Features

- Halogen Free. “Green” Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

NPN General Purpose Transistor

Maximum Ratings @ 25°C Unless Otherwise Specified

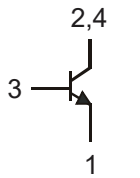
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	4	A
Power Dissipation@T_A=25℃	P_D	0.5	W
Power Dissipation@T_C=25℃	P_D	3.3	W

Thermal characteristics

Parameter	Symbol	Rating	Unit
Junction Temperature Range	T_J	-55~+150	°C
Storage Temperature Range	T_{STG}	-55~+150	°C
Thermal Resistance from Junction to Ambient(Note2)	$Rth_{(J-A)}$	250	°C/W
Thermal Resistance from Junction to Case(Note2)	$Rth_{(J-C)}$	38	°C/W

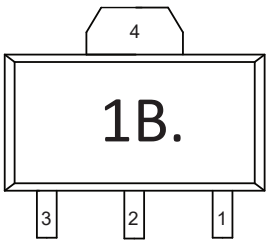
Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2.Part mounted on FR-4 board with recommended pad layout.

Internal Structure

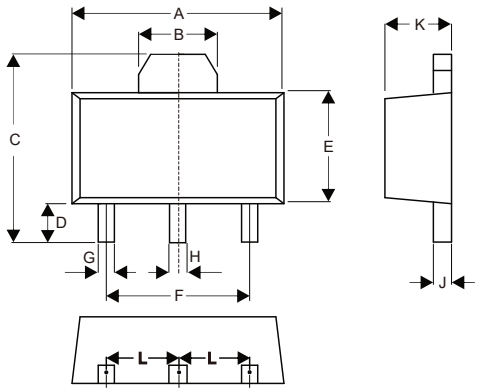


1.Emitter
2,4.Collector
3.Base

Marking Code

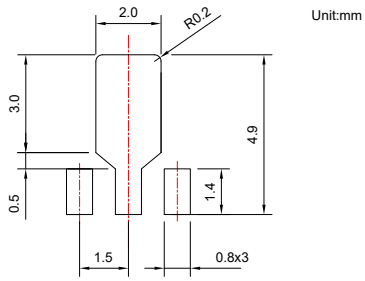


SOT-89



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.061		1.55		TYP.
C	0.154	0.171	3.91	4.35	
D	0.031	0.047	0.80	1.20	
E	0.089	0.104	2.25	2.65	
F	0.118		3.00		TYP.
G	0.013	0.020	0.33	0.52	
H	0.015	0.021	0.38	0.53	
J	0.014	0.017	0.35	0.44	
K	0.055	0.063	1.40	1.60	
L	0.059		1.50		TYP.

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	40			V	I_C=100uA, I_E=0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	I_C=1mA, I_B=0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	I_E=100uA, I_C=0
Collector-Base Cutoff Current	I_{CBO}			100	nA	V_{CB}=30V, I_E=0
Emitter-Base Cutoff Current	I_{EBO}			100	nA	V_{EB}=5V, I_C=0
Collector-Emitter Cutoff Current	I_{CES}			100	nA	V_{CE}=30V, I_C=0
DC Current Gain	$h_{FE(1)}$	300				V_{CE}=2V, I_C=0.5A
	$h_{FE(2)}$	300				V_{CE}=2V, I_C=1A
	$h_{FE(3)}$	250				V_{CE}=2V, I_C=2A
	$h_{FE(4)}$	100				V_{CE}=2V, I_C=5A
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$			90	mV	I_C=0.5A, I_B=5mA
	$V_{CE(sat)2}$			120	mV	I_C=1A, I_B=10mA
	$V_{CE(sat)3}$			150	mV	I_C=2A, I_B=200mA
	$V_{CE(sat)4}$			290	mV	I_C=4A, I_B=200mA
	$V_{CE(sat)5}$			355	mV	I_C=5A, I_B=500mA
Base-Emitter Saturation Voltage	$V_{BE(sat)1}$			1.1	V	I_C=4A, I_B=200mA
	$V_{BE(sat)2}$			1.2	V	I_C=5A, I_B=500mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$			1.1	V	I_C=2A, V_{CE}=2V
Transition Frequency	f_T		100		MHz	V_{CE}=10V, I_C=50mA, f=100MHz
Collector Capacitance	C_{ob}		20		pF	V_{CB}=10V, I_E=0, f=1MHz

