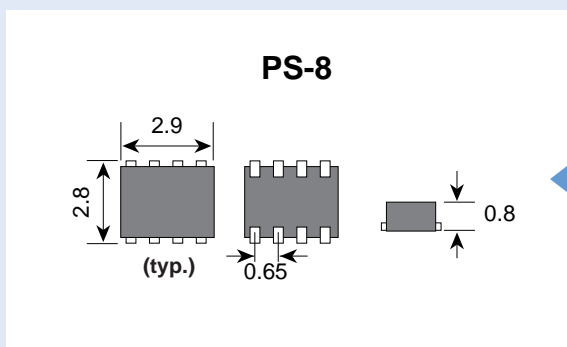


tf = 35 ns    25 ns/div

■ New Package PS-8



Small thin package with equivalent in power dissipation of the PW-Mini package (1 W)



Unit: mm

Ultra-High-Speed Switching Series

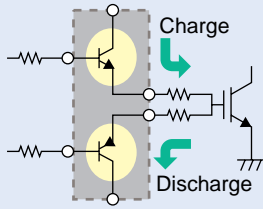
Part Number	Maximum Ratings			hFE	VCE		VCE(sat)			Package	Remarks
	VCEO (V)	IC (A)	PC (W)		(V)	(A)	(V)	IC (A)	IB (mA)		
<b>2SC5976</b>	30	3	0.625	250 to 400	2	0.3	0.14	1.0	33	TSM	
<b>2SC5906</b>	30	4	0.8	200 to 500	2	0.5	0.2	1.6	53	TSM	
★ <b>2SC6062</b>	30	5	0.8	250 to 400	2	0.5	0.12	1.6	53	TSM	
<b>2SC6033</b>	50	2.5	0.625	250 to 400	2	0.3	0.18	1.0	33	TSM	
<b>2SC6000</b>	50	7	20	250 to 400	2	2.5	0.18	2.5	83	PW-Mold	
★ <b>TPC6D02</b>	-15	-1.5	0.6	250 to 400	-2	-0.15	-0.17	-0.5	-16.7	VS-6	Incorporating SBD
<b>TPCP8H01</b>	50	5	1.0	250 to 400	2	0.5	0.13	1.6	53	PS-8	Incorporating S-MOS
<b>TPCP8H02</b>	30	3	1.0	250 to 400	2	0.3	0.14	1.0	33	PS-8	Incorporating S-MOS

Part number **XXXXXX** signifies a new product. ★: Under development

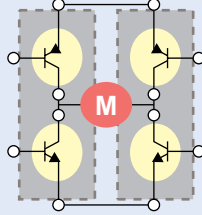
## Transistors for MOS Gate Drivers / Compact Motor Drivers

Low  $V_{CE(sat)}$  PNP and NPN transistors are housed in a single package. This is ideal for use in high-power IGBTs and high-speed gate drives for MOS gate devices such as MOSFETs or compact motor drivers.

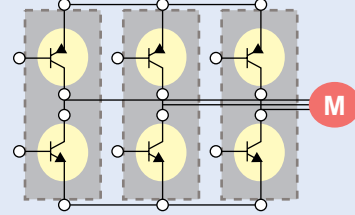
### Example Application Circuits



MOS gate driver



H-bridge motor driver



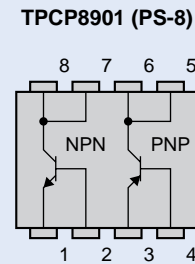
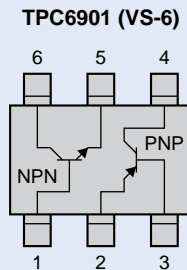
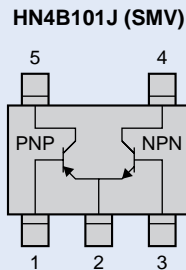
3-phase motor driver

### Product List

Part Number	Package	Polarity	Ratings				hFE		$V_{CE(sat)}$			Recommended Drive Current (A)		
			$V_{CEO}$ (V)	$I_C$ (A)	$I_{CP}$ (A)	$P_C$ Note 1 (W)	Min	Max	$V_{CE}$ (V)	$I_C$ (A)	$I_B$ (mA)			
HN4B101J	SMV	PNP	-30	-1	-5	550	200	500	-2	-0.12	-0.2	-0.4	-13	0.45
		NPN	30	1.2	5	550	200	500	2	0.12	0.17	0.4	-13	
TPC6901	VS-6	PNP	-50	-0.7	-2	400	200	500	-2	-0.1	-0.23	-0.3	-10	0.35
		NPN	50	1	2	400	400	1000	2	0.1	0.17	0.3	6	
TPCP8901	PS-8	PNP	-50	-0.8	-5	830	200	500	-2	-0.1	-0.21	-0.3	-10	0.45
		NPN	50	1	5	830	400	1000	2	0.1	0.17	0.3	6	

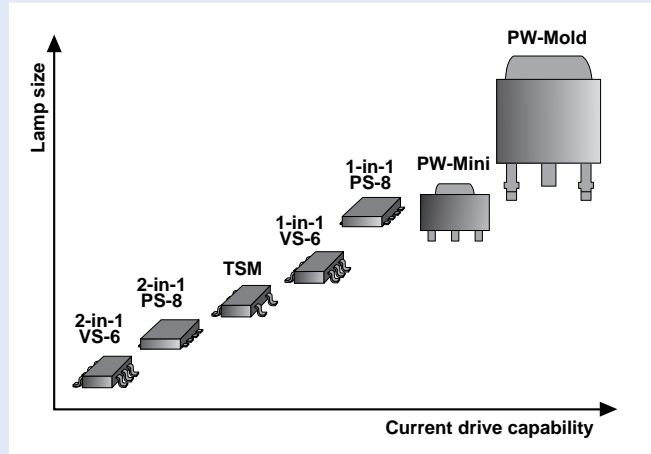
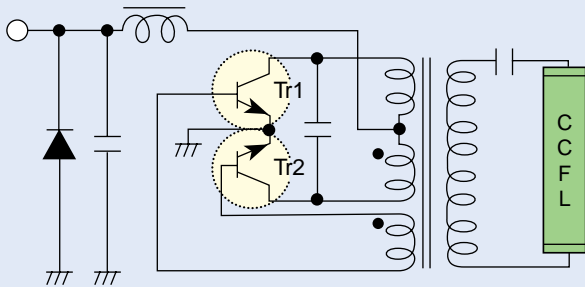
Note 1: The rating applies when the transistor is mounted on an FR4 board (Cu area = 645 mm<sup>2</sup>, glass-epoxy, t = 1.6 mm) and is in single-device operation. Thickness of cu: 70  $\mu$ m for SMV/PS-8, 35  $\mu$ m for VS-6  
Part number **XXXXXXXX** signifies a new product.

### Circuit Configuration (Top View)



# Recommended Transistors for Various Application Circuits

## Inverter Circuits for LCD Backlighting

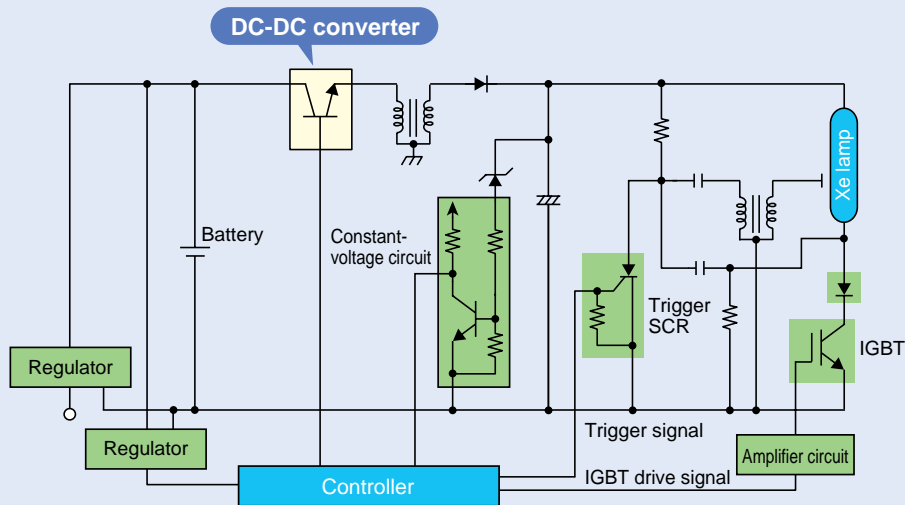


Package	Recommended Products
TSM	2SC5692, *2S6033, 2SC5703
VS-6	TPC6502, TPC6701
PW-Mini	2SC5810, 2SC5712
PS-8	TPCP8501, TPCP8505, TPCP8507, TPCP8701
PW-Mold	2SC5886, 2SC5886A, *2SC6000

- For small lamps, Toshiba recommends 2-in-1 power transistors housed in VS-6 and PS-8 packages.
- For LCD-TVs, Toshiba recommends power transistors housed in PW-Mold packages.
- Ultra-high-speed products are also available.

\*Ultra-high-speed product

## Strobe Circuits for DSCs / Cameras

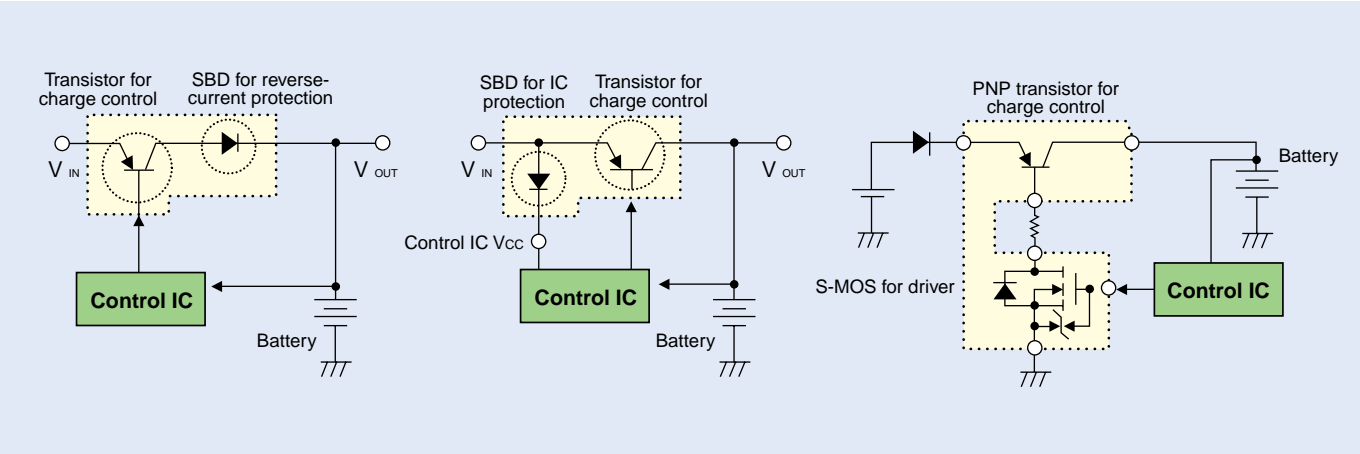


Polarity / Configuration	Package	Recommended Products
NPN / Single	TSM	2SC5738, *2SC5976, *2SC5906, *2SC6033, *★2SC6062
PNP / Single	TSM	2SA2061
PNP + S-MOS	PS-8	*TPCP8H01, *TPCP8H02

\*Ultra-high-speed product ★: Under development



## Battery Charge Circuits

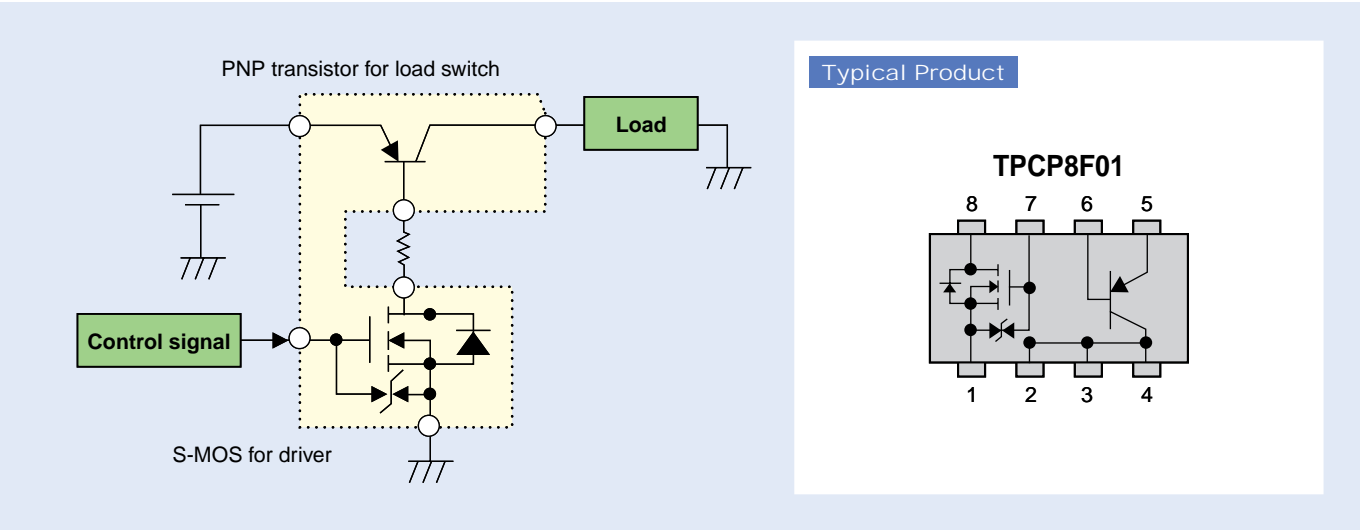


Package	Recommended Products
TSM	2SA2065, 2SA2061
VS-6	TPC6601, TPC6603, ★TPC6D02, TPC6D03
PW-Mini	2SA2069, 2SA2059
PS-8	TPCP8F01

★: Under development

## General-Purpose Load Switches

A Low  $V_{CE(sat)}$  PNP transistor and an S-MOS to drive it are housed in a single package. This is ideal for use in power supply switches to loads.

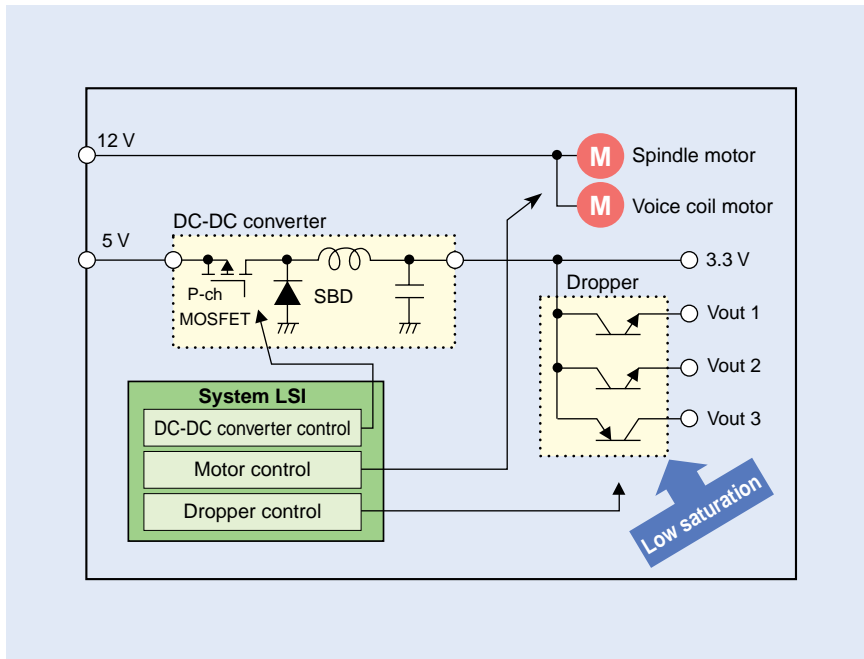


- Low power dissipation due to low  $V_{CE(sat)}$  PNP transistor
- Using an S-MOS to receive signals allows the transistor can be operated directly from a microcontroller.

