



TO-220 Plastic-Encapsulate Transistors

2SC3098 TRANSISTOR (NPN)

FEATURES

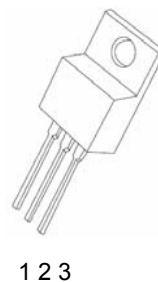
Power amplifier applications

MAXIMUM RATINGS* $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	1400	V
V_{CEO}	Collector-Emitter Voltage	800	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current –Continuous	4.0	A
I_{cp}	Collector Current –Pulse	8.0	A
P_C	Collector Dissipation	2	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$

TO-220

1. BASE
2. COLLECTOR
3. EMITTER



Marking: N ZP 2SC3098 ****

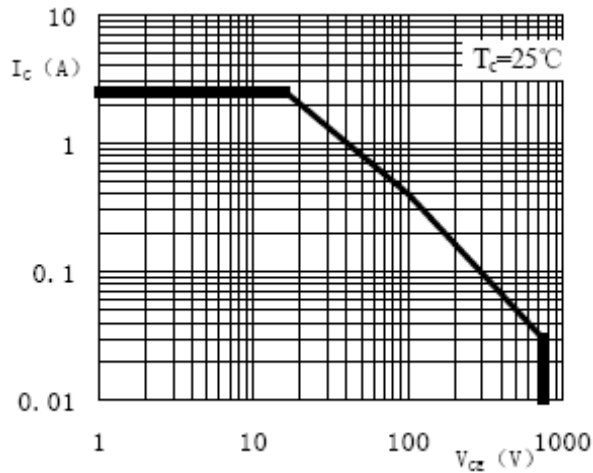
ELECTRICAL CHARACTERISTICS($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=0.1\text{mA}, I_E=0$	1400			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	800			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=0.1\text{mA}, I_C=0$	9			V
Collector cut-off current	I_{CBO}	$V_{CB}=1400\text{V}, I_E=0$			100	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			100	μA
DC current gain	h_{FE}	$V_{CE}=5\text{V}, I_C=200\text{mA}$	10		40	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1\text{A}, I_B=0.2\text{A}$		0.5	3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1\text{A}, I_B=0.2\text{A}$		0.9	1.5	V
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=100\text{mA}$	3			MHz
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		30		pF
Raise time	t_r	UI9600, $I_C=0.5\text{A}$			4	μS
Storage time	t_{stg}		2		8	μS
Fall time	t_f				4	μS

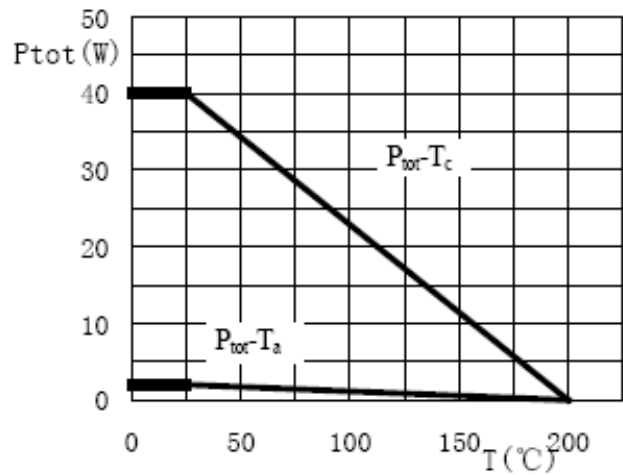
Rank	CLASSIFICATION OF h_{FE} $V_{CE}=5\text{V}, I_C=200\text{mA}$		
Range	10--20	20--30	30--40

Characteristic curve

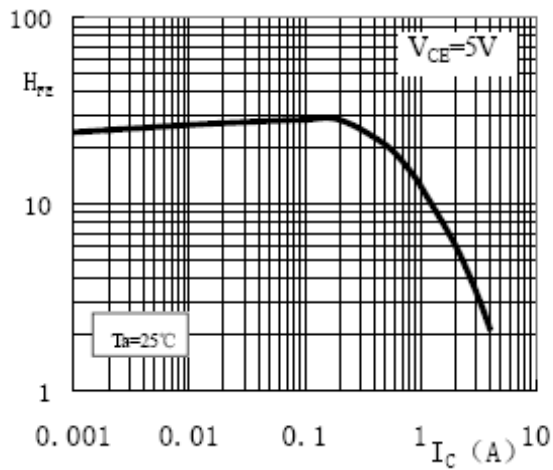
Secure working area (DC)



