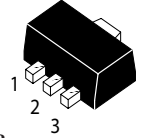


NPN Plastic-Encapsulate Transistor
 **Lead(Pb)-Free**
SOT-89

**1. BASE
2. COLLECTOR
3. EMITTER**
ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	20	V _{dc}
Collector-Base Voltage	V _{CBO}	50	V _{dc}
Emitter-Base Voltage	V _{EBO}	6.0	V _{dc}
Collector Current	I _C	5.0	Adc(DC)
	I _{CP}	10	Adc (Pulse) ⁽¹⁾
Collector Power Dissipation	P _C	0.5	W
Junction Temperature, Storage Temperature	T _j , T _{stg}	150, -55 to +150	°C

Device Marking

2SD2098Q=AHQ, 2SD2098R=AHR

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage (I _C = 1.0 mA _{dc} , I _B =0)	V _{(BR)CEO}	20	-	V _{dc}
Collector-Base Breakdown Voltage (I _C = 50 μA _{dc} , I _E =0)	V _{(BR)CBO}	50	-	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 50 μA _{dc} , I _C =0)	V _{(BR)EBO}	6.0	-	V _{dc}
Collector Cutoff Current (V _{CB} = 40 V _{dc} , I _E =0)	I _{CBO}	-	0.5	uAdc
Emitter Cutoff Current (V _{EB} =5.0 V _{dc} , I _C =0)	I _{EBO}	-	0.5	uAdc

 Note:
 1. Single pulse pw=10ms

2SD2098



ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Typ	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C=0.5\text{ Adc}, V_{CE}=2.0\text{ Vdc}$)	h_{FE}	120	-	390	-
Collector-Emitter Saturation Voltage ($I_C=100\text{ mAdc}, I_B=4\text{ Adc}$)	$V_{CE(sat)}$	-	0.3	1.0	Vdc
Transition Frequency ($I_E=-50\text{ mAdc}, V_{CE}=6.0\text{ Vdc}, f=100\text{ MHz}$)	f_T	-	150	-	MHz
Output Capacitance ($I_E=0\text{ Adc}, V_{CE}=20\text{ Vdc}, f=1\text{ MHz}$)	C_{ob}	-	35	-	pF