Polarity / Configuration	Part Number	Ratings			hFE		$V_{CE0}$		$V_{CE(sat)}$			Mass Production
		$V_{CE0}$ (V)	$I_C$ (A)	$P_C$ (mW)	Min	Max	(V)	(A)	(V)	$I_C$ (A)	$I_B$ (mA)	
<b>PNP+S-MOS</b>	<b>TPCP8F01</b>	-20	-3	1000	200	500	-2	-0.5	-0.19	-1.6	-53	Available

The rating applies when the transistor is mounted on an FR4 board: Cu area = 645 mm<sup>2</sup>, glass-epoxy, t = 1.6 mm. Incorporating N-ch S-MOS:  $V_{DSS} = 20$  V,  $I_D = 0.1$  A,  $R_{ON} = 4 \Omega$  (max)

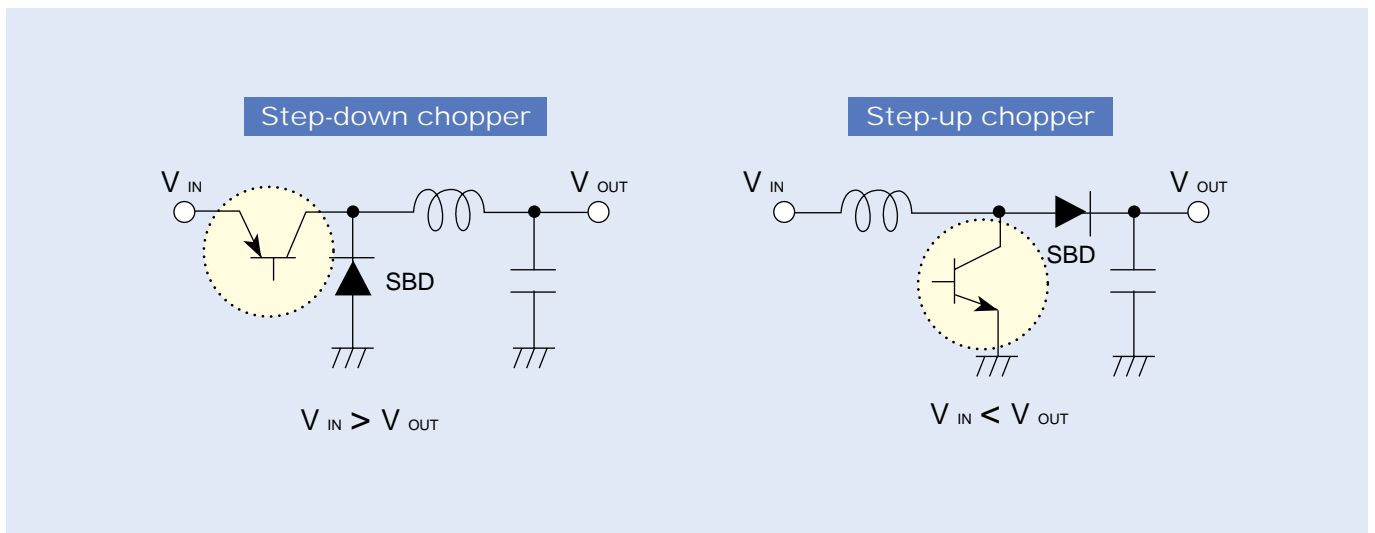
## HDD Dropper Power Supplies



### Recommended Products

	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	2.5 inches or less	3.5 inches
NPN transistor	10	2	<b>TPC6501</b>	
	10	2	<b>2SC5755</b>	
	10	2	<b>2SC5785</b>	
	10	2	<b>TPCP8504</b>	
	20	1.5	<b>2SC5819</b>	
	20	4	<b>2SC5714</b>	
	20	5		<b>2SC6052</b>
	50	1	<b>2SC5810</b>	
	50	3		<b>2SC5712</b>
	50	5		<b>2SC5886</b>
PNP transistor	-10	-1.5	<b>TPC6602</b>	
	-10	-1.5	<b>2SA2058</b>	
	-10	-2	<b>2SA2066</b>	
	-20	-2.5	<b>2SA2061</b>	
	-20	-3	<b>2SA2059</b>	
	-20	-5	<b>TPCP8601</b>	<b>2SA1242</b>
	-50	-1	<b>2SA2070</b>	
	-50	-2	<b>2SA2060</b>	
	-50	-2.5	<b>TPCP8602</b>	
	-50	-5		<b>2SA2097</b>

## DC-DC Converters for Various Information Devices

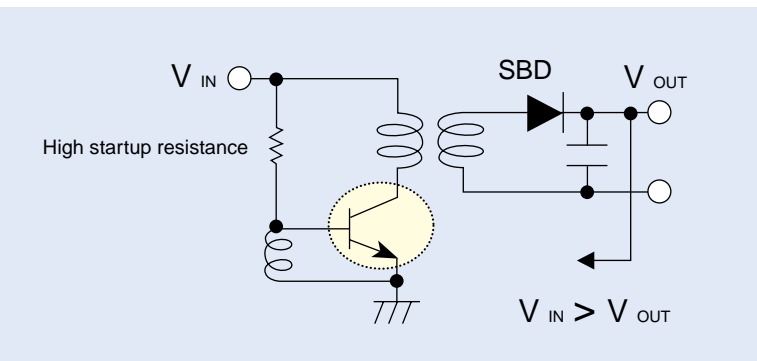


- Ultra-high-speed products emphasizing efficiency are ideal for DC-DC converters used in information devices.
- For the VS-6 package, a type incorporating an SBD is also available.

	Package	Recommended Products
Ultra-High Speed Transistors	<b>TSM</b>	<b>2SC6033, 2SC5976, ★2SC6062</b>
	<b>VS-6</b>	<b>★TPC6D02</b>
	<b>PW-Mold</b>	<b>2SC6000</b>
Standard Transistors	<b>TSM</b>	<b>2SA2056, 2SC5703</b>
	<b>PW-Mini</b>	<b>2SA2059, 2SC5714</b>

★: Under development

## Self-Excited DC-DC Converters for AC Adapters Used in Cell Phones / Amusement Equipments



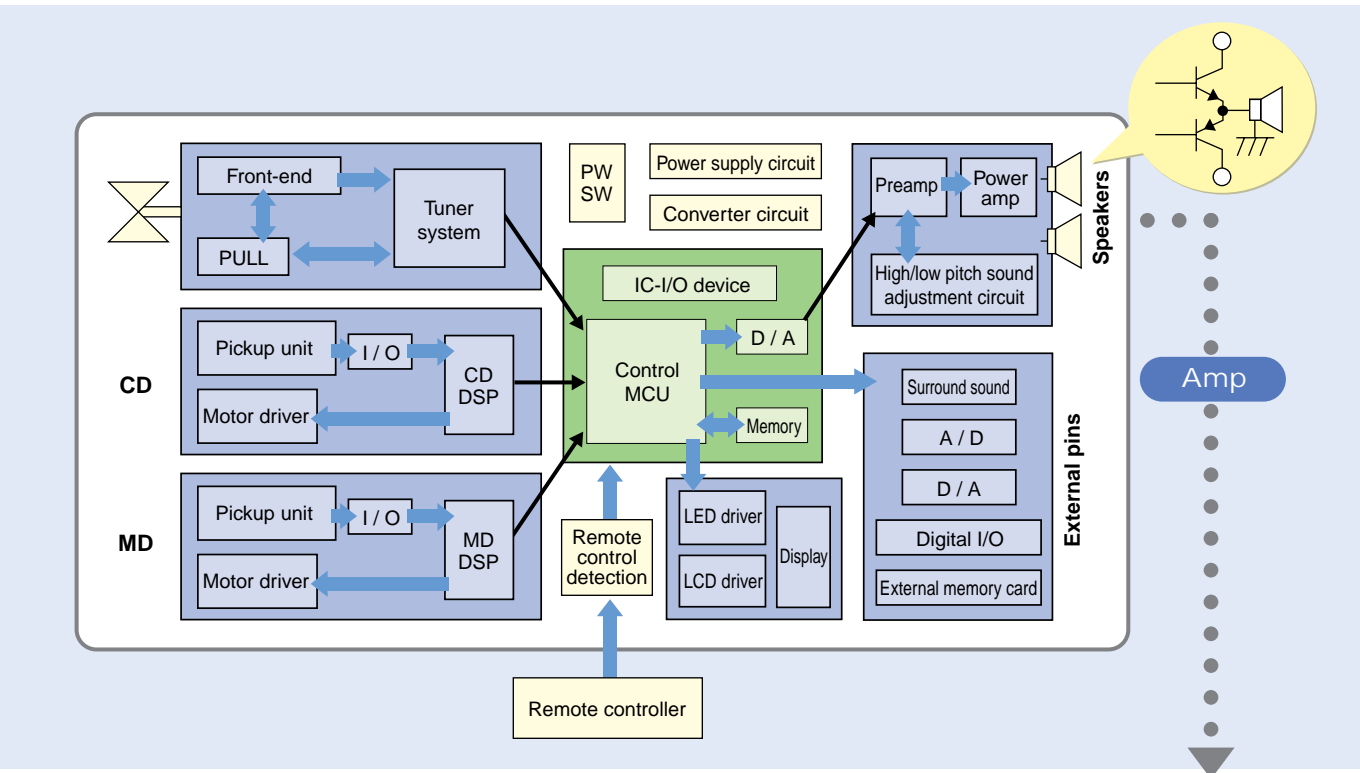
- Recommended to use for consuming standby power [High hFE achievement at low collector current]
- Available in low-profile packages



The MSTM package series is recommended.

Application	Package	Recommended Products	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	I <sub>c</sub> (A)	h <sub>FE</sub> (Min)(@V <sub>CE</sub> = 5 V, I <sub>c</sub> = 1 mA)
100 V AC	PW-Mold	2SC5548	600	370	2	50
		2SC5548A	600	400	2	12
	MSTM	2SC5930	600	285	1	20
		2SC6010	600	285	1	80
		2SA6034	600	285	1	100
200 V AC	MSTM	2SA6042	800	375	1	80
		2SC6040	800	410	1	50

## Audios



Application	Package	Recommended Products	Remarks
AV receivers	TO-3PN	2SB1682, 2SD2636	High-speed darlington
High-power amps	TO-3PN	★2SA2120, ★2SC5948	P <sub>c</sub> = 200 W
	TO-3PL	2SA2121, 2SC5949	P <sub>c</sub> = 220 W
	TO-220SIS	★2SA2182, ★2SC6060, ★S3K96, ★S3K95	Transistor for driver stage, S3K** signifies a prototype number.

★: Under development

# Product List by Package

## LSTM

(Weight: 0.36 g typ.)

LSTM



Part Number		Ic (A)	VCE0 (V)	Pc (W)	hFE		VCE(sat) Max			fr Typ. (Min)			Cob Max (Typ.)			Remarks	
NPN	PNP				VCE (V)	Ic (mA)	V	Ic (mA)	Ib (mA)	(MHz)	VCE (V)	Ie (mA)	(pF)	Vcb (V)	f (MHz)		
2SC4707	2SA1811	0.5	30	0.8	100 to 300	2	100	0.5	300	30	200	6	20	(9)	10	1	For audio
2SC2703	—	1	30	0.9	100 to 320	2	100	0.5	800	80	150	2	100	(13)	10	1	
2SC2383	2SA1013		160	0.9	60 to 320	5	200	1.5	500	50	(15)	5	200	20/35	10	1	
2SC2236	2SA966	1.5	30	0.9	100 to 320	2	500	2.0	1500	30	120	2	500	30	10	1	For audio
2SC2500	2SA1160	2	10	0.9	140 to 600	1	500	0.5	2000	50	150	1	500	(27)	10	1	Low-saturation voltage
2SC3225	—		40	0.9	500 min	1	400	0.5	300	1	220	2	100	(20)	10	1	
2SC2655	2SA1020		50	0.9	70 to 240	2	500	0.5	1000	50	100	2	500	(30)/(40)	10	1	
2SC4408	2SA1680		50	0.9	120 to 400	2	100	0.5	1000	50	100	2	100	(15)/(23)	10	1	
—	2SA1382		50	0.9	150 to 400	2	500	0.5	1000	33	110	2	500	(50)	10	1	
2SC3328	2SA1315	3	80	0.9	70 to 240	2	500	0.5	1000	50	80/100	2	500	30/45	10	1	High breakdown voltage
2SC4682	—		15	0.9	800 to 3200	1	500	0.5	3000	30	150	1	500	(30)	10	1	For strobe
2SC4604	2SA1761		50	0.9	120 to 400	2	100	0.5	1500	75	100	2	100	(20)/(32)	10	1	Low-saturation voltage
2SC4781	—	4	10	0.9	200 to 600	2	100	0.5	4000	80	170	2	500	(50)	10	1	For strobe

2SC2229	2SA949	0.05	150	0.8	70 to 240	5	10	0.5/0.8	10	1	120	30	10	3.5/(4)	10	1	High breakdown voltage
2SC2705	2SA1145		150	0.8	80 to 240	5	10	1.0	10	1	200	5	10	(1.8)/(2.5)	10	1	
2SC3334	—		250	0.9	50 min	20	25	1.5	10	1	100/80	10	10	1.8	30	1	
2SC5122	—		400	0.9	100 to 300	5	20	1.0	20	0.5	—	—	—	(4)	10	1	
2SC5201	—		600	0.9	100 to 300	5	20	1.0	20	0.5	—	—	—	—	—	—	
2SC2230	—	0.1	160	0.8	120 to 400	10	10	0.5	50	5	(50)	10	10	7	10	1	High breakdown voltage
2SC2230A	—		180	0.8	120 to 400	10	10	0.5	50	5	(50)	10	10	7	10	1	
2SC2482	—		300	0.9	30 to 150	10	20	1.0	10	1	(50)	10	20	(3)	10	1	
—	2SA1972	0.5	400	0.9	140 to 400	5	100	1.0	100	10	—	—	—	—	—	—	High breakdown voltage
2SC5549	—	1	400	0.9	20 to 65	5	40	1.0	200	25	—	—	—	—	—	—	

2SC1627A	2SA817A	0.4	80	0.8	70 to 240	2	50	0.4	200	20	100	10	10	(10)/(14)	10	1	For audio
2SC2235	2SA965	0.8	120	0.9	80 to 240	5	100	1.0	500	50	120	5	100	30/40	10	1	

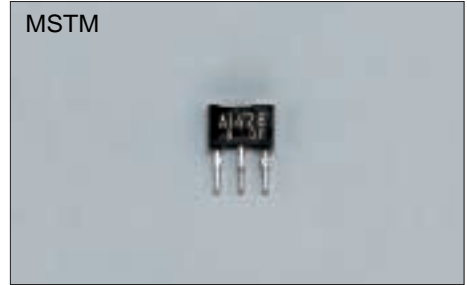
Part Number		Ic (A)	VCE0 (V)	Pc (W)	hFE		VCE(sat) Max			SW Time Typ.			Remarks	
NPN	PNP				VCE (V)	Ic (mA)	V	Ic (mA)	Ib (mA)	ton (μs)	tstg (μs)	tr (μs)		
2SD1140	—	1.5	30	0.9	4000 min	2	150	1.5	1000	1	0.2	0.6	0.3	Darlington
2SD2088	—	2.0	60 ± 10	0.9	2000 min	2	1000	1.5	1000	1	0.4	4.0	0.6	
2SD2695	—	2.0	60 ± 10	0.9	2000 min	2	1000	1.5	1000	1	0.4	4.0	0.6	
2SD2248	—	2.0	80 ± 10	0.9	2000 min	2	1000	1.5	1000	1	0.4	4.0	0.6	
2SD2206	2SB1457	2.0	100	0.9	2000 min	2	1000	1.5	1000	1	0.4	4.0/20	0.6/0.4	
2SD2536	—	2.0	100 ± 15	0.9	2000 min	2	1000	1.5	1000	—	—	—	—	
2SD2206A	—	2.0	120	0.9	2000 min	2	1000	1.5	1000	1	1.1	2.0	0.6	

Part number **XXXXXX** signifies a new product.

# MSTM

(Weight: 0.2 g typ.)

MSTM



Part Number		Ic (A)	VCEO (V)	Pc (W)	hFE		VCE(sat) Max			fr Typ.			Cob Max (Typ.)			Remarks	
NPN	PNP				VCE (V)	Ic (mA)	V (V)	Ic (mA)	Ib (mA)	(MHz)	VCE (V)	Ic (mA)	(pF)	Vcb (V)	f (MHz)		
<b>2SC3672</b>	<b>2SA1432</b>	0.1	300	1.0	30 to 150	10	20	0.5	20	2	80/60	10	20	4/8	10	1	High breakdown voltage
<b>2SC3665</b>	<b>2SA1425</b>	0.8	120	1.0	80 to 240	5	100	1.0	500	50	120	5	100	30/40	10	1	For audio
<b>2SC3666</b>	<b>2SA1426</b>	1.0	30	1.0	100 to 320	2/1	100	0.5/0.7	800	80	150/120	2	100	(13)/(19)	10	1	Low-saturation voltage
<b>2SC5930</b>	—	1.0	285	1.0	40 to 100	5	200	1.0	400	50	—	—	—	—	—	—	High-voltage switching
<b>2SC6010</b>	—	1.0	285	1.0	100 to 200	5	100	1.0	800	75	—	—	—	—	—	—	
<b>2SC6034</b>	—	1.0	285	1.0	125 to 250	5	100	1.0	800	75	—	—	—	—	—	—	
<b>2SC6042</b>	—	1.0	375	1.0	100 to 200	5	100	1.0	800	100	—	—	—	—	—	—	
<b>2SC6040</b>	—	1.0	410	1.0	60 to 120	5	100	1.0	800	100	—	—	—	—	—	—	Darlington
<b>2SD1631</b>	—	1.5	30	1.0	4000 min	2	150	1.5	1000	1	—	—	—	—	—	—	
<b>2SC3670</b>	<b>2SA1430</b>	2.0	10	1.0	140 to 600	1	500	0.5	2000	50	150/140	1	500	(27)/(50)	10	1	Low-saturation voltage
<b>2SC3673</b>	—	2.0	40	1.0	500 min	1	400	0.5	300	1	220	2	100	(20)	10	1	High hFE
<b>2SC3668</b>	<b>2SA1428</b>	2.0	50	1.0	70 to 240	2	500	0.5	1000	50	100	2	500	(30)/(40)	10	1	Low-saturation voltage
<b>2SC3669</b>	<b>2SA1429</b>	2.0	80	1.0	70 to 240	2	500	0.5	1000	50	100/80	2	500	(30)/(45)	10	1	
<b>2SC4683</b>	—	3.0	15	1.0	800 to 3200	1	500	0.5	3000	30	150	1	500	(30)	10	1	
—	<b>2SA1926</b>	3.0	80	1.0	100 to 300	2	500	0.17	1000	50	—	—	—	45	10	1	
<b>2SC3671</b>	<b>2SA1431</b>	5.0	20	1.0	100 to 320	2	500	1.0	4000	100	100/170	2	500	(40)/(62)	10	1	

Part number **XXXXXXX** signifies a new product.