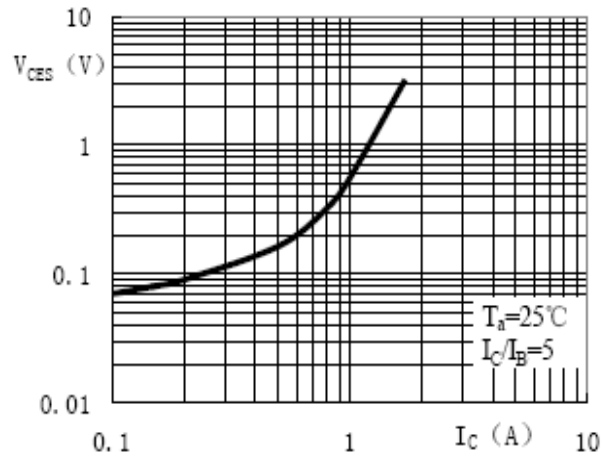
Ptot ~ T Relation curve



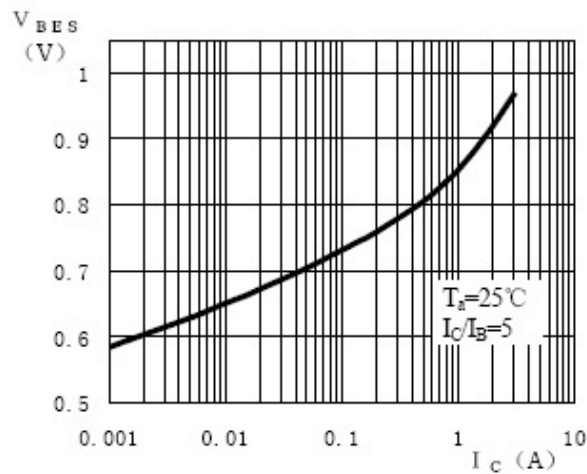
HFE ~ Ic Relation curve

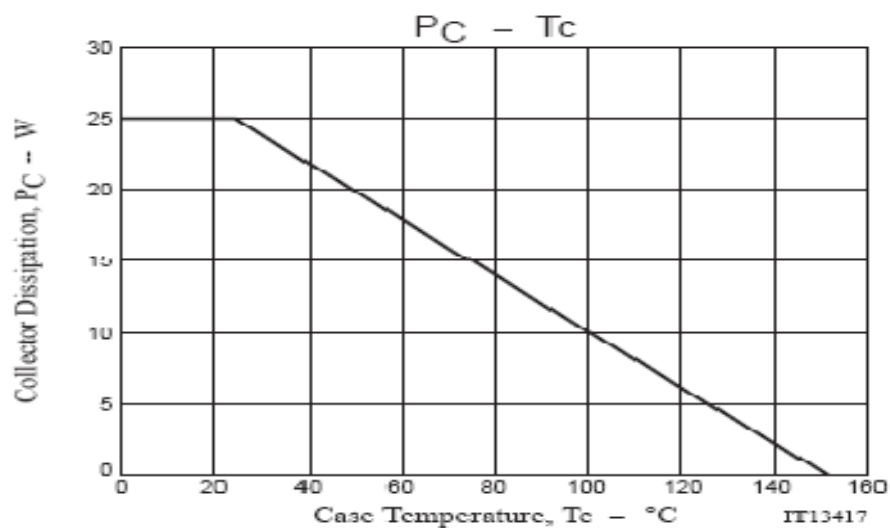
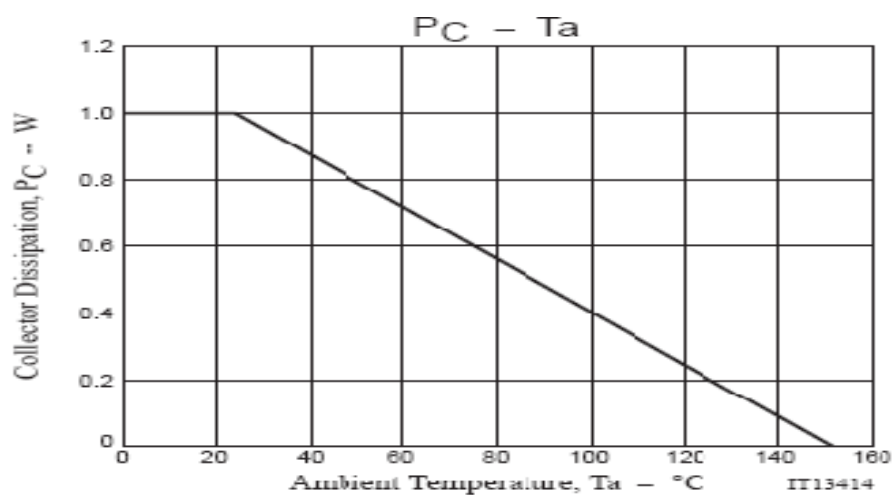


Vces ~ Ic Relation curve



VBES ~ Ic Relation curve





$$\theta_{JC} = \frac{T_a(H) - T_a(L)}{P_C} = \frac{150^\circ\text{C} - 25^\circ\text{C}}{25\text{W}} = 5^\circ\text{C/W}$$

$$\theta_{JA} = \frac{T_a(H) - T_a(L)}{P_C} = \frac{150^\circ\text{C} - 25^\circ\text{C}}{1\text{W}} = 125^\circ\text{C/W}$$