CLASSIFICATION OF h_{FE}

Item	Q	R
Range	120-270	180-390

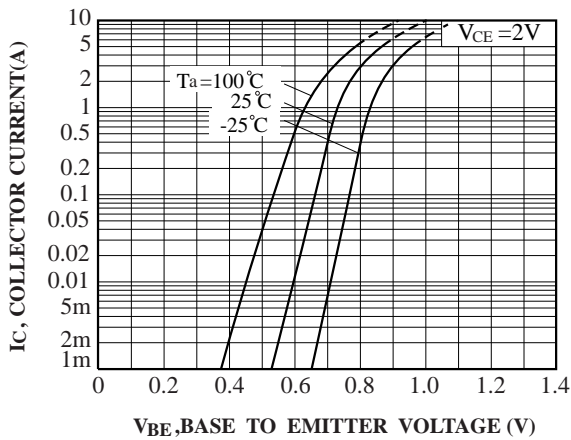


FIG.1 Grounded Emitter Propagation Characteristics

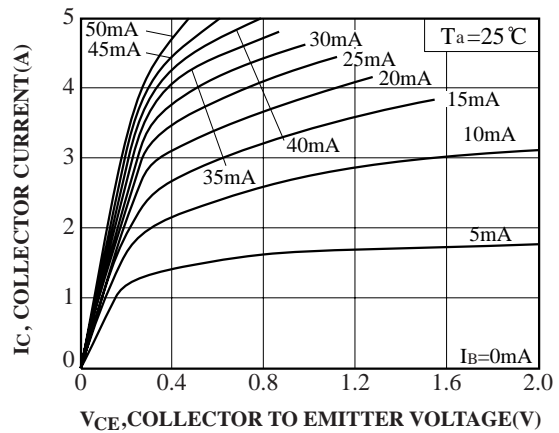


FIG.2 Grounded Emitter Output Characteristics

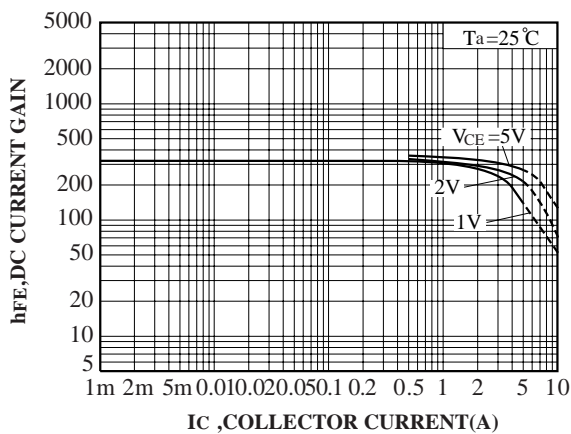


FIG.3 DC Current Gain vs. Collector Current

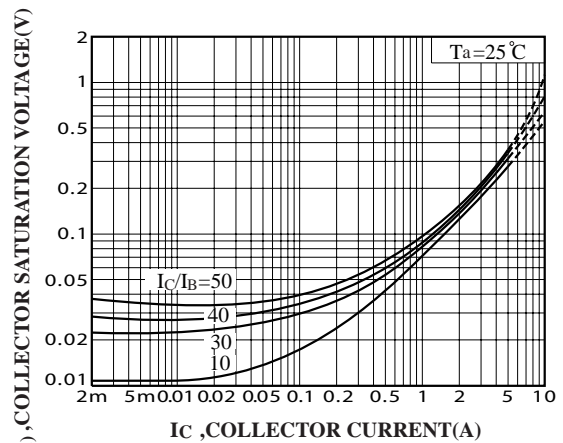


FIG.4 Collector-Emitter Saturation Voltage vs. Collector Current

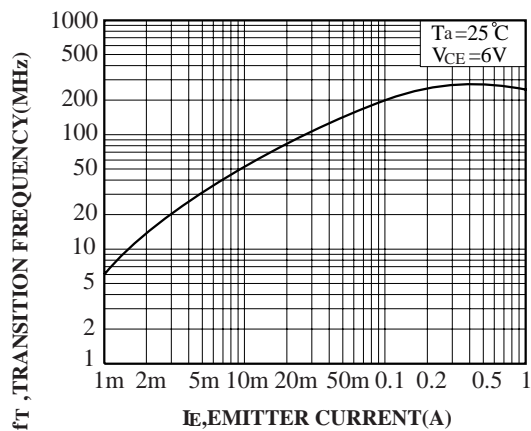
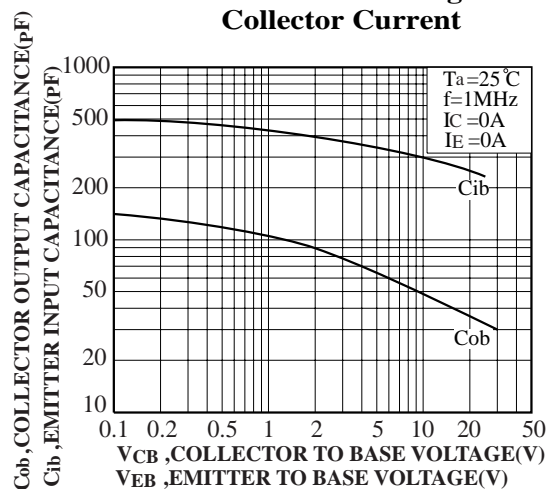


FIG.5 Gain Bandwidth Product vs. Emitter Current



**FIG.6 Collector Output Capacitance vs. Collector-Base Voltage
Emitter Input Capacitance vs. Emitter-Base Voltage**

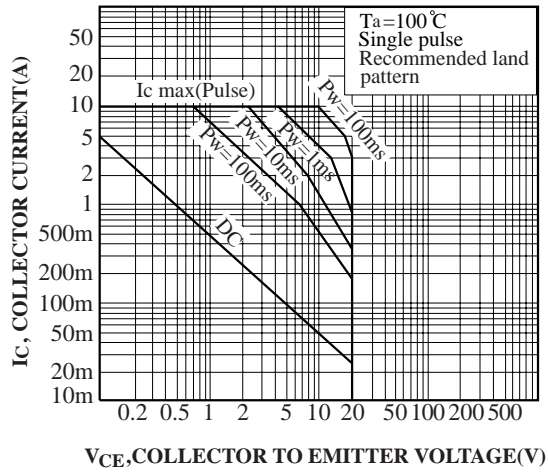
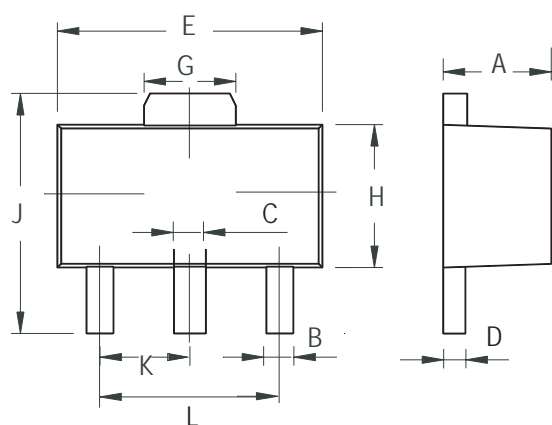


FIG.7 Safe Operating Area

SOT-89 Outline Dimensions

unit:mm



SOT-89		
Dim	Min	Max
A	1.400	1.600
B	0.320	0.520
C	0.360	0.560
D	0.350	0.440
E	4.400	4.600
G	1.400	1.800
H	2.300	2.600
J	3.940	4.250
K	1.500TYP	
L	2.900	3.100