Features

- Low Collector-Emitter Saturation Voltage
- 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)

PNP General Purpose Amplifier

Maximum Ratings @ 25°C Unless Otherwise Specified

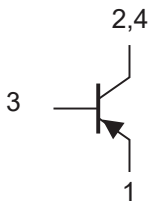
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-160	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-1	A
Power Dissipation	P_D	500	mW

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	$Rth_{(J-A)}$	250	°C/W

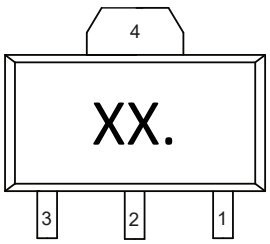
Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure



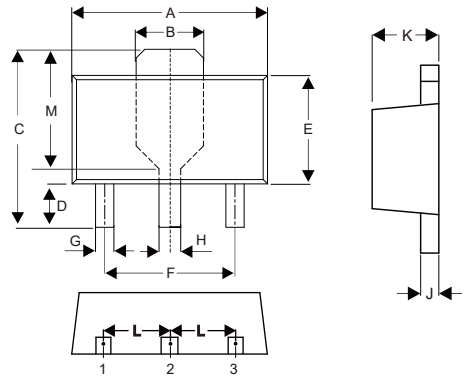
3.BASE
2,4.COLLECTOR
1.EMITTER

Marking Code



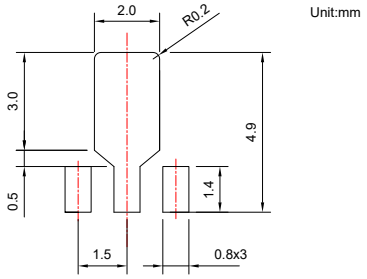
Part NO.	2SB1013-O	2SB1013-P
Marking code	A1013	B1013

SOT-89



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.
M	0.108		2.75		TYP.

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-160			V	I_C=-100uA, I_E=0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-160			V	I_C=-10mA, I_B=0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6			V	I_E=-100uA, I_C=0
Collector-Base Cutoff Current	I_{CBO}			-1	uA	V_{CB}=-150V, I_E=0
Emitter-Base Cutoff Current	I_{EBO}			-1	uA	V_{EB}=-6V, I_C=0
DC Current Gain	h_{FE}	60		320		V_{CE}=-5V, I_C=-200mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-1.5	V	I_C=-500mA, I_B=-50mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.5	V	I_C=-500mA, I_B=-50mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	-0.45		-0.75	V	I_C=-0.5A, V_{CE}=-5V
Transition Frequency	f_T	15			MHz	V_{CE}=-5V, I_C=-200mA
Collector Capacitance	C_{ob}			35	pF	V_{CB}=-10V, I_E=0, f=1MHz