Selection Guide by Functions and Applications

Recommended Transistors for Various Application Circuits

Product List by Packages

Standard Tape Packaging for Automated Pick-and-Place Assembly

Standard Lead-Formed Product List

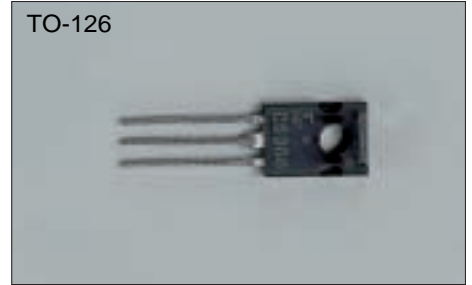
Package List

Product List

TO-126

(Weight: 0.82 g typ.)

TO-126



Part Number		Ic (A)	VCEO (V)	Pc Tc = 25°C *Ta = 25°C (W)	hFE			VCE(sat) Max			fr Typ.			Remarks
NPN	PNP				VCE (V)	Ic (A)	Ib (mA)	VCE (V)	Ic (A)	Ib (mA)	(MHz)	VCE (V)	Ic (A)	
<b>2SC3423</b>	<b>2SA1360</b>	0.05	150	5	80 to 240	10	10 m	1	10 m	1	200	10	10 m	For audio
<b>2SC3424</b>	—		250	5	50 to 200	20	25 m	1.5	10 m	1	80	10	10 m	Chroma output
<b>2SC3619</b>	—		300	5	30 to 150	10	20 m	1	0.01	1	80	10	20 m	Dynamic focus
<b>2SC5460</b>	—		800	10	15 min	50	7 m	1.0	20 m	4	—	—	—	
<b>2SC3620</b>	—	0.1	300	10	40 to 170	10	50 m	1	0.1	20	50 min	10	30 m	Chroma output
<b>2SC3963</b>	—	0.2	160	*1.5	100 to 320	10	50 m	1	0.2	20	50 min	10	50 m	For audio
—	<b>2SA1924</b>		400	10	100 to 320	5	0.1	1	0.1	10	35	5	50 m	High breakdown voltage
<b>2SC4200</b>	—	0.6	18	5	25 min	10	50 m	1	0.1	10	2500	10	0.2	Video output
<b>2SC3419</b>	<b>2SA1356</b>	0.8	40	5	70 to 240	2	50 m	0.8	0.5	50	100	2	0.5	General-purpose
<b>2SC3425</b>	—		400	10	20 to 100	5	0.1	0.5	0.1	10	—	—	—	High breakdown voltage
<b>2SC3421</b>	<b>2SA1358</b>	1	120	10	80 to 240	5	0.1	1	0.5	50	120	5	0.1	For audio
<b>2SC5550</b>	—	1	400	10	20 to 65	5	40 m	1	0.2	25	—	—	—	For ballast
<b>2SC3621</b>	<b>2SA1408</b>	1.5	150	10	60 to 320	5	0.2	1	0.5	50	20 min	5	0.2	Vertical-deflectin output
<b>2SC3964</b>	—	2	40	*1.5	500 min	1	0.4	0.5	0.3	1.0	220	2	0.1	General-purpose
<b>2SC5368</b>	—		450	10	20 to 65	5	0.2	1	0.8	0.1	—	—	—	High breakdown voltage
<b>2SC3422</b>	<b>2SA1359</b>	3	40	10	80 to 240	2	0.5	0.8	2	200	100	2	0.5	General-purpose
<b>2SC3420</b>	—	5	20	10	140 to 450	2	0.5	1	4	100	100	2	0.5	For strobe
<b>2SC4685</b>	—				800 to 3200	2	0.5	0.5	4	40	150	2	0.5	
—	<b>2SA1357</b>				100 to 320	2	0.5	1	4	100	170	2	0.5	
<b>2SD1508</b>	—	1.5	30	10	4000 min	2	0.15	1.5	1	1	—	—	—	Darlington
<b>2SD1509</b>	<b>2SB1067</b>	2	80	10	2000 min	2	1	1.5	1	1	100/50	2	0.5	
<b>2SD1658</b>	—		60 ± 10	10	2000 min	2	1	1.5	1	1	100	2	0.5	
<b>2SD2130</b>	—	4	60 ± 10	10	2000 min	2	1	1.5	3	10	60	2	0.5	

Selection Guide by Functions and Applications

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Product List by Packages

Standard Tape Packaging for Automated Pick-and-Place Assembly

Standard Lead-Formed Product List

Package List

Product List

## TO-220 Series

**TO-220NIS** [isolation package]  
(Weight: 1.7 g typ.)

TO-220NIS



Part Number		Ic (A)	V <sub>CEO</sub> (V)	P <sub>c</sub> T <sub>c</sub> =25°C (W)	hFE		V <sub>CE(sat)</sub> Max			f <sub>T</sub> Typ.			SW Time Typ.			Remarks	
NPN	PNP				V <sub>CE</sub> (V)	I <sub>c</sub> (A)	V <sub>CE</sub> (V)	I <sub>c</sub> (A)	I <sub>B</sub> (A)	(MHz)	V <sub>CE</sub> (V)	I <sub>c</sub> (A)	t <sub>on</sub> (μs)	t <sub>stg</sub> (μs)	t <sub>f</sub> (μs)		
<b>2SC5563</b>	—	0.02	1500	10	10 to 60	5	1 m	5.0	10 m	2 m	—	—	—	—	—	Dynamic focus	
<b>2SC5466</b>	—	0.05	800	10	15 min	5	7 m	1.0	20 m	4 m	5.5	10	3 m	—	—	Dynamic focus	
<b>2SC4686</b>	—		1000	10	15 to 60	5	3 m	1.5	0.01	2 m	5.5	10	3 m	—	—		
<b>2SC4686A</b>	—		1200	10	15 to 60	5	3 m	1.5	0.01	2 m	5.5	10	3 m	—	—		
<b>2SC4544</b>	—	0.1	300	8	30 to 200	10	0.02	1.0	0.01	1 m	70	20	0.02	—	—	Chroma output	
<b>2SC5360</b>	—	0.15	300	12.5	40 to 170	10	50 m	1.2	0.1	20 m	100	10	30 m	—	—	—	
<b>2SC4793</b>	<b>2SA1837</b>	1	230	20	100 to 320	5	0.1	1.5	0.5	50 m	100	10	0.1	—	—	For audio	
—	<b>2SA1822</b>		400	25	30 to 100	5	0.3	1.0	0.3	30 m	—	—	—	*1.0	*5.0	*1.0	General-purpose
<b>2SC2073A</b>	<b>2SA940A</b>	1.5	150	20	40 to 140	10	0.5	1.5	0.5	50 m	4/6	10	0.5	—	—	Vertical-deflectin output	
<b>2SD2352</b>	—	2	60	25	800 to 3200	5	0.1	1.0	0.5	5 m	17	5	0.5	—	—	General-purpose	
<b>2SC5171</b>	<b>2SA1930</b>		180	20	100 to 320	5	0.1	1.0	1	0.1	200	5	0.3	—	—	For audio	
<b>2SC4935</b>	<b>2SA1869</b>	3	50	10	70 to 140	2	0.5	0.6	2	0.2	50/100	2	0.5	—	—	General-purpose	
<b>2SD2012</b>	<b>2SB1375</b>		60	25	100 to 320	5	0.5	1.0/1.5	2	0.2	3	5	0.5	—	—		
<b>2SD2353</b>	—		60	25	800 to 3200	5	0.2	1.0	1	10 m	18	5	0.5	—	—		
<b>2SD2531</b>	—	4	60	25	100 to 320	5	0.5	1.5	2	0.2	3	5	0.5	—	—	General-purpose	
—	<b>2SB1642</b>		60	25	100 to 320	5	0.5	1.5	2.5	0.25	9	5	0.5	—	—		
<b>2SD2406</b>	—		80	25	70 to 240	5	0.5	1.5	3	0.3	8	5	0.5	—	—		
<b>2SD1407A</b>	<b>2SB1016A</b>	5	100	30	40 to 240	5	1	2.0	4	0.4	12	5	1.0	—	—	—	
—	<b>2SA1327A</b>	10	20	20	100 to 320	2	1	0.4	8	0.4	45	2	1	—	—	*1.0	For strobe

\*: Max



Part Number		Ic (A)	V <sub>CEO</sub> (V)	P <sub>C</sub> T <sub>C</sub> =25°C (W)	h <sub>FE</sub>		V <sub>CE(sat)</sub> Max			f <sub>t</sub> Typ.		SW Time Typ.			Remarks		
NPN	PNP				V <sub>CE</sub> (V)	I <sub>C</sub> (A)	V	I <sub>C</sub> (A)	I <sub>B</sub> (A)	(MHz)	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	t <sub>on</sub> (μs)	t <sub>stg</sub> (μs)		t <sub>r</sub> (μs)	
2SD2092	—	3	100	25	500 to 1500	1	0.5	0.3	1	0.01	140	5	0.5	0.5	5.0	0.7	Low-saturation voltage (For DC-DC Converter)
2SC4881	2SA1931	5	50	20	100 to 1320	1	1	0.4	2.5	0.125	100	4	1	0.1	0.8	0.1	
2SD1412A	—	7	50	30	70 to 1240	1	1	0.4	4	0.4	10	4	1	0.2	2.5	0.5	
2SD1411A	2SB1018A		80	30	70 to 1240	1	1	0.5	4	0.4	10	4	1	0.4	2.5	0.5	
2SC5000	2SA1887	10	50	25	120 to 1400	1	1	0.4	5	0.25	45	1	1	—	—	—	
2SD1947A	—		100	40	500 to 11500	1	1	0.3	5	0.05	70	5	1	0.5	6.0	1.0	
2SC3709A	2SA1451A	12	50	30	70 to 1240	1	1	0.4	6	0.3	90/70	5	1	0.2/0.3	1.0	0.2/0.5	
2SC3710A	2SA1452A		80	30	70 to 1240	1	1	0.4	6	0.3	80/50	5	1	0.2/0.3	1.0	0.2/0.5	
—	2SA1771		80	30	70 to 1240	1	1	0.4	6	0.3	50	5	1	0.3	1.0	0.5	

Part Number		Ic (A)	V <sub>CEO</sub> (V)	P <sub>C</sub> T <sub>C</sub> =25°C (W)	h <sub>FE</sub>		V <sub>CE(sat)</sub> Max			SW Time Typ.			Remarks	
NPN	PNP				V <sub>CE</sub> (V)	I <sub>C</sub> (A)	V	I <sub>C</sub> (A)	I <sub>B</sub> (A)	t <sub>on</sub> (μs)	t <sub>stg</sub> (μs)	t <sub>r</sub> (μs)		
2SC5459	—	3	400	25	20 min	5	0.3	1.0	1.2	0.24	▲*0.5	*2.0	*0.3	High breakdown voltage, Switching application
2SC5353	—	3	800	25	15 min	5	0.15	1	1.2	0.24	▲*0.7	*4.0	*0.5	
2SC5172	—	5	400	25	20 min	5	1	1	3	0.4	▲*0.7	*2.5	*0.5	
2SC5439	—	8	450	30	14 to 134	5	1	1.0	3.2	0.64	▲*0.2	*3.5	0.15	

—	2SB1411	2	100	20	1500 to 115000	3	1	2.5	2	8 m	1.0	3.0	2.0	Darlington
2SD2257	2SB1495	3	100	20	2000 min	2	1	1.5	1.5	1.5 m	0.5	2.0	0.5	
2SD2129	—		100	20	2000 to 115000	3	1.5	2.0	3	12 m	1.0	5.0	2.0	
2SD2204	—	4	60	25	2000 to 115000	3	1.5	2.0	3	12 m	1.0	5.0	2.0	
2SD2241	2SB1481		100	25	2000 min	2	1.5	1.5	3	6 m	0.2/0.15	1.5/0.8	0.6/0.4	
2SD2131	—	5	60	30	2000 to 115000	3	3	1.5	3	6 m	1.0	4.0	2.5	
—	2SB1381		100	30	1500 to 115000	3	2.5	1.5	2.5	5 m	0.8	2.5	2.0	
2SD2079	—		100	30	2000 to 115000	3	3	1.5	3	6 m	1.0	4.0	2.5	
2SD2604	—	110 ± 15	20	2000 to 115000	3	2	1.5	2	4 m	0.5	5.0	0.7		
2SD1415A	2SB1020A	7	100	30	2000 to 115000	3	3	1.5	3	6 m	0.3/0.8	5.1/2	0.6/2.5	
2SD2271	—	12	200	30	500 to 15000	2	5	2.0	10	100 m	(*) 1.0	(*) 12	(*) 2.0	

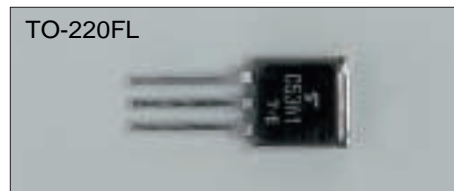
▲ : tr. \* : Max

**TO-220FL**

(Weight: 1.5 g typ.)

**TO-220SM**

(Weight: 1.4 g typ.)



Part Number		Ic (A)	V <sub>CEO</sub> (V)	P <sub>C</sub> T <sub>C</sub> =25°C (W)	h <sub>FE</sub>		V <sub>CE(sat)</sub> Max			SW Time Typ.			Remarks	
NPN	PNP				V <sub>CE</sub> (V)	I <sub>C</sub> (A)	V	I <sub>C</sub> (A)	I <sub>B</sub> (A)	t <sub>on</sub> (μs)	t <sub>stg</sub> (μs)	t <sub>r</sub> (μs)		
2SC4754	—	2	400	20	20 min	5	0.1	1	1	0.2	1.0	12.5	1.0	High breakdown voltage, Switching application
2SD2414	—	7	80	30	70 to 240	1	1	0.5	4	0.4	0.4	2.5	0.5	Low-saturation voltage
—	2SB1667	3	60	25	60 to 200	5	0.5	1.7	3	0.3	0.4	1.7	0.5	General-purpose
2SC5361	—		800	40	15 min	5	0.15	1.0	1.2	0.24	▲*0.7	▲*4.0	▲*0.5	High breakdown voltage, Switching application

▲ : tr. \* : Max



## TO-3P Series

### TO-3P(N)

(Weight: 4.7 g typ.)

TO-3P(N)



Part Number		Ic (A)	V <sub>CEO</sub> (V)	Pc T <sub>c</sub> = 25°C (W)	hFE			V <sub>CE(sat)</sub> Max			f <sub>r</sub> Typ.		SW Time Typ.			Remarks	
NPN	PNP				VCE (V)	Ic (A)	Ic (A)	Ib (A)	Ic (A)	Ib (A)	(MHz)	VCE (V)	Ic (A)	ton (μs)	tstg (μs)		tr (μs)
2SC5196	2SA1939	6	80	60	55 to 160	5	1	2	5	0.5	30	5	1	—	—	—	Audio amp
2SC5197	2SA1940	8	120	80	55 to 160	5	1	2	6	0.6	30	5	1	—	—	—	
2SC5198	2SA1941	10	140	100	55 to 160	5	1	2	7	0.7	30	5	1	—	—	—	
2SC5242	2SA1962	15	230	130	55 to 160	5	1	3	8	0.8	30	5	1	—	—	—	
2SC5358	2SA1986		230	150	55 to 160	5	1	3	8	0.8	30	5	1	—	—	—	
★ 2SC5948	★ 2SA2120	12	200	200	55 to 160	5	1	2/3	8	0.8	30/25	5	1	—	—	—	
2SD2386	2SB1557	7	140	70	5000 to 30000	5	6	2.5	6	6 m	30	5	1	—	—	—	Audio amp (Darlington)
2SD2387	2SB1558	8	140	80	5000 to 30000	5	7	2.5	7	7 m	30	5	1	—	—	—	
2SD2636	2SB1682	8	160	100	5000 to 15000	4	7	3	7	7 m	35	10	1	0.7	3.5/1.3	0.6/0.7	

2SC3657	—	4	800	80	10 min	5	1	1	2	0.4	—	—	—	▲*1.0	*2.5	*1.0	High breakdown voltage, Switching application
2SC5354	—	5	800	100	15 min	5	0.5	1	2	0.2	—	—	—	▲*0.7	*4.0	*0.5	
2SC5352	—	10	400	80	20 min	5	1	1	4	0.5	—	—	—	▲*0.5	*2.0	*0.3	
2SC4157	—		450	100	15 min	5	5	1	5	1.0	—	—	—	▲*0.5	*2.5	*0.5	

2SD1662	—	15	100	100	1000 min	3	15	1.5	15	25 m	14	5	1	1	2	1.5	Darlington
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★: Under development

▲: tr. \*: Max

### TO-3P(N)IS [isolation package]

(Weight: 5.8 g typ.)