Curve Characteristics

Fig. 1 - Static Characteristics

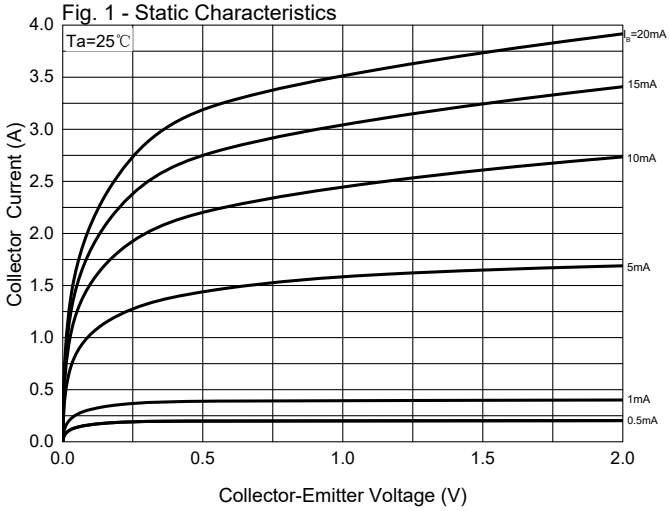


Fig. 2 - DC Current Gain Characteristics

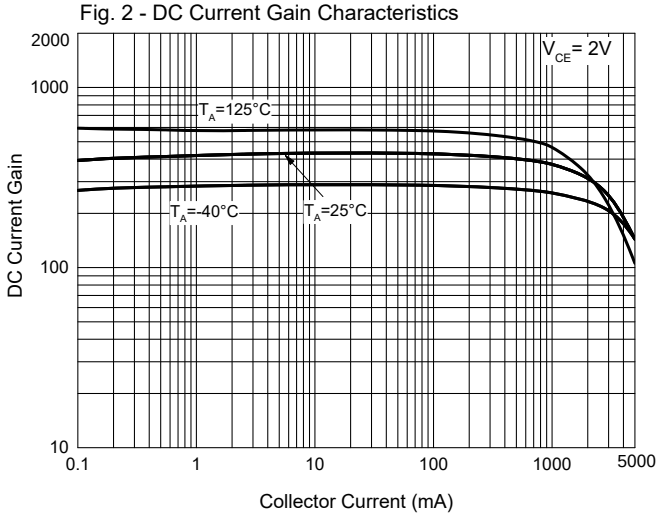


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

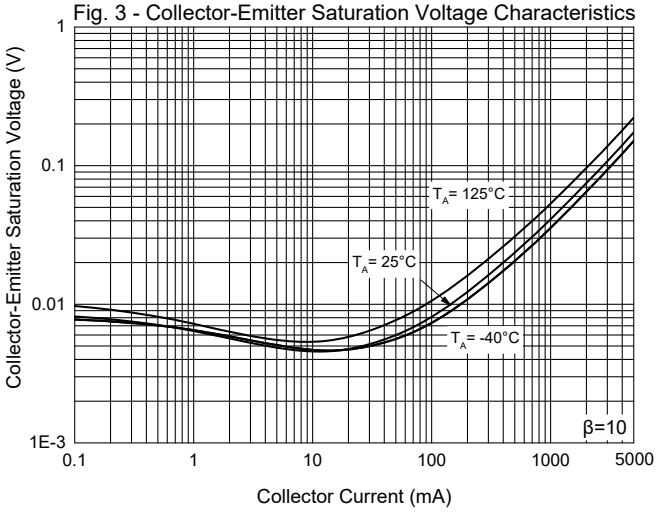


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

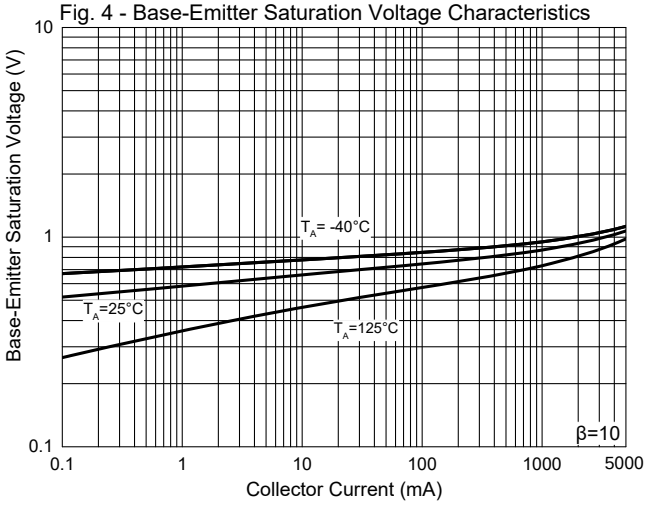


Fig. 5 - Base-Emitter Voltage Characteristics

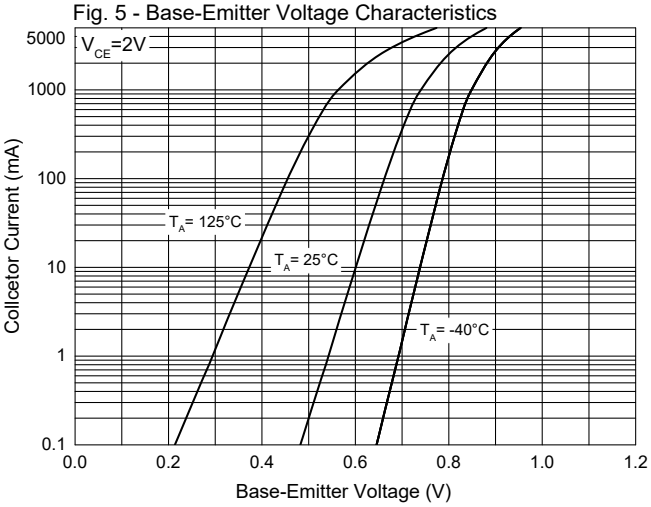
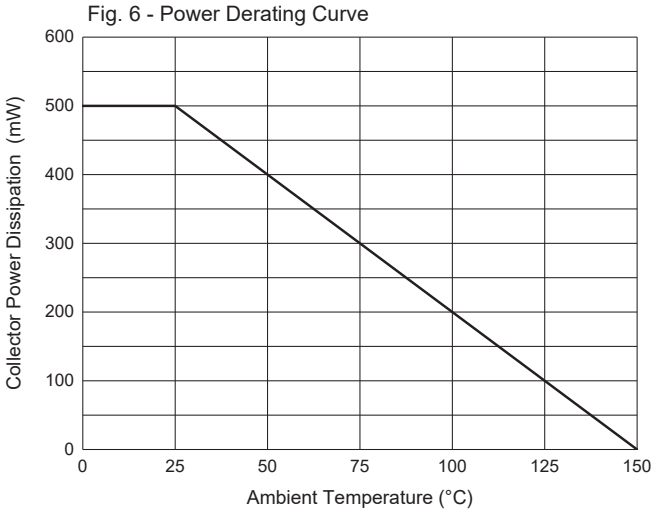


Fig. 6 - Power Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 1Kpcs/Reel