



TO-92MOD Plastic-Encapsulate Transistors

2SC2230/2230A TRANSISTOR (NPN)

FEATURE

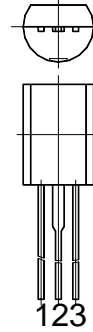
- High voltage: $V_{CEO}=180V(2SC2230A)$
- High DC Current Gain

TO-92MOD

1. EMITTER

2. COLLECTOR

3. BASE



MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	200	V
V_{CEO}	Collector-Emitter Voltage	2SC2230 160 2SC2230A 180	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	0.1	A
P_C	Collector Power Dissipation	0.8	W
T_J	Junction Temperature	150	$^{\circ}C$
T_{stg}	Storage Temperature	-55 to +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	200		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{ mA}, I_B=0$	2SC2230 160 2SC2230A 180		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5		V
Collector cut-off current	I_{CBO}	$V_{CB}=200V, I_E=0$		0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5V, I_C=0$		0.1	μA
DC current gain	h_{FE1}	$V_{CE}=10\text{ V}, I_C=10\text{ mA}$	120	400	
	h_{FE2}	$V_{CE}=10\text{ V}, I_C=50\text{ mA}$	80		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{ mA}, I_B=5\text{ mA}$		0.5	V
Base-emitter voltage	V_{BE}	$I_C=1\text{ mA}, V_{CE}=10V$	0.5	0.7	V
Transition frequency	f_T	$V_{CE}=10\text{ V}, I_C=10\text{ mA}$	50		MHz
Collector output capacitance	C_{ob}	$V_{CB}=10V, I_E=0, f=1\text{ MHz}$		7	pF

CLASSIFICATION OF h_{FE1}

Rank	Y	GR
Range	120-240	200-400

Typical Characteristics