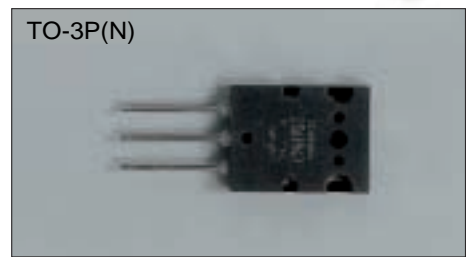
TO-3P(N)IS



Part Number		Ic (A)	V <sub>CEO</sub> (V)	Pc T <sub>c</sub> = 25°C (W)	hFE			V <sub>CE(sat)</sub> Max			f <sub>r</sub> Typ.		Remarks	
NPN	PNP				VCE (V)	Ic (A)	Ic (A)	Ib (A)	Ic (A)	Ib (A)	(MHz)	VCE (V)		Ic (A)
2SC4688	2SA1803	6	80	55	55 to 160	5	1	2.0	5.0	0.5	30	5	1	Audio amp
2SC4689	2SA1804	8	120	70	55 to 160	5	1	2.0	6.0	0.6	30	5	1	
2SC4690	2SA1805	10	140	80	55 to 160	5	1	2.0	7.0	0.7	30	5	1	
2SD2440	—	6	60	40	200 to 900	5	0.5	1.2	5.0	1.0	5	10	0.5	General-purpose

**TO-3P(L)**  
(Weight: 9.75 g typ.)

TO-3P(N)



Part Number		Ic	VCEO	Pc	hFE	VCE(sat) Max			fr Typ.			Remarks		
NPN	PNP	(A)	(V)	Tc=25°C (W)		VCE (V)	Ic (A)	Ib (A)	(MHz)	VCE (V)	Ic (A)			
2SC5199	2SA1942	12	160	120	55 to 160	5	1	2.5	8	0.8	30	5	1	Audio amp
2SC5200	2SA1943	15	230	150	55 to 160	5	1	3	8	0.8	30	5	1	
2SC5359	2SA1987	15	230	180	55 to 160	5	1	3.0	8	0.8	30	5	1	
2SC5949	2SA2121	15	200	220	55 to 160	5	1	3.0	10	1	30/25	5	1	
2SD2384	2SB1555	7	140	100	5000 to 30000	5	6	2.5	6	6 m	30	5	1	Audio amp (Darlington)
2SD2385	2SB1556	8	140	120	5000 to 30000	5	7	2.5	7	7 m	30	5	1	
2SD2449	2SB1594	10	160	150	3000 to 20000	5	8	3.0	8	8 m	30	5	1	

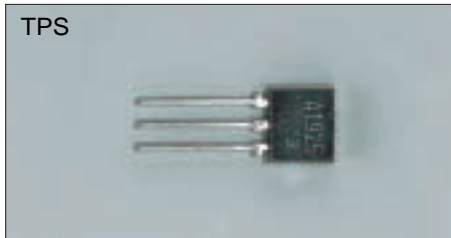
Part Number		Ic	VCEO	Pc	hFE	VCE(sat) Max			SW Time Typ.			Remarks		
NPN	PNP	(A)	(V)	Tc=25°C (W)		VCE (V)	Ic (A)	Ib (A)	ton (μs)	tstg (μs)	tr (μs)			
2SC3307	—	10	800	150	10 min	5	5	1.0	5	1.0	▲*1.0	*3.0	*1.0	High breakdown voltage, Switching application

2SD1314	—	15	450	150	100 min	5	15	2.0	15	0.4	*1.0	*12	*3.0	Darlington
2SD1525	—	30	100	150	1000 min	5	20	1.5	20	0.2	1.5	10	1.5	

▲ : tr. \* : Max

## TPS

(Weight: 0.55 g Typ.)



Part Number		Ic (A)	VCEO (V)	Pc (W)	hFE		VCE(sat) Max			fr Typ.			Remarks	
NPN	PNP				VCE (V)	Ic (A)	(V)	Ic (A)	Ib (mA)	(MHz)	VCE (V)	Ic (A)		
<b>2SC5027</b>	—	0.1	300	1.3	30 to 200	10	0.02	1.0	0.01	1	70	10	0.02	Video output
—	<b>2SA1925</b>	0.5	400	1.3	60 min	5	0.05	1.2	0.1	10	—	—	—	High breakdown voltage, Switching application
<b>2SC5562</b>	—	0.8	800	1.3	15 min	5	0.08	1.0	0.3	60	—	—	—	High breakdown voltage, Switching application
<b>2SC5154</b>	—	1.5	160	1.3	70 to 240	5	0.1	1.5	0.5	50	100	10	0.1	For audio
<b>2SC5028</b>	<b>2SA1891</b>	2	50	1.3	120 to 400	2	0.1	0.5	1	50	100	2	0.1	Low-saturation voltage
<b>2SD2461</b>	—	2	60	1.3	800 to 3200	5	0.1	1.0	0.5	5	17	5	0.5	High hFE
<b>2SC5075</b>	—	2	400	1.3	20 min	5	0.1	1.0	1	200	—	—	—	High breakdown voltage, Switching application
<b>2SC5208</b>	—	2	400	1.3	20 to 80	5	0.1	0.4	0.1	10	—	—	—	High breakdown voltage, Switching application
<b>2SC5351</b>	—	2	450	1.3	20 min	5	0.2	1.0	0.8	100	—	—	—	High breakdown voltage, Switching application
<b>2SC5029</b>	<b>2SA1892</b>	3	50	1.3	70 to 240	2	0.5	0.5	1	50	100	2	0.5	Low-saturation voltage
<b>2SD2462</b>	—	3	60	1.3	800 to 3200	5	0.2	1.0	1.0	10	18	5	0.5	High hFE
—	<b>2SA1893</b>	5	20	1.3	100 to 320	2	0.5	1.0	4	100	170	2	0.5	For strobe
<b>2SC5030</b>	—	5	20	1.3	800 to 3200	2	0.5	0.5	4	40	150	2	0.5	For strobe
<b>2SC5076</b>	<b>2SA1905</b>	5	50	1.3	70 to 240	1	1	0.4	3	150	120/60	4	1	Low-saturation voltage

<b>2SD2481</b>	—	1.5	30	1.3	4000 min	2	0.15	1.5	1	1	—	—	—	Darlington
<b>2SD2480</b>	<b>2SB1617</b>	2	100	1.3	2000 min	2	1	1.5	1	1	100/50	2	0.5	Darlington

## TPL

(Weight: 1.5 g Typ.)



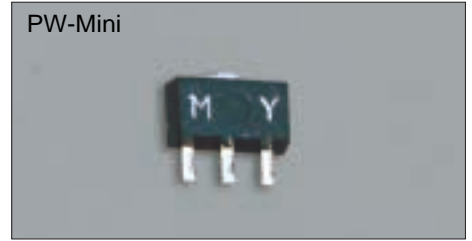
Part Number		Ic (A)	VCEO (V)	Pc (W)	hFE		VCE(sat) Max			fr Typ.			Remarks	
NPN	PNP				VCE (V)	Ic (A)	(V)	Ic (A)	Ib (mA)	(MHz)	VCE (V)	Ic (A)		
<b>2SC5174</b>	—	1	230	1.8	100 to 320	5	0.1	1.5	0.5	50	100/70	10	0.1	General-purpose
<b>2SD2525</b>	<b>2SB1640</b>	3	60	1.8	100 to 320	5	0.1	1.0/1.5	2	200	3/9	5	0.5	General-purpose
<b>2SC5175</b>	<b>2SA1933</b>	5	50	1.8	100 to 320	1	1	0.4	2.5/2	125/200	100/60	4	1	Low-saturation voltage
<b>2SC5176</b>	<b>2SA1934</b>	5	80	1.8	70 to 240	1	1	0.4	3	150	120/60	4	1	Low-saturation voltage
<b>2SD2526</b>	—	5	100	1.8	2000 to 15000	3	3	1.5	3	6	—	—	—	Darlington
<b>2SC5279</b>	—	2	400	1.8	20 min	5	0.1	1.0	1	100	—	—	—	High breakdown voltage, Switching application
<b>2SC5266A</b>	—	5	400	1.8	20 min	5	1	1.0	3	400	—	—	—	High breakdown voltage, Switching application



**PW-Mini(SC-62)**

(Weight: 0.05 g Typ.)

PW-Mini

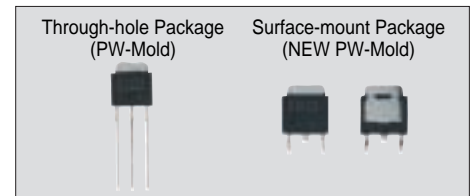


Part Number		Ratings					Electrical Characteristics							Marking		Equivalent to LSTP		Remarks		
		PC (W)	PC* (W)	PC** (W)	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	hFE		V <sub>CE(sat)</sub>			f <sub>T</sub>								
NPN	PNP						V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	(V) Max	I <sub>C</sub> (mA)	I <sub>B</sub> (mA)	(MHz) Typ.	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	NPN	PNP	NPN	PNP		
2SC2880	2SA1200	0.5	0.8	—	150	0.05	70 to 240	5	10	0.5/0.8	10	1	120	30	10	A□	B□	2SC2229	2SA949	High breakdown voltage
2SC2881	2SA1201	0.5	1.0	—	120	0.8	80 to 240	5	100	1.0	500	50	120	5	100	C□	D□	2SC2235	2SA965	For audio
2SC2882	2SA1202	0.5	1.0	—	80	0.4	70 to 240	2	50	0.4	200	20	120/100	10	10	E□	F□	(2SC1627)	(2SA817)	Low-saturation voltage
2SC2883	2SA1203	0.5	1.0	—	30	1.5	100 to 320	2	500	2.0	1500	30	120	2	500	G□	H□	2SC2236	2SA966	For audio
2SC2884	2SA1204	0.5	1.0	—	30	0.8	100 to 320	1	100	0.5/0.7	500	20	120	5	10	P□	R□	(2SC2120)	(2SA950)	Low-saturation voltage
2SC2873	2SA1213	0.5	1.0	—	50	2.0	70 to 240	2	500	0.5	1000	50	120	2	500	M□	N□	2SC2655	2SA1020	Low-saturation voltage
2SC2982	2SA1314	0.5	1.0	—	10	2.0	140 to 600	1	500	0.5	2000	50	140	1	500	S□	T□	(2SC3279)	(2SA1300)	Low-saturation voltage
2SC3515	2SA1384	0.5	1.0	—	300	0.1	30 to 150	10	20	0.5	20	2	60	10	20	I□	J□	(2SC2551)	(2SA1091)	Low-saturation voltage
2SC3803	2SA1483	0.5	1.0	—	45	0.2	40 to 240	1	10	0.3	100	10	200	10	10	V□	W□	—	—	Low-saturation voltage
2SC4409	2SA1681	0.5	1.0	—	50	2.0	120 to 400	2	100	0.5	1000	50	100	2	100	KA	LA	2SC4408	2SA1680	Low-saturation voltage
2SC4539	2SA1734	0.5	1.0	—	30	1.2	120 to 400	2	100	0.5	700	35	100	2	100	KB	LB	—	—	Low-saturation voltage
2SC4540	2SA1735	0.5	1.0	—	50	1.0	120 to 400	2	100	0.5	500	25	100	2	100	KC	LC	—	—	Low-saturation voltage
2SC4541	2SA1736	0.5	1.0	—	50	3.0	120 to 400	2	100	0.5	1500	75	100	2	100	KD	LD	—	—	Low-saturation voltage
2SD1784	—	0.5	1.0	—	30	1.5	4000 min	2	150	1.5	1000	1	—	—	—	XN	—	2SD1140	—	Driver (Darlington)
2SC5785	—	—	—	1	10	2	400 to 1000	2	200	0.12	600	12	—	—	—	3E	—	—	—	Low-saturation voltage
—	2SA2066	—	—	1	-10	-2	200 to 500	-2	-200	-0.19	-600	-20	—	—	—	4E	—	—	—	Low-saturation voltage
2SC5713	—	—	—	1	10	4	400 to 1000	2	500	0.15	1600	32	—	—	—	2C	—	—	—	Low-saturation voltage
2SC5819	—	—	—	1	20	1.5	400 to 1000	2	150	0.12	500	10	—	—	—	3D	—	—	—	Low-saturation voltage
—	2SA2069	—	—	1	-20	-1.5	200 to 500	-2	-150	-0.14	-500	-17	—	—	—	4D	—	—	—	Low-saturation voltage
2SC5714	—	—	—	1	20	4	400 to 1000	2	500	0.15	1600	32	—	—	—	2E	—	—	—	Low-saturation voltage
—	2SA2059	—	—	1	-20	-3	200 to 500	-2	-500	-0.19	-1600	-53	—	—	—	4F	—	—	—	Low-saturation voltage
2SC5712	—	—	—	1	50	3	400 to 1000	2	300	0.14	1000	20	—	—	—	2A	—	—	—	Low-saturation voltage
—	2SA2060	—	—	1	-50	-2	200 to 500	-2	-300	-0.20	-1000	-33	—	—	—	4G	—	—	—	Low-saturation voltage
2SC5810	—	—	—	1	50	1	400 to 1000	2	100	0.17	300	6	—	—	—	3C	—	—	—	Low-saturation voltage
—	2SA2070	—	—	1	-50	-1	200 to 500	-2	-100	-0.18	-300	-10	—	—	—	4C	—	—	—	Low-saturation voltage
2SD2686	—	—	—	1	60±10	1	2000 min	2	1000	1.5	1000	1	—	—	—	3H	—	—	—	Darlington

Remark: hFE rank symbol listed below enters blank column □ in device marking  
 (R rank → R, O rank → O, Y rank → Y, A rank → A, B rank → B, C rank → C, D rank → D)  
 \*: The rating applies when the transistor is mounted on a ceramic board (250 mm × 250 mm × 0.8 mm).  
 \*\*: The rating applies when the transistor is mounted on a glass-epoxy board (645 mm × 645 mm × 1.6 mm).  
 Part number **XXXXXXXX** signifies a new product.

## PW-Mold(D-PACK)(SC-63/64)

(Weight: 0.36 g Typ.)



Part Number		Ic (A)	VCE0 *VCBO (V)	Pc Tc = 25°C (W)	hFE		VCE(sat) Max			ft Typ.			Through-hole Package	Surface-mount Package	Remarks	
NPN	PNP				VCE (V)	Ic (A)	(V)	Ic (A)	Ib (mA)	(MHz)	VCE (V)	Ic (A)				
—	<b>2SA1923</b>	0.5	400	10	100 to 320	5	0.1	1	0.1	10	35	10	1	○	△	High breakdown voltage, Switching application
—	<b>2SA1937</b>	0.5	600	10	100 to 500	5	0.02	1	0.1	10	35	5	0.05	○	—	
—	<b>2SA2142</b>	0.5	600	15	100 to 400	5	0.05	1	0.1	10	35	5	0.05	—	○	
<b>2SC3075</b>	—	0.8	400	10	20 to 100	5	0.1	0.5	0.1	10	—	—	—	○	○	
<b>2SC5458</b>	—		400	10	20 min	5	0.08	1	0.3	0.04	—	—	—	○	○	
—	<b>2SA2034</b>	2	400	15	80 to 240	5	0.1	1	0.5	100	—	—	—	—	○	
—	<b>★2SA2184</b>	1	550	15	80 to 300	5	0.1	1.2	0.3	60	—	—	—	—	○	
<b>2SC3405</b>	—	0.8	800	20	10 min	5	0.3	0.5	0.3	60	—	—	—	○	○	
<b>2SC5465</b>	—		800	20	15 min	5	0.08	1	0.3	0.06	—	—	—	○	△	
<b>2SD1220</b>	<b>2SB905</b>	1.5	150	10	60 to 320	5	0.2	1.5	0.5	50	100	5	0.2	○	○	
<b>2SC2983</b>	<b>2SA1225</b>		160	15	70 to 240	5	0.1	1.5	0.5	50	100	10	0.1	○	○	For audio
<b>2SD1160</b>	—	2	*50	10	100 to 300	2	1	0.6	2	40	—	—	—	○	—	General-purpose
<b>2SD1221</b>	<b>2SB906</b>	3	60	20	60 to 200	5	0.5	1	3	300	3	5	0.5	○	○	General-purpose

<b>2SC3076</b>	<b>2SA1241</b>	2	50	10	70 to 240	2	0.5	0.5	1	50	100	2	0.5	○	○	Low saturation voltage
<b>2SC3474</b>	—		80	20	500 min	1	0.4	0.5	0.3	1	85	2	0.1	○	○	
<b>2SC4681</b>	<b>2SA1802</b>	3	10	10	200 to 600	2	0.5	0.5	3	60	150	2	0.5	○	—	
<b>★2SC6052</b>	—	5	20	10	180 to 390	2	0.5	0.2	1.6	53	—	—	—	—	○	
<b>2SC3074</b>	<b>2SA1244</b>		50	20	70 to 240	1	1	0.4	3	150	120	4	1	○	○	
<b>2SC5886</b>	—		50	20	400 to 1000	2	0.5	0.22	1.6	32	—	—	—	—	○	
—	<b>2SA2097</b>		50	20	200 to 500	2	0.5	0.27	1.6	53	—	—	—	—	○	
<b>2SC5886A</b>	—		50	20	400 to 1000	2	0.5	0.22	1.6	32	—	—	—	—	○	
<b>■S3H32</b>	—		50	20	200 to 500	2	0.5	0.2	1.6	53	—	—	—	—	○	
<b>2SC3303</b>	—		80	20	70 to 240	1	1	0.4	3	150	120	4	1	○	○	
<b>2SC6000</b>	—		7	50	20	250 to 400	2	2.5	0.18	2.5	83	—	—	—	—	○

<b>2SC3072</b>	—	5	20	10	140 to 450	2	0.5	1	4	100	100	2	0.5	○	○	For strobe
<b>2SC4684</b>	—		20	10	800 to 3200	2	0.5	0.5	4	40	150	2	0.5	○	○	
—	<b>2SA1242</b>		20	10	100 to 320	2	0.5	1	4	100	100	2	0.5	○	○	

<b>2SD1224</b>	—	1.5	30	10	400 min	2	0.15	1.5	1	1	—	—	—	○	—	Darlington
<b>2SD1222</b>	<b>2SB907</b>	3	40	15	2000 min	2	1	1.5	2	4	—	—	—	○	○	
<b>2SD1223</b>	<b>2SB908</b>	4	80	15	2000 min	2	1	1.5	3	6	—	—	—	○	○	
<b>2SC5548</b>	—	2	370	15	60 to 120 min	5	0.2	1	0.8	100	—	—	—	○	○	
<b>2SC5548A</b>	—	2	400	15	40 to 100 min	5	0.2	1	0.8	100	—	—	—	○	○	

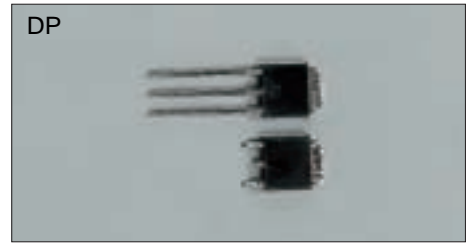
Part number **XXXXXX** signifies a new product.