Classification of $h_{FE(1)}$

Rank	O	P
Range	100-200	160-320

Curve Characteristics

Fig. 1 - Static Characteristics

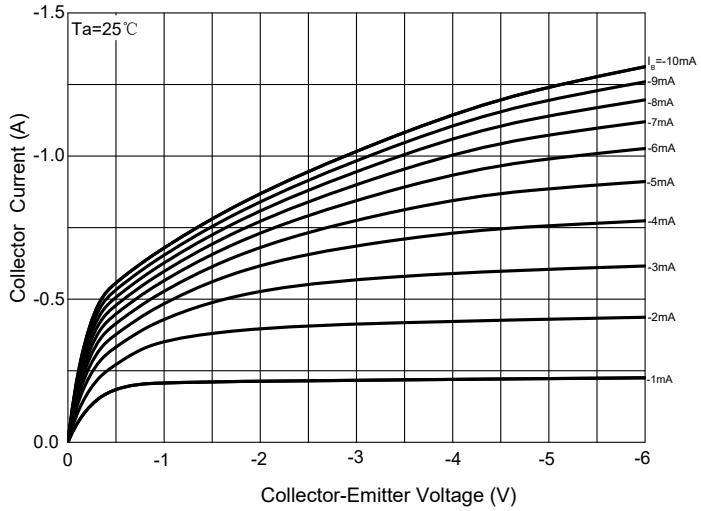


Fig. 2 - DC Current Gain Characteristics

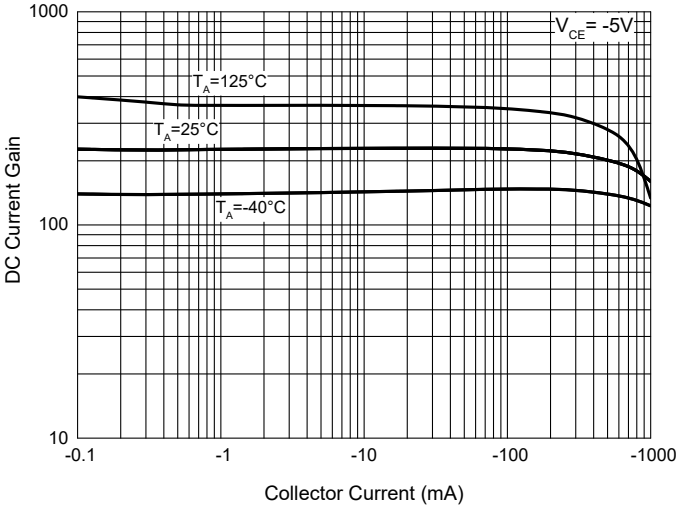


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

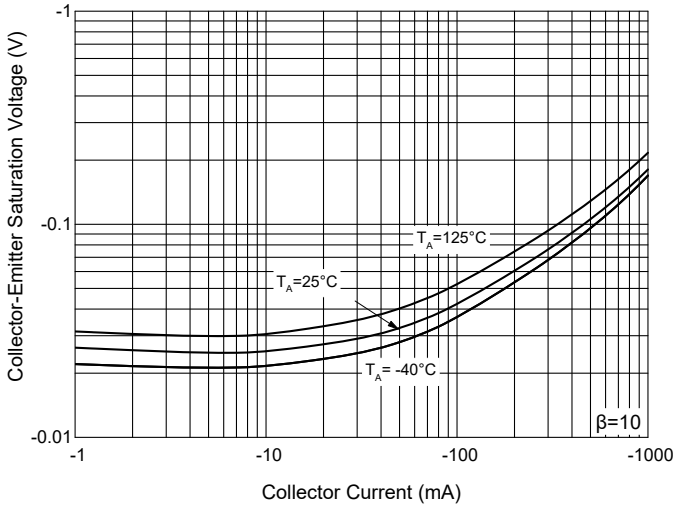


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

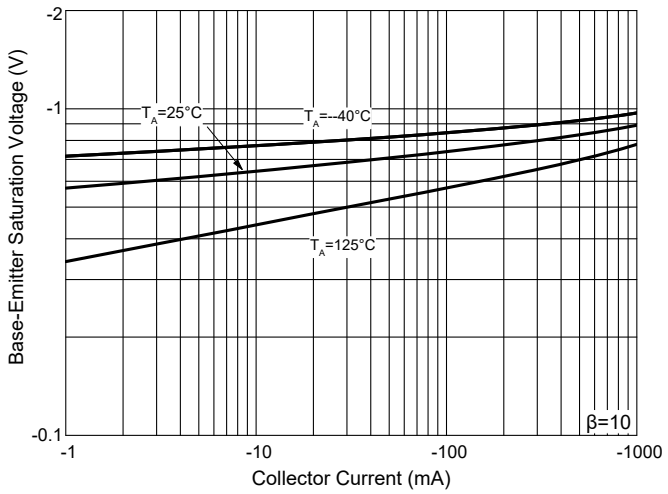


Fig. 5 - Base-Emitter Voltage Characteristics

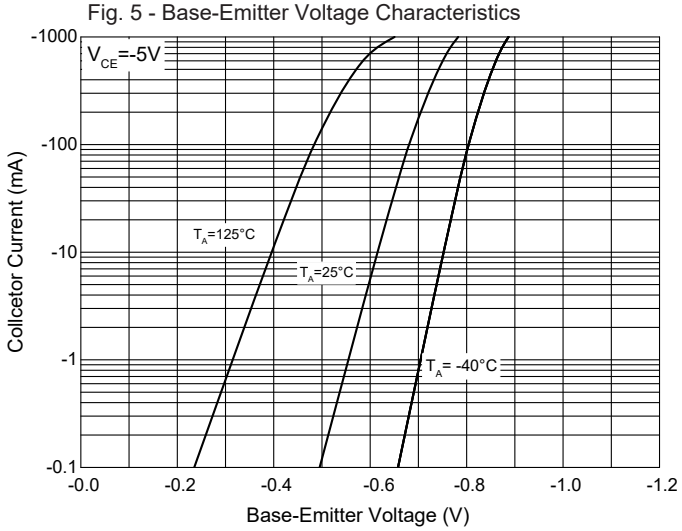
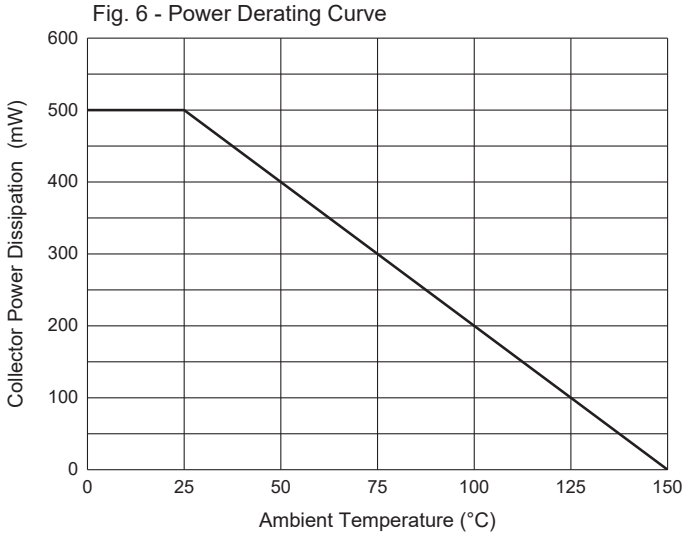


Fig. 6 - Power Derating Curve



Ordering Information

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