★: Under development ■: Under planning (indicating prototype part number)

△: Manufacture of surface-mount package type planned

DP

(Weight: 0.36 g Typ.)



Part Number		Ic	VCEO	Pc	hFE	VCE(sat) Max			SW Time (Typ.)			Remarks		
NPN	PNP	(A)	(V)	Tc=25°C (W)		VCE (V)	Ic (mA)	(V)	Ic (mA)	Ib (mA)	ton (μs)		tstg (μs)	tr (μs)
2SC5356	—	3	800	40	15 min	5	0.15	1.0	1.2	0.24	▲*0.7	4.0	0.5	High breakdown voltage, Switching application
2SC5355	—	5	400	40	20 to 65	5	0.5	1.0	2.0	0.25	▲*0.5	2.0	0.3	
2SD2584	—	7	100	40	2000 to 15000	3	3.0	1.5	3.0	6 m	0.3	5.1	0.6	Darlington

▲ : tr. \* : Max

TSM

(Weight: 0.01 g Typ.)



Part Number	Ratings			Electrical Characteristics						Marking
	VCEO (V)	Ic (A)	ICP (A)	hFE	VCE (V)	Ic (A)	VCE(sat) Max (V)	Ic (A)	Ib (mA)	
2SC5755	10	2	3.5	400 to 1000	2	0.2	0.12	0.6	12	WL
2SA2058	-10	-1.5	-2.5	200 to 500	-2	-0.2	-0.19	-0.6	-20	WM
2SC5784	20	1.5	2.5	400 to 1000	2	0.15	0.12	0.5	10	WJ
2SA2065	-20	-1.5	-2.5	200 to 500	-2	-0.15	-0.14	-0.5	-17	WK
2SC5738	20	3.5	6	400 to 1000	2	0.5	0.15	1.6	32	WD
2SA2061	-20	-2.5	-4	200 to 500	-2	-0.5	-0.19	-1.6	-53	WE
■ S3C82	50	1	2	400 to 1000	2	0.1	0.17	0.3	6	WG
■ S3C83	-50	-1	-2	200 to 500	-2	-0.1	-0.18	-0.3	-10	WH
2SC5976	30	3	5	250 to 400	2	0.3	0.14	1	33	WW
2SC5906	30	4	7	200 to 500	2	0.5	0.2	1.6	53	WP
★ 2SC6062	30	5	8	250 to 400	2	0.5	0.12	1.6	53	WR
2SC5692	50	2.5	4	400 to 1000	2	0.3	0.14	1	20	WB
2SC6033	50	2.5	5	250 to 400	2	0.3	0.18	1	33	WX
2SA2056	-50	-2	-3.5	200 to 500	-2	-0.3	-0.2	-1	-33	WF
2SC5703	50	4	7	400 to 1000	2	0.5	0.12	1.6	32	WA
★ 2SC6061	120	1	2	120 to 300	2	0.1	0.14	0.3	10	WN

Part number XXXXXX signifies a new product. ★: Under development ■: Under planning (indicating prototype part number)

## VS-6

(Weight: 0.011 g Typ.)



Part Number	Polarity / Configuration	Ratings			Electrical Characteristics						Marking	
		V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	I <sub>CP</sub> (A)	hFE		V <sub>CE(sat)</sub> Max (V)		I <sub>C</sub> (A)	I <sub>B</sub> (mA)		
TPC6501	NPN / Single	10	2	3.5	400 to 1000		2	0.2	0.12	0.6	12	H2A
TPC6502	NPN / Single	50	3	4	400 to 1000		2	0.3	0.14	1	20	H2B
TPC6503	NPN / Single	20	1.5	2.5	400 to 1000		2	0.15	0.12	0.5	10	H2C
■S3F61	NPN / Single	10	4	6	400 to 1000		2	0.5	0.15	1.6	32	—
■S3F62	NPN / Single	20	4	6	400 to 1000		2	0.5	0.15	1.6	32	—
■S3F59	NPN / Single	50	1	2	400 to 1000		2	0.1	0.17	0.3	6	—
TPC6601	PNP / Single	-50	-2	-3.5	200 to 500		-2	-0.3	-0.2	-1	-33	H3A
TPC6602	PNP / Single	-10	-2	-3.5	200 to 500		-2	-0.2	-0.19	-0.6	-20	H3B
TPC6603	PNP / Single	-20	-3	-5	200 to 500		2	0.5	-0.19	-1.6	-53	H3E
■S3F56	PNP / Single	-20	-1.5	-2.5	200 to 500		-2	-0.15	-0.14	-0.5	-17	—
■S3F57	PNP / Single	-50	-1	-2	200 to 500		-2	-0.1	-0.18	-0.3	-10	—
TPC6701	NPN / Dual	50	1	2	400 to 1000		2	0.1	0.17	0.3	6	H4A
TPC6901	NPN + PNP	50/-50	1/-0.7	2/-2	400 to 1000/200 to 500		2/-2	0.1/-0.1	0.17/-0.23	0.3/-0.3	6/-10	H6A

Part Number	Polarity / configuration	Ratings					Electrical Characteristics (Transistor)						Electrical Characteristics (Diode)				Marking
		Transistor			Diode		hFE		V <sub>CE(sat)</sub> Max			V <sub>F</sub> Max		I <sub>R</sub> Max			
		V <sub>CE</sub> (V)	I <sub>C</sub> (A)	I <sub>CP</sub> (A)	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)		V <sub>CE</sub> (V)	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	I <sub>B</sub> (mA)	V <sub>F</sub> (V)	I <sub>F</sub> (A)	I <sub>R</sub> (μA)	V <sub>R</sub> (V)	
★TPC6D02	PNP + Di	-15	-1.5	-3	30	0.7	250 to 400	-2	-0.15	-0.17	-0.5	-16.7	0.5	0.7	100	10	H8B
TPC6D03	PNP + Di	-20	-1.2	-2	30	0.7	140 to 350	-2	-0.15	-0.17	-0.5	-16.7	0.5	0.7	100	10	H8C

Part number **XXXXXXX** signifies a new product. ★: Under development ■: Under planning (indicating prototype part number)

## PS-8

(Weight: 0.0173 g Typ.)



Part Number	Polarity / Configuration	Ratings			hFE				V <sub>CE(sat)</sub> (V)		
		V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	P <sub>C</sub> (W) <sup>Note 1</sup>		V <sub>CE</sub> (V)	I <sub>C</sub> (A)		Max	I <sub>C</sub> (A)	I <sub>B</sub> (mA)
★TPCP8503	NPN / Single	600	0.05	1.1	100 to 300		5	0.001	1.0	0.02	0.5
TPCP8507	NPN / Single	120	1	1.25	120 to 300		2	0.1	0.14	0.3	10
TPCP8501	NPN / Single	100	2	1.3	100 to 300		2	0.3	0.2	1	33
TPCP8505	NPN / Single	50	3	1.25	400 to 1000		2	0.3	0.14	1	20
TPCP8504	NPN / Single	10	2	1.2	400 to 1000		2	0.2	0.12	0.6	12
TPCP8603	PNP / Single	-120	-1	1.25	120 to 300		-2	-0.1	-0.2	-0.3	-10
TPCP8602	PNP / Single	-50	-2.5	1.25	200 to 500		-2	-0.3	-0.2	-1	-33
TPCP8601	PNP / Single	-20	-4	1.3	200 to 500		-2	-0.6	-0.19	-2	-67
TPCP8701	NPN / Dual	50	2	0.94	400 to 1000		2	0.3	0.14	1	20
★TPCP8801	PNP / Dual	-30	-1.2	0.83	200 to 500		-2	-0.15	-0.3	-0.36	-12
TPCP8901	NPN + PNP <sup>Note 2</sup>	50/-50	1/-0.8	0.83	400 to 1000/200 to 500		2/-2	0.1/-0.1	0.17/-0.21	0.3/-0.3	6/-10
TPCP8F01	PNP + S-MOS <sup>Note 2</sup>	-20	-3	1	200 to 500		-2	-0.5	-0.19	-1.6	-53
TPCP8H01	NPN + S-MOS <sup>Note 2</sup>	50	5	1	250 to 400		2	0.5	0.13	1.6	53
TPCP8H02	NPN + S-MOS <sup>Note 3</sup>	30	3	1	250 to 400		2	0.3	0.14	1	33
TPCP8L01	NPN darlington + HED	120	2	0.9	2000 to 9000		2	1	1.5	1	1

Note 1: The rating applies when the transistor is mounted on an FR4 board (copper area: 645 mm<sup>2</sup>, glass epoxy, t = 1.6 mm).

Note 2: Built-in S-MOS, V<sub>DSS</sub> = 20 V, I<sub>D</sub> = 0.1 A, R<sub>ON</sub> = 4 Ω (max)

Note 3: Incorporating HED V<sub>RRM</sub> = 200 V, I<sub>F</sub> (AV) = 1 A

Part number **XXXXXXX** signifies a new product. ★: Under development

# Standard Tape Packaging for Automated Pick-and-Place Assembly



Tape Appearance	Tape Type Suffix	Packing Type	Packing Quantity
 <p>TSM</p>	TE85L	Embossed Type	3000 / reel
 <p>VS-6</p>	TE85L	Embossed Type	3000 / reel
 <p>PS-8</p>	TE85L	Embossed Type	3000 / reel
 <p>PW-Mini(SOT-89)</p>	TE12L	Embossed Type	1000 / reel
 <p>New-PW-Mold</p>	TE16L1, N	Embossed Type	2000 / reel

Selection Guide by Functions and Applications

Recommended Transistors for Various Application Circuits

Product List by Packages

Standard Tape Packaging for Automated Pick-and-Place Assembly

Standard Lead-Formed Product List

Package List

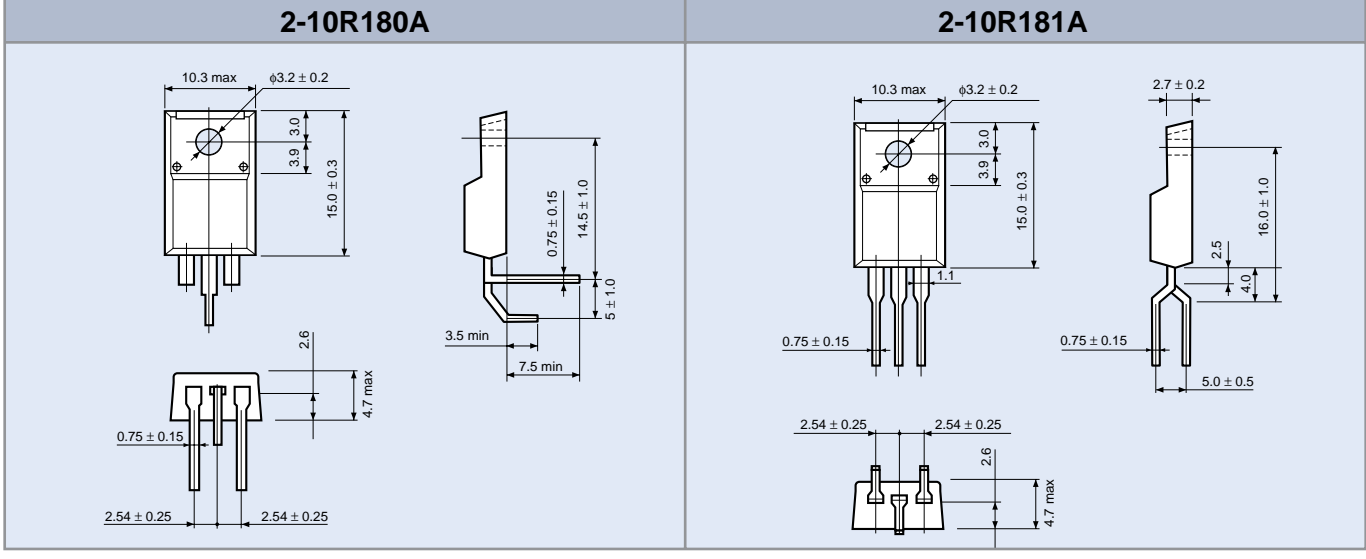
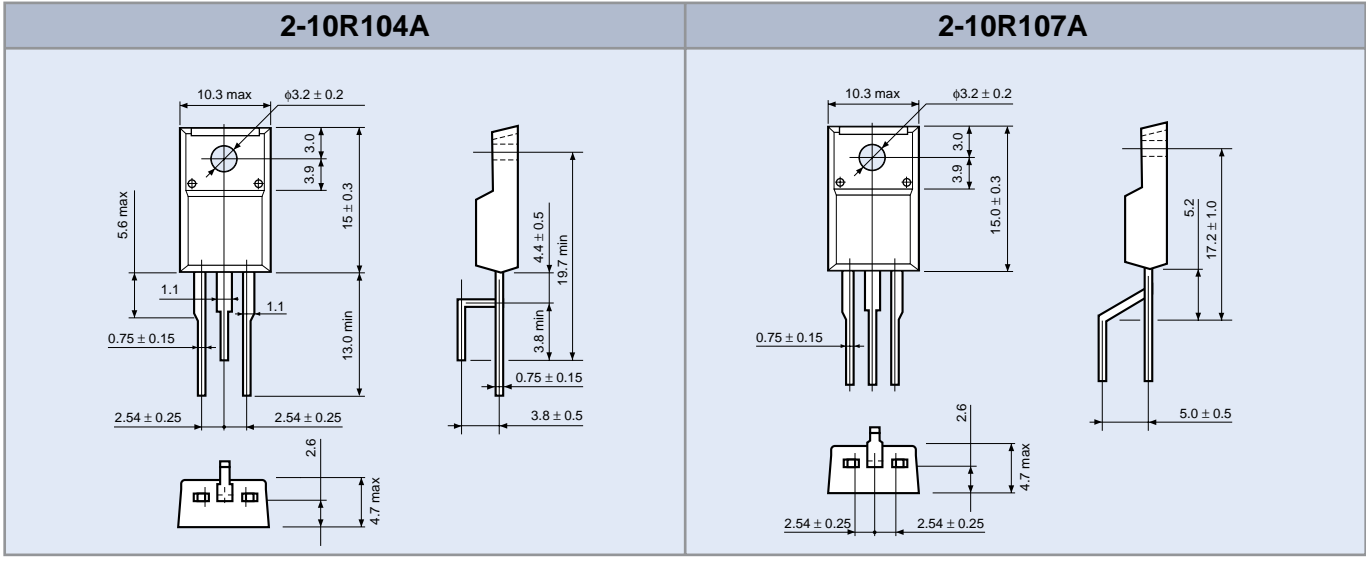
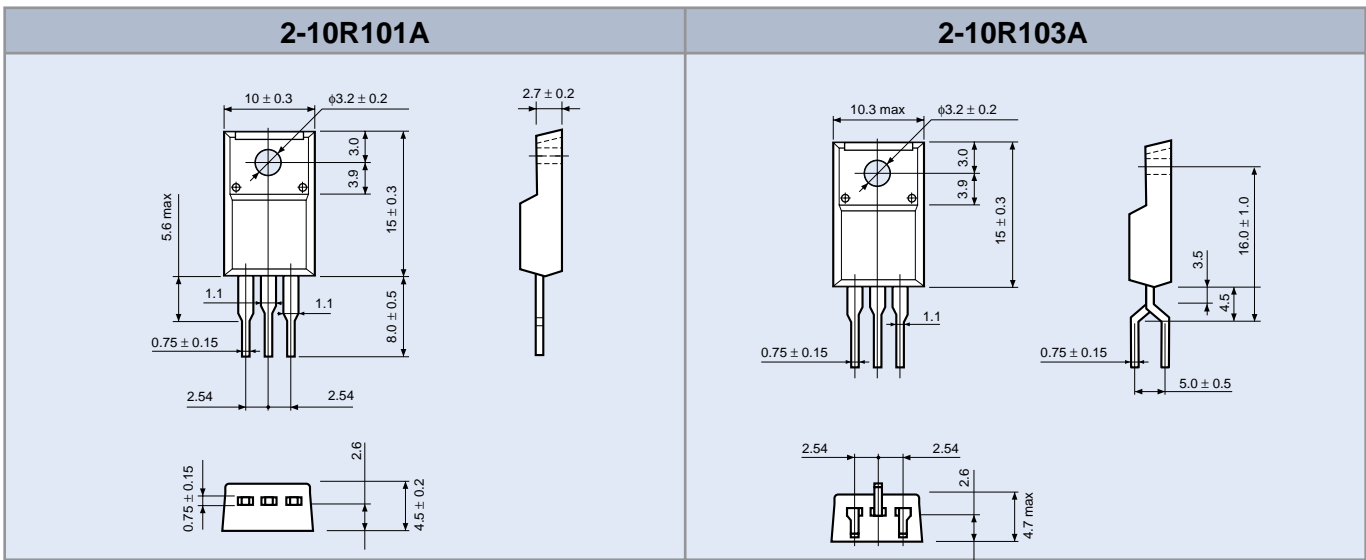
Product List



Tape Appearance	Tape Type Suffix	Packing Type	Packing Quantity
 <p data-bbox="284 578 399 606">TO-92MOD</p>	TPE6	Ammo pack Type	2000 / carton
 <p data-bbox="311 919 375 946">MSTM</p>	TPF2	Ammo pack Type	2000 / carton
 <p data-bbox="319 1272 367 1298">TPL</p>	TP	Ammo pack Type	1000 / carton
 <p data-bbox="319 1613 367 1638">TPS</p>	TP	Ammo pack Type	2000 / carton

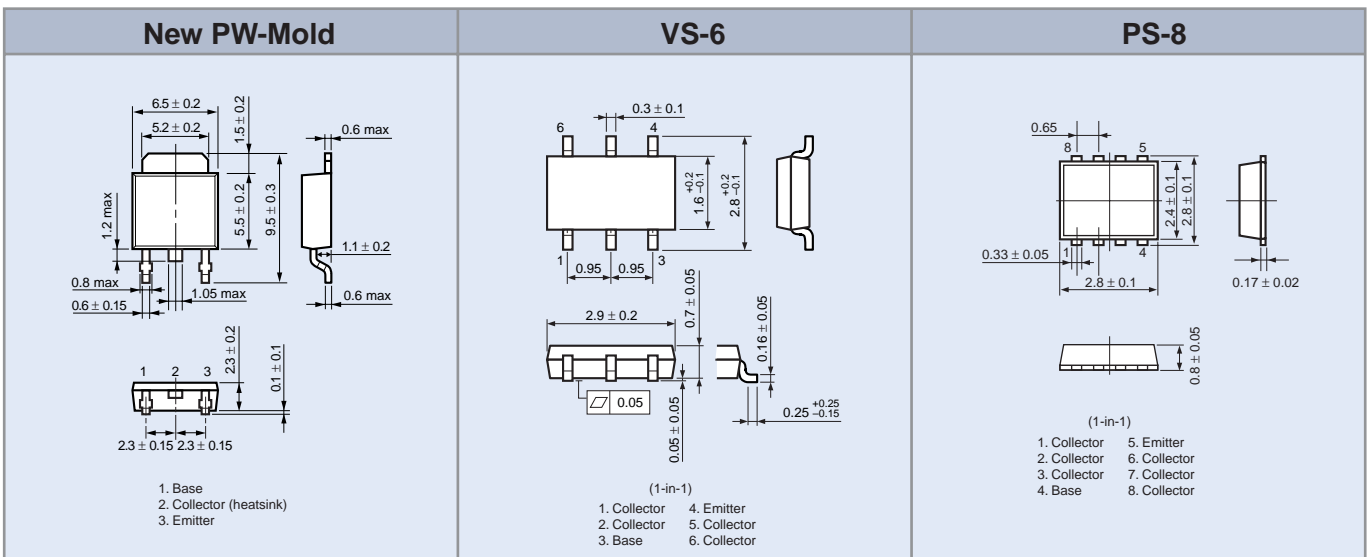
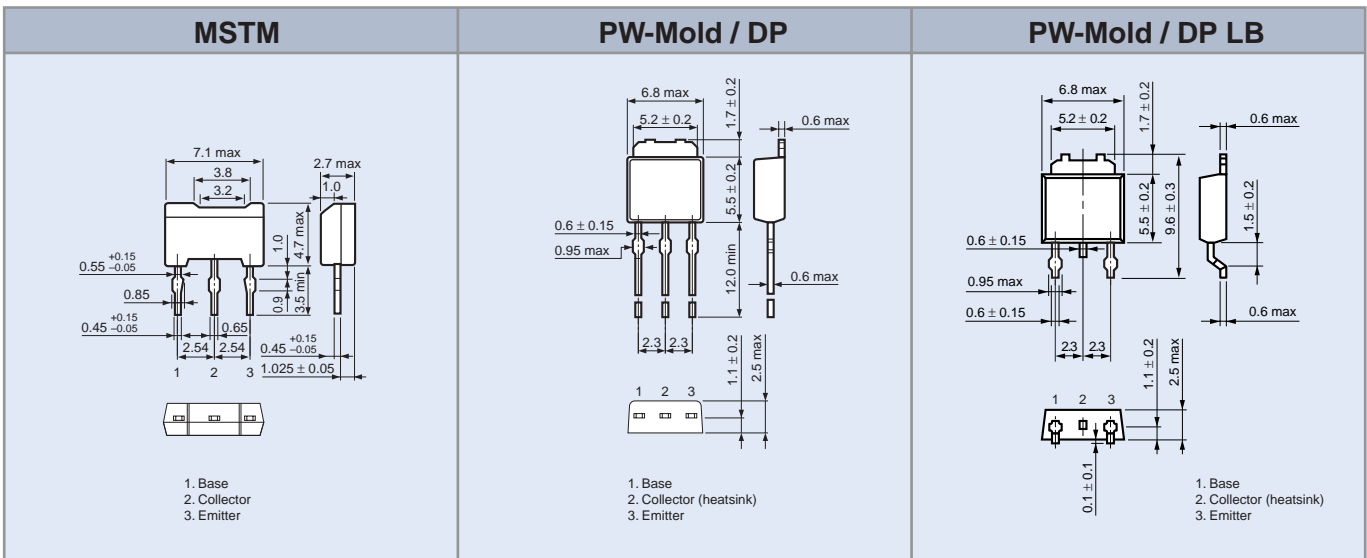
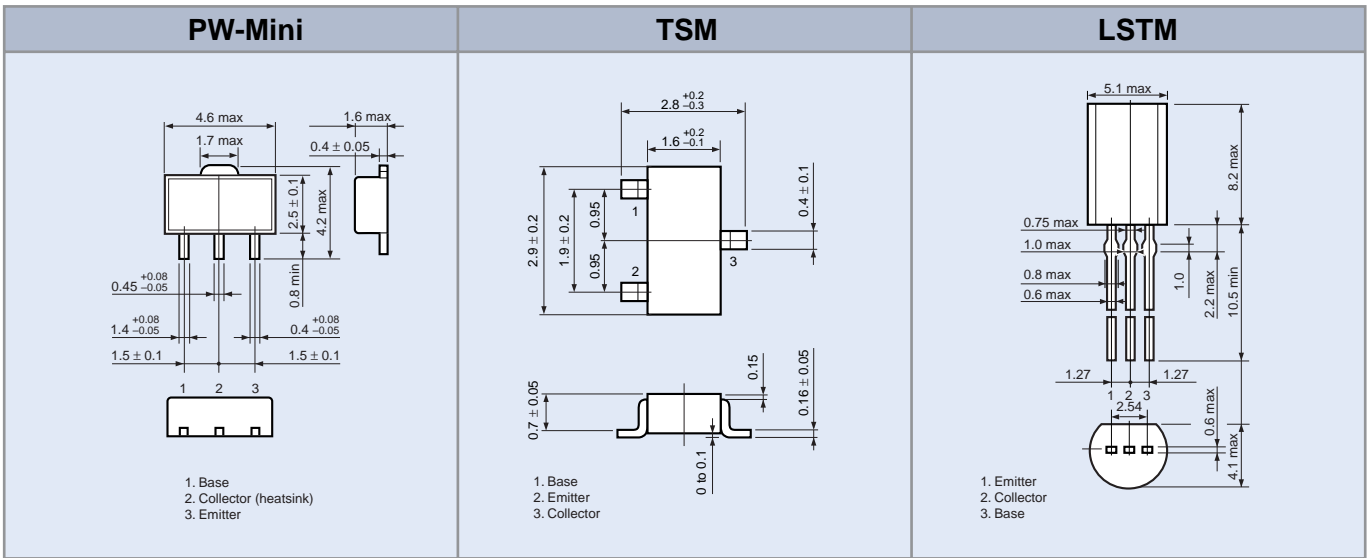
# Standard Lead-Formed Product List

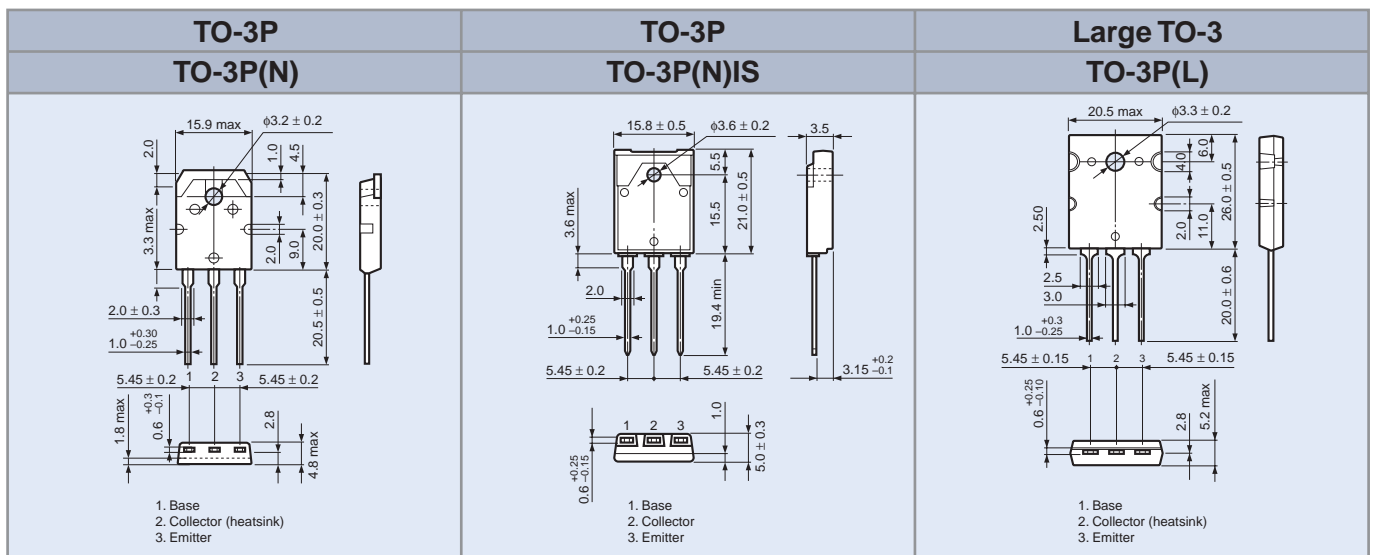
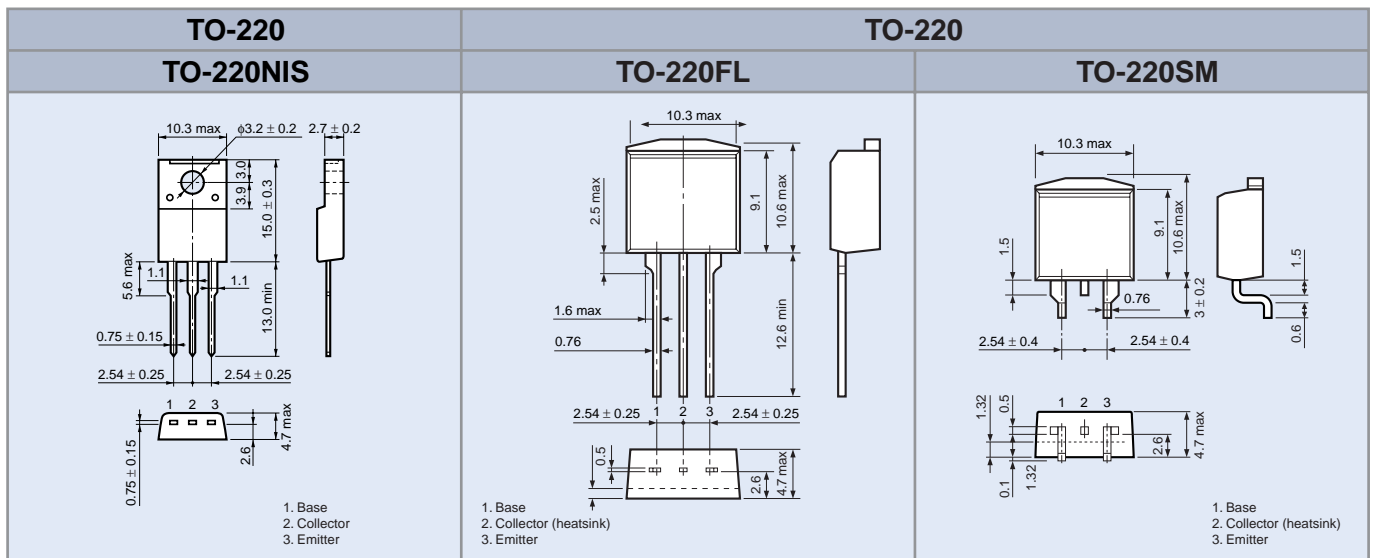
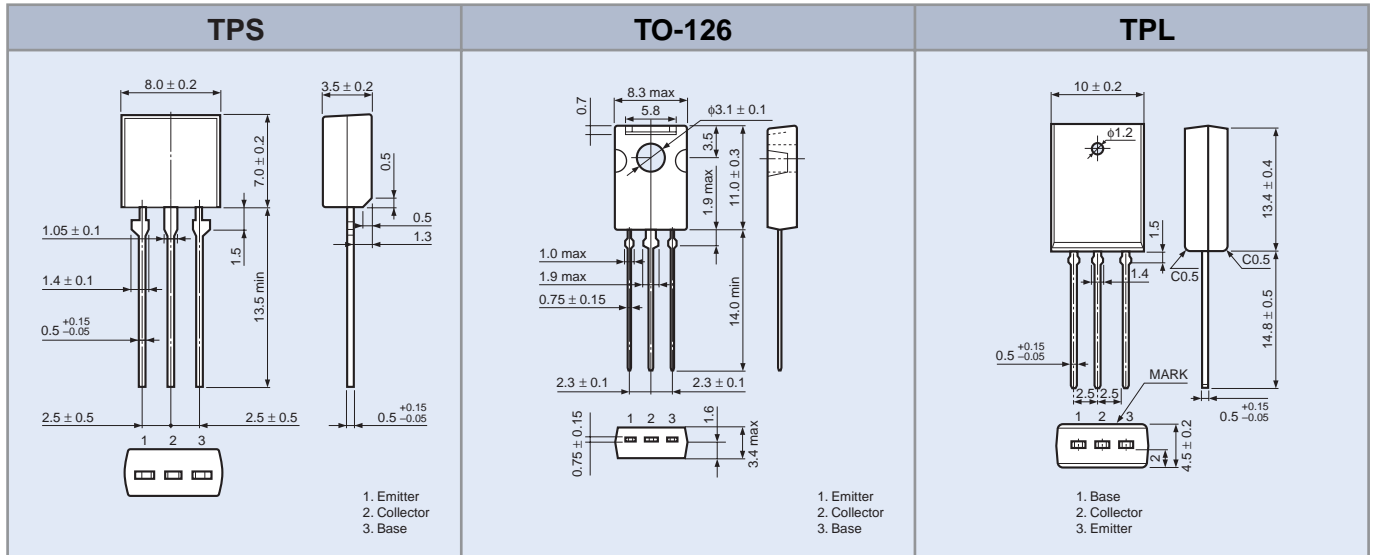
## TO-220NIS



# Package List

Selection Guide by Functions and Applications  
 Recommended Transistors for Various Application Circuits  
 Product List by Packages  
 Standard Tape Packaging for Automated Pick-and-Place Assembly  
 Standard Lead-Formed Product List  
 Package List  
 Product List





# Product List

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
<b>2SA562TM</b>	TO-92	-30	-0.5		—
<b>2SA817A</b>	TO-92MOD	-80	-0.4		21
<b>2SA940A</b>	TO-220NIS	-150	-1.5		24
<b>2SA949</b>	TO-92MOD	-150	-0.05		21
<b>2SA950</b>	TO-92	-30	-0.8		—
<b>2SA965</b>	TO-92MOD	-120	-0.8		21
<b>2SA966</b>	TO-92MOD	-30	-1.5		21
<b>2SA970</b>	TO-92	-120	-0.1		—
<b>2SA1013</b>	TO-92MOD	-160	-1		21
<b>2SA1015</b>	TO-92	-50	-0.15		—
<b>2SA1020</b>	TO-92MOD	-50	-2		21
<b>2SA1048</b>	MINI	-50	-0.15		—
<b>2SA1049</b>	MINI	-120	-0.1		—
<b>2SA1091</b>	TO-92	-300	-0.1		—
<b>2SA1145</b>	TO-92MOD	-150	-0.05		21
<b>2SA1150</b>	MINI	-30	-0.8		—
<b>2SA1160</b>	TO-92MOD	-10	-2		21
<b>2SA1162</b>	S-MINI(SC-59)	-50	-0.15		—
<b>2SA1163</b>	S-MINI(SC-59)	-120	-0.1		—
<b>2SA1182</b>	S-MINI(SC-59)	-30	-0.5		—
<b>2SA1200</b>	PW-Mini(SC-62)	-150	-0.05		29
<b>2SA1201</b>	PW-Mini(SC-62)	-120	-0.8		29
<b>2SA1202</b>	PW-Mini(SC-62)	-80	-0.4		29
<b>2SA1203</b>	PW-Mini(SC-62)	-30	-1.5		29
<b>2SA1204</b>	PW-Mini(SC-62)	-30	-0.8		29
<b>2SA1213</b>	PW-Mini(SC-62)	-50	-2		29
<b>2SA1225</b>	PW-Mold(SC-63/64)	-160	-1.5		30
<b>2SA1241</b>	PW-Mold(SC-63/64)	-50	-2		30
<b>2SA1242</b>	PW-Mold(SC-63/64)	-20	5		30
<b>2SA1244</b>	PW-Mold(SC-63/64)	-50	-5		30
<b>2SA1255</b>	S-MINI(SC-59)	-200	-0.05		—
<b>2SA1296</b>	TO-92	-20	-2		—
<b>2SA1297</b>	MINI	-20	-2		—
<b>2SA1298</b>	S-MINI(SC-59)	-25	-0.8		—
<b>2SA1300</b>	TO-92	-10	-2		—
<b>2SA1312</b>	S-MINI(SC-59)	-120	-0.1		—
<b>2SA1313</b>	S-MINI(SC-59)	-50	-0.5		—
<b>2SA1314</b>	PW-Mini(SC-62)	-10	-2		29
<b>2SA1315</b>	TO-92MOD	-80	-2		21
<b>2SA1320</b>	TO-92	-250	-0.05		—
<b>2SA1327A</b>	TO-220NIS	-20	-10		24
<b>2SA1356</b>	TO-126	-40	-0.8		23
<b>2SA1357</b>	TO-126	-20	-5		23
<b>2SA1358</b>	TO-126	-120	-1		23
<b>2SA1359</b>	TO-126	-40	-3		23
<b>2SA1360</b>	TO-126	-150	-0.05		23
<b>2SA1362</b>	S-MINI(SC-59)	-15	-0.8		—
<b>2SA1382</b>	TO-92MOD	-50	-2		21

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
<b>2SA1384</b>	PW-Mini(SC-62)	-300	-0.1		29
<b>2SA1408</b>	TO-126	-150	-1.5		23
<b>2SA1425</b>	MSTM	-120	-0.8		22
<b>2SA1426</b>	MSTM	-30	-0.8		22
<b>2SA1428</b>	MSTM	-50	-2		22
<b>2SA1429</b>	MSTM	-80	-2		22
<b>2SA1430</b>	MSTM	-10	-2		22
<b>2SA1431</b>	MSTM	-20	-5		22
<b>2SA1432</b>	MSTM	-300	-0.1		22
<b>2SA1451A</b>	TO-220NIS	-50	-12		25
<b>2SA1452A</b>	TO-220NIS	-80	-12		25
<b>2SA1483</b>	PW-Mini(SC-62)	-45	-0.2		29
<b>2SA1586</b>	USM(SC-70)	-50	-0.15		—
<b>2SA1587</b>	USM(SC-70)	-120	-0.1		—
<b>2SA1588</b>	USM(SC-70)	-30	-0.5		—
<b>2SA1618</b>	SMV	-50	-0.15		—
<b>2SA1620</b>	S-MINI(SC-59)	-80	-0.3		—
<b>2SA1621</b>	S-MINI(SC-59)	-30	-0.8		—
<b>2SA1680</b>	TO-92MOD	-50	-2		21
<b>2SA1681</b>	PW-Mini(SC-62)	-50	-2		29
<b>2SA1721</b>	S-MINI(SC-59)	-300	-0.1		—
<b>2SA1734</b>	PW-Mini(SC-62)	-30	-1.2		29
<b>2SA1735</b>	PW-Mini(SC-62)	-50	-1		29
<b>2SA1736</b>	PW-Mini(SC-62)	-50	-3		29
<b>2SA1761</b>	TO-92MOD	-50	-3		21
<b>2SA1771</b>	TO-220NIS	-80	-12		25
<b>2SA1802</b>	PW-Mold(SC-64)	-10	-3		30
<b>2SA1803</b>	TO-3P(N)IS	-80	-6		26
<b>2SA1804</b>	TO-3P(N)IS	-120	-8		26
<b>2SA1805</b>	TO-3P(N)IS	-140	-10		26
<b>2SA1811</b>	TO-92MOD	-30	-0.5		21
<b>2SA1822</b>	TO-220NIS	-400	-1		24
<b>2SA1832</b>	SSM	-50	-0.15		—
<b>2SA1837</b>	TO-220NIS	-230	-1		24
<b>2SA1869</b>	TO-220NIS	-50	-3		24
<b>2SA1873</b>	USV	-50	-0.15		—
<b>2SA1887</b>	TO-220NIS	-50	-10		25
<b>2SA1891</b>	TPS	-50	-2		28
<b>2SA1892</b>	TPS	-50	-3		28
<b>2SA1893</b>	TPS	-20	-5		28
<b>2SA1905</b>	TPS	-50	-5		28
<b>2SA1923</b>	PW-Mold(SC-63/64)	-400	-0.5		30
<b>2SA1924</b>	TO-126	-400	-0.5		23
<b>2SA1925</b>	TPS	-400	-0.5		28
<b>2SA1926</b>	MSTM	-80	-3		22
<b>2SA1930</b>	TO-220NIS	-180	-2		24
<b>2SA1931</b>	TO-220NIS	-50	-5		25
<b>2SA1933</b>	TPL	-50	-5		28

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Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
2SA1934	TPL	-80	-5		28
2SA1937	PW-Mold(SC-64)	-600	-0.5		30
2SA1939	TO-3P(N)	-80	-6		26
2SA1940	TO-3P(N)	-120	-8		26
2SA1941	TO-3P(N)	-140	-10		26
2SA1942	TO-3P(L)	-160	-12		27
2SA1943	TO-3P(L)	-230	-15		27
2SA1954	USM(SC-70)	-12	-0.5		—
2SA1955	SSM	-12	-0.4		—
2SA1962	TO-3P(N)	-230	-15		26
2SA1971	PW-Mini(SC-62)	-400	-0.5		—
2SA1972	TO-92MOD	-400	-0.5		21
2SA1986	TO-3P(N)	-230	-15		26
2SA1987	TO-3P(L)	-230	-15		27
2SA2034	PW-Mold(SC-63)	-400	-2		30
2SA2056	TSM	-50	-2	Low-saturation voltage	31
2SA2058	TSM	-10	-1.5	Low-saturation voltage	31
2SA2059	PW-Mini	-20	-3	Low-saturation voltage	29
2SA2060	PW-Mini	-50	-2	Low-saturation voltage	29
2SA2061	TSM	-20	-2.5	Low-saturation voltage	31
2SA2065	TSM	-20	-1.5	Low-saturation voltage	31
2SA2066	PW-Mini	-10	-2	Low-saturation voltage	29
2SA2069	PW-Mini	-20	-1.5	Low-saturation voltage	29
2SA2070	PW-Mini	-50	-1	Low-saturation voltage	29
2SA2097	PW-Mold(SC-63)	-50	-5	Low-saturation voltage	30
2SA2120	TO-3P(N)	-200	-12		26
2SA2121	TO-3P(L)	-200	-15		27
2SA2142	PW-Mold(SC-63)	-600	-0.5		30
2SA2182	TO-220SIS	-230	-1		9
2SA2183	TO-220SIS	-60	-5		4
2SA2184	PW-Mold(SC-63)	-550	-1		6
2SA2187	TO-220SIS	-80	-4		5
2SB905	PW-Mold(SC-63/64)	-150	-1.5		30
2SB906	PW-Mold(SC-63/64)	-60	-3		30
2SB907	PW-Mold(SC-63/64)	-40	-3	Darlington	30
2SB908	PW-Mold(SC-63/64)	-80	-4	Darlington	30
2SB1016A	TO-220NIS	-100	-5		24
2SB1018A	TO-220NIS	-80	-7	Darlington	25
2SB1020A	TO-220NIS	-100	-7	Darlington	25
2SB1067	TO-126	-80	-2	Darlington	23
2SB1375	TO-220NIS	-60	-3		24
2SB1381	TO-220NIS	-100	-5	Darlington	25
2SB1411	TO-220NIS	-100	-2	Darlington	25
2SB1457	TO-92MOD	-100	-2	Darlington	21
2SB1481	TO-220NIS	-100	-4	Darlington	25
2SB1495	TO-220NIS	-100	-3	Darlington	25
2SB1555	TO-3P(L)	-140	-7	Darlington	27
2SB1556	TO-3P(L)	-140	-8	Darlington	27

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
2SB1557	TO-3P(N)	-140	-7	Darlington	26
2SB1558	TO-3P(N)	-140	-8	Darlington	26
2SB1594	TO-3P(L)	-160	-10	Darlington	27
2SB1617	TPS	-100	-2	Darlington	28
2SB1640	TPL	-60	-3		28
2SB1642	TO-220NIS	-60	-4		24
2SB1667	TO-220FL/SM	-60	-3		25
2SB1682	TO-3P(N)	-150	-8		26
2SC380TM	TO-92(SC-43)	30	0.05		—
2SC388ATM	TO-92	25	0.05		—
2SC732TM	TO-92	50	0.15		—
2SC941TM	TO-92	30	0.1		—
2SC982TM	TO-92	40	0.3		—
2SC1627	TO-92	80	0.3		—
2SC1627A	TO-92MOD	80	0.4		21
2SC1815	TO-92	50	0.15		—
2SC1923	TO-92	30	0.02		—
2SC1959	TO-92	30	0.5		—
2SC2073A	TO-220NIS	150	1.5		24
2SC2120	TO-92	30	0.8		—
2SC2216	TO-92	45	0.05		—
2SC2229	TO-92MOD	150	0.05		21
2SC2230	TO-92MOD	160	0.1		21
2SC2230A	TO-92MOD	180	0.1		21
2SC2235	TO-92MOD	120	0.8		21
2SC2236	TO-92MOD	30	1.5		21
2SC2240	TO-92	120	0.1		—
2SC2290	(2-13B1A)	45	20	For RF	—
2SC2347	TO-92	15	0.05		—
2SC2349	TO-92	15	0.05		—
2SC2383	TO-92MOD	160	1		21
2SC2458	MINI	50	0.15		—
2SC2459	MINI	120	0.1		—
2SC2482	TO-92MOD	300	0.1		21
2SC2498	TO-92	20	0.05		—
2SC2500	TO-92MOD	10	2		21
2SC2510	(2-13B1A)	35	20	For RF	—
2SC2532	S-MINI(SC-59)	40	0.3		—
2SC2551	TO-92	300	0.1		—
2SC2655	TO-92MOD	50	2		21
2SC2668	MINI	30	0.02		—
2SC2669	MINI	30	0.05		—
2SC2670	MINI	30	0.1		—
2SC2703	TO-92MOD	30	1		21
2SC2705	TO-92MOD	150	0.05		21
2SC2710	MINI	30	0.8		—
2SC2712	S-MINI(SC-59)	50	0.15		—
2SC2713	S-MINI(SC-59)	120	0.1		—

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Product List by Packages

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<b>2SC2714</b>	S-MINI(SC-59)	30	0.02	For RF	—
<b>2SC2715</b>	S-MINI(SC-59)	30	0.05	For RF	—
<b>2SC2716</b>	S-MINI(SC-59)	30	0.1	For RF	—
<b>2SC2782</b>	(2-13C1A)	16	20	For RF	—
<b>2SC2859</b>	S-MINI(SC-59)	30	0.5		—
<b>2SC2873</b>	PW-Mini(SC-62)	50	2		29
<b>2SC2878</b>	TO-92	20	0.3		—
<b>2SC2879</b>	(2-13B1A)	18	25	For RF	—
<b>2SC2880</b>	PW-Mini(SC-62)	150	0.05		29
<b>2SC2881</b>	PW-Mini(SC-62)	120	0.8		29
<b>2SC2882</b>	PW-Mini(SC-62)	80	0.4		29
<b>2SC2883</b>	PW-Mini(SC-62)	30	1.5		29
<b>2SC2884</b>	PW-Mini(SC-62)	30	0.8		29
<b>2SC2982</b>	PW-Mini(SC-62)	10	2		29
<b>2SC2983</b>	PW-Mold(SC-63/64)	160	1.5		30
<b>2SC2995</b>	MINI	30	0.05		—
<b>2SC2996</b>	S-MINI(SC-59)	30	0.05	For RF	—
<b>2SC3072</b>	PW-Mold(SC-63/64)	20	5		30
<b>2SC3074</b>	PW-Mold(SC-63/64)	50	5		30
<b>2SC3075</b>	PW-Mold(SC-63/64)	400	0.8		30
<b>2SC3076</b>	PW-Mold(SC-63/64)	50	2		30
<b>2SC3112</b>	TO-92	50	0.15		—
<b>2SC3113</b>	MINI	50	0.15		—
<b>2SC3120</b>	S-MINI(SC-59)	15	0.05	For RF	—
<b>2SC3121</b>	S-MINI(SC-59)	15	0.05	For RF	—
<b>2SC3122</b>	S-MINI(SC-59)	30	0.02	For RF	—
<b>2SC3123</b>	S-MINI(SC-59)	20	0.05	For RF	—
<b>2SC3124</b>	S-MINI(SC-59)	15	0.05	For RF	—
<b>2SC3125</b>	S-MINI(SC-59)	25	0.05	For RF	—
<b>2SC3138</b>	S-MINI(SC-59)	200	0.05		—
<b>2SC3225</b>	TO-92MOD	40	2		21
<b>2SC3265</b>	S-MINI(SC-59)	25	0.8		—
<b>2SC3266</b>	TO-92	20	2		—
<b>2SC3267</b>	MINI	20	2		—
<b>2SC3279</b>	TO-92	10	2		—
<b>2SC3295</b>	S-MINI(SC-59)	50	0.15		—
<b>2SC3303</b>	PW-Mold(SC-63/64)	80	5		30
<b>2SC3307</b>	TO-3P(L)	800	10		27
<b>2SC3324</b>	S-MINI(SC-59)	120	0.1		—
<b>2SC3325</b>	S-MINI(SC-59)	50	0.5		—
<b>2SC3326</b>	S-MINI(SC-59)	20	0.3		—
<b>2SC3327</b>	MINI	20	0.3		—
<b>2SC3328</b>	TO-92MOD	80	2		21
<b>2SC3333</b>	TO-92	250	0.05		—
<b>2SC3334</b>	TO-92MOD	250	0.05		21
<b>2SC3405</b>	PW-Mold(SC-63/64)	800	0.8		30
<b>2SC3419</b>	TO-126	40	0.8		23
<b>2SC3420</b>	TO-126	20	5		23

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>c</sub> (A)	Remarks	Page
<b>2SC3421</b>	TO-126	120	1		23
<b>2SC3422</b>	TO-126	40	3		23
<b>2SC3423</b>	TO-126	150	0.05		23
<b>2SC3424</b>	TO-126	250	0.05		23
<b>2SC3425</b>	TO-126	400	0.8		23
<b>2SC3437</b>	S-MINI(SC-59)	15	0.2		—
<b>2SC3474</b>	PW-Mold(SC-63/64)	80	2		30
<b>2SC3515</b>	PW-Mini(SC-62)	300	0.1		29
<b>2SC3547A</b>	S-MINI(SC-59)	12	0.03	For RF	—
<b>2SC3606</b>	S-MINI(SC-59)	12	0.08	For RF	—
<b>2SC3619</b>	TO-126	300	0.1		23
<b>2SC3620</b>	TO-126	300	0.1		23
<b>2SC3621</b>	TO-126	150	1.5		23
<b>2SC3657</b>	TO-3P(N)	800	4		26
<b>2SC3665</b>	MSTM	120	0.8		22
<b>2SC3666</b>	MSTM	30	1		22
<b>2SC3668</b>	MSTM	50	2		22
<b>2SC3669</b>	MSTM	80	2		22
<b>2SC3670</b>	MSTM	10	2		22
<b>2SC3671</b>	MSTM	20	5		22
<b>2SC3672</b>	MSTM	300	0.1		22
<b>2SC3673</b>	MSTM	40	2		22
<b>2SC3709A</b>	TO-220NIS	50	12		25
<b>2SC3710A</b>	TO-220NIS	80	12		25
<b>2SC3862</b>	S-MINI(SC-59)	15	0.05	For RF	—
<b>2SC3963</b>	TO-126	160	0.2		23
<b>2SC3964</b>	TO-126	40	2		23
<b>2SC4116</b>	USM(SC-70)	50	0.15		—
<b>2SC4117</b>	USM(SC-70)	120	0.1		—
<b>2SC4118</b>	USM(SC-70)	30	0.5		—
<b>2SC4157</b>	TO-3P(N)	450	10		26
<b>2SC4200</b>	TO-126	18	0.6		23
<b>2SC4207</b>	SMV	50	0.15		—
<b>2SC4209</b>	S-MINI(SC-59)	80	0.3		—
<b>2SC4210</b>	S-MINI(SC-59)	30	0.8		—
<b>2SC4213</b>	USM(SC-70)	20	0.3		—
<b>2SC4214</b>	SMQ(SC-61)	20	0.02	For RF	—
<b>2SC4215</b>	USM(SC-70)	30	0.02	For RF	—
<b>2SC4244</b>	USM(SC-70)	20	0.02	For RF	—
<b>2SC4245</b>	USM(SC-70)	15	0.05	For RF	—
<b>2SC4246</b>	USM(SC-70)	15	0.05	For RF	—
<b>2SC4247</b>	USM(SC-70)	12	0.03	For RF	—
<b>2SC4249</b>	USM(SC-70)	30	0.02	For RF	—
<b>2SC4250</b>	USM(SC-70)	20	0.05	For RF	—
<b>2SC4251</b>	USM(SC-70)	15	0.05	For RF	—
<b>2SC4252</b>	USM(SC-70)	12	0.03	For RF	—
<b>2SC4253</b>	USM(SC-70)	25	0.05	For RF	—
<b>2SC4408</b>	TO-92MOD	50	2		21



Part Number	Package	V <sub>CEO</sub> (V)	I <sub>c</sub> (A)	Remarks	Page
2SC4409	PW-Mini(SC-62)	50	2		29
2SC4497	S-MINI(SC-59)	300	0.1		—
2SC4527	USM(SC-70)	15	0.05		—
2SC4539	PW-Mini(SC-62)	30	1.2		29
2SC4540	PW-Mini(SC-62)	50	1		29
2SC4541	PW-Mini(SC-62)	50	3		29
2SC4544	TO-220NIS	300	0.1		24
2SC4604	TO-92MOD	50	3		21
2SC4666	USM(SC-70)	50	0.15		—
2SC4667	USM(SC-70)	15	0.2		—
2SC4681	PW-Mold(SC-64)	10	3		30
2SC4682	TO-92MOD	15	3		21
2SC4683	MSTM	15	3		22
2SC4684	PW-Mold(SC-63/64)	20	5		30
2SC4685	TO-126	20	5		23
2SC4686	TO-220NIS	1000	0.05		24
2SC4686A	TO-220NIS	1200	0.05		24
2SC4688	TO-3P(N)IS	80	6		26
2SC4689	TO-3P(N)IS	120	8		26
2SC4690	TO-3P(N)IS	140	10		26
2SC4707	TO-92MOD	30	0.5		21
2SC4738	SSM	50	0.15		—
2SC4738F	ESM	50	0.15		—
2SC4754	TO-220FL/SM	400	2		25
2SC4781	TO-92MOD	10	4		21
2SC4793	TO-220NIS	230	1		24
2SC4881	TO-220NIS	50	5		25
2SC4915	SSM	30	0.02	For RF	—
2SC4935	TO-220NIS	50	3		24
2SC4944	USV	50	0.15		—
2SC5000	TO-220NIS	50	10		25
2SC5027	TPS	300	0.1		28
2SC5028	TPS	50	2		28
2SC5029	TPS	50	3		28
2SC5030	TPS	20	5		28
2SC5064	S-MINI(SC-59)	12	0.03	For RF	—
2SC5065	USM(SC-70)	12	0.03	For RF	—
2SC5066	SSM	12	0.03	For RF	—
2SC5066FT	TESM	12	0.03	For RF	—
2SC5075	TPS	400	2		28
2SC5076	TPS	50	5		28
2SC5084	S-MINI(SC-59)	12	0.08	For RF	—
2SC5085	USM(SC-70)	12	0.08	For RF	—
2SC5086	SSM	12	0.08	For RF	—
2SC5086FT	TESM	12	0.08	For RF	—
2SC5087	SMQ	12	0.08	For RF	—
2SC5088	USQ	12	0.08	For RF	—
2SC5089	S-MINI(SC-59)	10	0.04	For RF	—

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>c</sub> (A)	Remarks	Page
2SC5090	USM(SC-70)	10	0.04	For RF	—
2SC5091	SSM	10	0.04	For RF	—
2SC5091FT	TESM	8	0.04	For RF	—
2SC5092	SMQ	10	0.04	For RF	—
2SC5093	USQ	10	0.04	For RF	—
2SC5094	S-MINI(SC-59)	10	0.015		—
2SC5095	USM(SC-70)	10	0.015	For RF	—
2SC5096	SSM	10	0.015	For RF	—
2SC5096FT	TESM	8	0.015	For RF	—
2SC5097	SMQ	10	0.015	For RF	—
2SC5098	USQ	10	0.015	For RF	—
2SC5106	S-MINI(SC-59)	10	0.03	For RF	—
2SC5107	USM(SC-70)	10	0.03	For RF	—
2SC5108	SSM	10	0.03	For RF	—
2SC5108FT	TESM	10	0.03	For RF	—
2SC5109	S-MINI(SC-59)	10	0.06	For RF	—
2SC5110	USM(SC-70)	10	0.06	For RF	—
2SC5111	SSM	10	0.06	For RF	—
2SC5111FT	TESM	10	0.06	For RF	—
2SC5122	TO-92MOD	400	0.05		21
2SC5154	TPS	160	1.5		28
2SC5171	TO-220NIS	180	2		24
2SC5172	TO-220NIS	400	5		25
2SC5174	TPL	230	1		28
2SC5175	TPL	50	5		28
2SC5176	TPL	80	5		28
2SC5196	TO-3P(N)	80	6		26
2SC5197	TO-3P(N)	120	8		26
2SC5198	TO-3P(N)	140	10		26
2SC5199	TO-3P(L)	160	12		27
2SC5200	TO-3P(L)	230	15		27
2SC5201	TO-92MOD	600	0.05		21
2SC5208	TPS	400	0.8		28
2SC5233	USM(SC-70)	12	0.5		—
2SC5242	TO-3P(N)	230	15		26
2SC5255	USM(SC-70)	7	0.04	For RF	—
2SC5256	SSM	7	0.04	For RF	—
2SC5256FT	TESM	7	0.04	For RF	—
2SC5257	SMQ	7	0.04	For RF	—
2SC5260	USM(SC-70)	7	0.015	For RF	—
2SC5261	SSM	7	0.015	For RF	—
2SC5261FT	TESM	7	0.015	For RF	—
2SC5262	SMQ	7	0.015	For RF	—
2SC5266A	TPL	400	5		28
2SC5279	TPL	400	2		28
2SC5280	TO-3P(H)IS	1500*	8		—
2SC5307	PW-Mini(SC-62)	400	0.05		—
2SC5317	SSM	5	0.02	For RF	—

\*: Collector-base voltage (V<sub>cb0</sub>)



Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
<b>2SC5317FT</b>	TESM	5	0.02	For RF	—
<b>2SC5319</b>	USQ	5	0.02	For RF	—
<b>2SC5322</b>	SSM	5	0.01	For RF	—
<b>2SC5322FT</b>	TESM	5	0.01	For RF	—
<b>2SC5339</b>	TO-3P(H)(IS)	1500*	7		—
<b>2SC5351</b>	TPS	450	2		28
<b>2SC5352</b>	TO-3P(N)	400	10		26
<b>2SC5353</b>	TO-220NIS	800	3		25
<b>2SC5354</b>	TO-3P(N)	800	5		26
<b>2SC5355</b>	DP(SC-63/64)	400	5		31
<b>2SC5356</b>	DP(SC-63/64)	800	3		31
<b>2SC5358</b>	TO-3P(N)	230	15		26
<b>2SC5359</b>	TO-3P(L)	230	15		27
<b>2SC5360</b>	TO-220NIS	300	0.15		24
<b>2SC5361</b>	TO-220FL/SM	800	3		25
<b>2SC5368</b>	TO-126	450	2		23
<b>2SC5376</b>	ESM	12	0.4		—
<b>2SC5386</b>	TO-3P(H)IS	1500*	8		—
<b>2SC5387</b>	TO-3P(H)IS	1500*	10		—
<b>2SC5404</b>	TO-3P(H)IS	1500*	9		—
<b>2SC5411</b>	TO-3P(H)IS	1500*	14		—
<b>2SC5421</b>	TO-3P(LH)	1500*	15		—
<b>2SC5422</b>	TO-3P(LH)	1700*	15		—
<b>2SC5439</b>	TO-220NIS	450	8		25
<b>2SC5445</b>	TO-3P(LH)	1500*	20		—
<b>2SC5446</b>	TO-3P(LH)	1700*	18		—
<b>2SC5458</b>	PW-Mold(SC-63/64)	400	0.8		30
<b>2SC5459</b>	TO-220NIS	400	3		25
<b>2SC5460</b>	TO-126	800	0.05		23
<b>2SC5463</b>	USM(SC-70)	12	0.06	For RF	—
<b>2SC5464</b>	SSM	12	0.06	For RF	—
<b>2SC5464FT</b>	TESM	12	0.06	For RF	—
<b>2SC5465</b>	PW-Mold(SC-63/64)	800	0.8		30
<b>2SC5466</b>	TO-220NIS	800	0.05		24
<b>2SC5497</b>	USQ	4.5	0.015	For RF	—
<b>2SC5548</b>	PW-Mold(SC-63/64)	370	2		30
<b>2SC5548A</b>	PW-Mold(SC-63/64)	400	2		30
<b>2SC5549</b>	TO-92MOD	400	1		21
<b>2SC5550</b>	TO-126	400	1		23
<b>2SC5562</b>	TPS	800	0.8		28
<b>2SC5563</b>	TO-220NIS	1500	0.02		24
<b>2SC5570</b>	TO-3P(LH)	1700*	28		—
<b>2SC5587</b>	TO-3P(H)IS	1500*	17		—
<b>2SC5588</b>	TO-3P(H)IS	1700*	15		—
<b>2SC5589</b>	TO-3P(LH)	1500*	18		—
<b>2SC5590</b>	TO-3P(LH)	1700*	16		—
<b>2SC5612</b>	TO-3P(LH)	2000*	22		—
<b>2SC5692</b>	TSM	50	2.5	Low-saturation voltage	31

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
<b>2SC5695</b>	TO-3P(LH)	1500*	22		—
<b>2SC5703</b>	TSM	50	4	Low-saturation voltage	31
<b>2SC5712</b>	PW-Mini	50	3	Low-saturation voltage	29
<b>2SC5713</b>	PW-Mini	10	4	Low-saturation voltage	29
<b>2SC5714</b>	PW-Mini	20	4	Low-saturation voltage	29
<b>2SC5716</b>	TO-3P(H)IS	1700*	8		—
<b>2SC5717</b>	TO-3P(H)IS	1500*	21		—
<b>2SC5738</b>	TSM	20	3.5	Low-saturation voltage	31
<b>2SC5748</b>	TO-3P(LH)	2000*	16		—
<b>2SC5749</b>	TO-3P(LH)	2000*	16		—
<b>2SC5755</b>	TSM	10	2	Low-saturation voltage	31
<b>2SC5784</b>	TSM	20	1.5	Low-saturation voltage	31
<b>2SC5785</b>	PW-Mini	10	2	Low-saturation voltage	29
<b>2SC5810</b>	PW-Mini	50	1	Low-saturation voltage	29
<b>2SC5819</b>	PW-Mini	20	1.5	Low-saturation voltage	29
<b>2SC5855</b>	TO-3P(H)IS	1500*	12		—
<b>2SC5856</b>	TO-3P(H)IS	1500*	14		—
<b>2SC5857</b>	TO-3P(H)IS	1700*	21		—
<b>2SC5858</b>	TO-3P(LH)	1700*	22		—
<b>2SC5859</b>	TO-3P(LH)	1700*	23		—
<b>2SC5861</b>	TO-3P(LH)	1700*	28		—
<b>2SC5886</b>	PW-Mold(SC-63)	50	5	Low-saturation voltage	30
<b>2SC5886A</b>	PW-Mold(SC-63)	50	5	V <sub>EBO</sub> = 9 V	30
<b>2SC5906</b>	TSM	30	4	Ultra-high speed	31
<b>2SC5930</b>	MSTM	285	1		22
<b>2SC5948</b>	TO-3P(N)	200	12		26
<b>2SC5949</b>	TO-3P(L)	200	15		27
<b>2SC5976</b>	TSM	30	3	Ultra-high speed	31
<b>2SC6000</b>	PW-Mold(SC-63)	50	7	Ultra-high speed	30
<b>2SC6010</b>	MSTM	285	1		22
<b>2SC6033</b>	TSM	50	2.5	Ultra-high speed	31
<b>2SC6034</b>	MSTM	285	1		22
<b>2SC6040</b>	MSTM	410	1		22
<b>2SC6042</b>	MSTM	375	1		22
<b>2SC6052</b>	PW-Mold(SC-63)	20	5		30
<b>2SC6060</b>	TO-220SIS	230	1		9
<b>2SC6061</b>	TSM	120	1		31
<b>2SC6062</b>	TSM	30	4		31
<b>2SC6066</b>	TO-220SIS	80	4		5
<b>2SD1140</b>	TO-92MOD	30	1.5	Darlington	21
<b>2SD1160</b>	PW-Mold(SC-64)	20	2		30
<b>2SD1220</b>	PW-Mold(SC-63/64)	150	1.5		30
<b>2SD1221</b>	PW-Mold(SC-63/64)	60	3		30
<b>2SD1222</b>	PW-Mold(SC-63/64)	40	3	Darlington	30
<b>2SD1223</b>	PW-Mold(SC-63/64)	80	4	Darlington	30
<b>2SD1224</b>	PW-Mold(SC-64)	30	1.5	Darlington	30
<b>2SD1314</b>	TO-3P(L)	450	15	Darlington	27
<b>2SD1407A</b>	TO-220NIS	100	5		24

\*: Collector-base voltage (V<sub>cbo</sub>)



Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
2SD1411A	TO-220NIS	80	7		25
2SD1412A	TO-220NIS	50	7		25
2SD1415A	TO-220NIS	100	7	Darlington	25
2SD1508	TO-126	30	1.5	Darlington	23
2SD1509	TO-126	80	2	Darlington	23
2SD1525	TO-3P(L)	100	30	Darlington	27
2SD1631	MSTM	30	1.5	Darlington	22
2SD1658	TO-126	60	2	Darlington	23
2SD1662	TO-3P(N)	100	15	Darlington	26
2SD1784	PW-Mini(SC-62)	30	1.5	Darlington	29
2SD1947A	TO-220NIS	100	10		25
2SD2012	TO-220NIS	60	3		24
2SD2079	TO-220NIS	100	5	Darlington	25
2SD2088	TO-92MOD	60	2	Darlington	21
2SD2092	TO-220NIS	100	3		25
2SD2129	TO-220NIS	100	3	Darlington	25
2SD2130	TO-126	60	4	Darlington	23
2SD2131	TO-220NIS	60	5	Darlington	25
2SD2204	TO-220NIS	65	4	Darlington	25
2SD2206	TO-92MOD	100	2	Darlington	21
2SD2206A	TO-92MOD	120	2	Darlington	21
2SD2241	TO-220NIS	100	4	Darlington	25
2SD2248	TO-92MOD	80	2	Darlington	21
2SD2257	TO-220NIS	100	3	Darlington	25
2SD2271	TO-220NIS	200	12	Darlington	25
2SD2352	TO-220NIS	60	2		24
2SD2353	TO-220NIS	60	3		24
2SD2384	TO-3P(L)	140	7	Darlington	27
2SD2385	TO-3P(L)	140	8	Darlington	27
2SD2386	TO-3P(N)	140	7	Darlington	26
2SD2387	TO-3P(N)	140	8	Darlington	26
2SD2406	TO-220NIS	80	4		24
2SD2414	TO-220FL/SM	80	7		25
2SD2440	TO-3P(N)IS	60	6		26
2SD2449	TO-3P(L)	160	10		27
2SD2461	TPS	60	2		28
2SD2462	TPS	60	3		28
2SD2480	TPS	100	2	Darlington	28
2SD2481	TPS	30	1.5	Darlington	28
2SD2498	TO-3P(H)IS	1500*	6		—
2SD2499	TO-3P(H)IS	1500*	6		—
2SD2500	TO-3P(H)IS	1500*	10		—
2SD2525	TPL	60	3		28
2SD2526	TPL	100	5	Darlington	28
2SD2531	TO-220NIS	60	4		24
2SD2536	TO-92MOD	100	2	Darlington	21
2SD2539	TO-3P(H)IS	1500*	7		—
2SD2551	TO-3P(H)IS	1700*	5		—

Part Number	Package	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	Remarks	Page
2SD2553	TO-3P(H)IS	1700*	8		—
2SD2559	TO-3P(H)IS	1500*	8		—
2SD2584	DP(SC-63/64)	100	7	Darlington	31
2SD2586	TO-3P(H)IS	1500*	5		—
2SD2599	TO-3P(H)IS	1500*	3.5		—
2SD2604	TO-220NIS	110	5	Darlington	25
2SD2636	TO-3P(N)	150	8		26
2SD2638	TO-3P(H)IS	1700*	7		—
2SD2686	PW-Mini	60	1	Darlington	29
2SD2695	TO-92MOD	60	2	Darlington	21
2SD2709	TO-220SIS	60	3		—
HN4B101J	SMV	30/-30	1.2/-1		16
S2000N	TO-3P(H)IS	1500*	8		—
S2055N	TO-3P(H)IS	1500*	8		—
TPC6501	VS-6(1-in-1)	10	2	1-in-1 transistor	32
TPC6502	VS-6(1-in-1)	50	3	1-in-1 transistor	32
TPC6503	VS-6(1-in-1)	20	1.5	1-in-1 transistor	32
TPC6601	VS-6(1-in-1)	-50	-2	1-in-1 transistor	32
TPC6602	VS-6(1-in-1)	-10	-2	1-in-1 transistor	32
TPC6603	VS-6(1-in-1)	-20	-3	1-in-1 transistor	32
TPC6701	VS-6(2-in-1)	50	1	2-in-1 transistor	32
TPC6901	VS-6(2-in-1)	50/-50	1/-0.7	NPN + PNP	32
TPC6D02	VS-6(2-in-1)	-15	-1.5	Transistor + Diode	32
TPC6D03	VS-6(2-in-1)	-20	-1.2	Transistor + Diode	32
TPCP8501	PS-8(1-in-1)	100	2	1-in-1 transistor	32
TPCP8504	PS-8(1-in-1)	10	2	1-in-1 transistor	32
TPCP8505	PS-8(1-in-1)	50	3	1-in-1 transistor	32
TPCP8507	PS-8(1-in-1)	120	0.8	1-in-1 transistor	32
TPCP8601	PS-8(1-in-1)	-20	-4	1-in-1 transistor	32
TPCP8602	PS-8(1-in-1)	-50	-2.5	1-in-1 transistor	32
TPCP8603	PS-8(1-in-1)	-120	-0.8	1-in-1 transistor	32
TPCP8701	PS-8(2-in-1)	50	2	2-in-1 transistor	32
TPCP8801	PS-8(2-in-1)	-30	-1.2	2-in-1 transistor	32
TPCP8901	PS-8(2-in-1)	50/-50	1/-0.8	NPN + PNP	32
TPCP8F01	PS-8(2-in-1)	-20	-3	Transistor + S-MOS	32
TPCP8H01	PS-8(2-in-1)	50	5	Transistor + S-MOS	32
TPCP8H02	PS-8(2-in-1)	30	3	Transistor + S-MOS	32
TPCP8L01	PS-8(2-in-1)	120	2	Darlington + HED	32

\*: Collector-base voltage (V<sub>CB0</sub>)

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