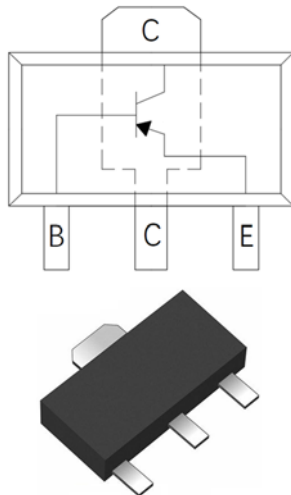


## PNP General Purpose Amplifier

### SOT-89



#### Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

#### Application

- Signal amplification
- Switching circuit

#### Mechanical data

- **Package:** SOT-89
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

#### ■ Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Device marking code				NY
Collector-base voltage	$V_{CBO}$	V	$I_C=-100\mu\text{A}$ , $I_E=0$	-50
Collector-emitter voltage	$V_{CEO}$	V	$I_C=-10\text{mA}$ , $I_B=0$	-50
Emitter-base voltage	$V_{EBO}$	V	$I_E=-100\mu\text{A}$ , $I_C=0$	-5
Collector current	$I_C$	A		-2
Power dissipation	$P_D$	mW		500
Junction temperature	$T_J$	$^\circ\text{C}$		-55 to +150
Storage temperature	$T_{STG}$	$^\circ\text{C}$		-55 to +150



## 2SA1213-Y

### ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	V	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	-50		
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	V	I <sub>C</sub> =-10mA, I <sub>B</sub> =0	-50		
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	V	I <sub>E</sub> =-100μA, I <sub>C</sub> =0	-5		
Collector-base cut-off current	I <sub>CBO</sub>	μA	V <sub>CB</sub> =-50V			-0.1
Emitter-base cut-off current	I <sub>EBO</sub>	μA	V <sub>EB</sub> =-5V			-0.1
DC current gain	h <sub>FE1</sub>		I <sub>C</sub> =-0.5A V <sub>CE</sub> =-2V	120		240
	h <sub>FE2</sub>		I <sub>C</sub> =-2A V <sub>CE</sub> =-2V	20		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	I <sub>C</sub> =-1A I <sub>B</sub> =-50mA			-0.5
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	I <sub>C</sub> =-1A I <sub>B</sub> =-50mA			-1.2
Transition frequency	f <sub>T</sub>	MHz	V <sub>CE</sub> =-5V, I <sub>C</sub> =-50mA	50		
Collector-base output capacitance	C <sub>ob</sub>	pF	V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz		20	

### ■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R <sub>θJ-A</sub> <sup>(1)</sup>	°C/W	250
Thermal resistance, junction-to-case	R <sub>θJ-C</sub> <sup>(1)</sup>	°C/W	200

#### Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint



■ Characteristics

Fig 1: Static Characteristics

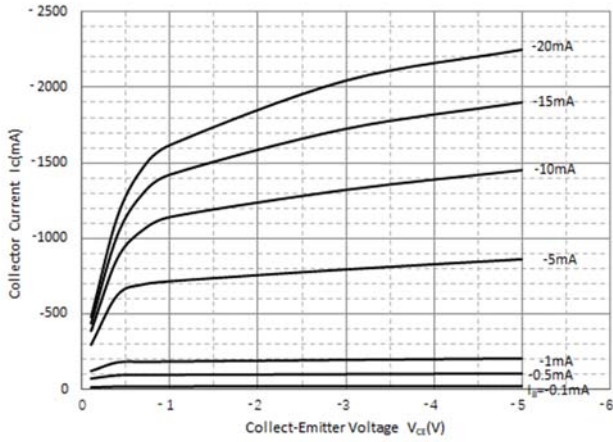


Fig 2: DC Current Gain

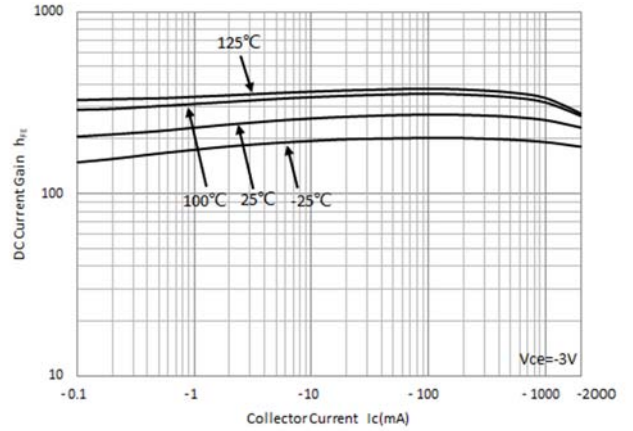


Fig 3: Collector-Emitter Saturation Voltage

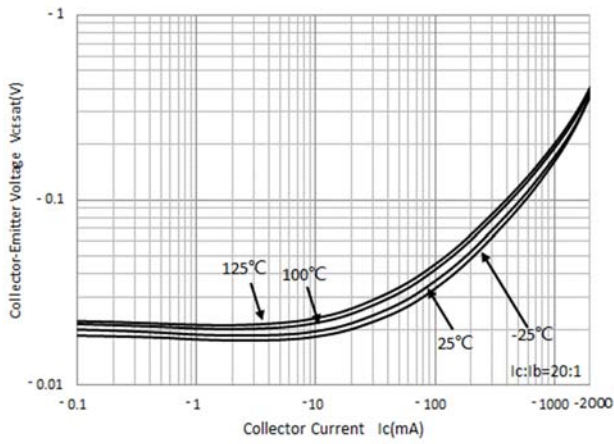


Fig 4: Base-Emitter Saturation Voltage

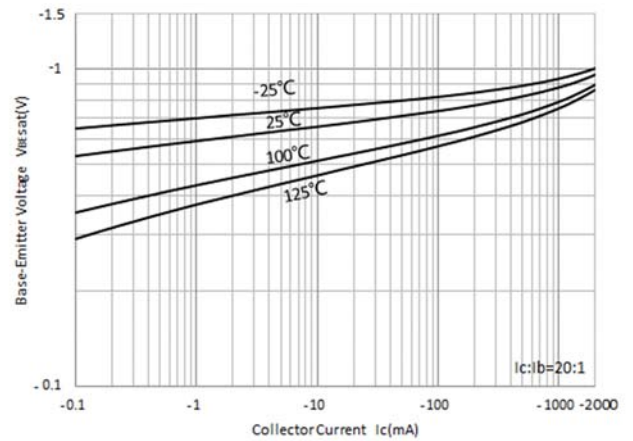


Fig 5: Base-Emitter On Voltage

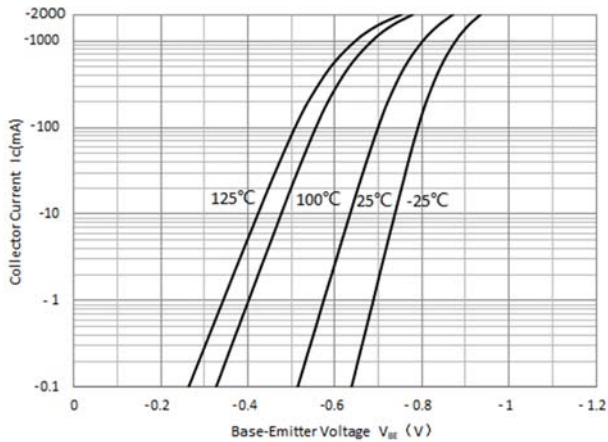
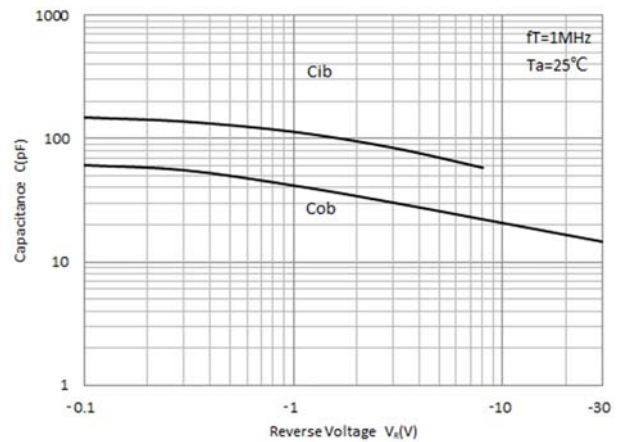
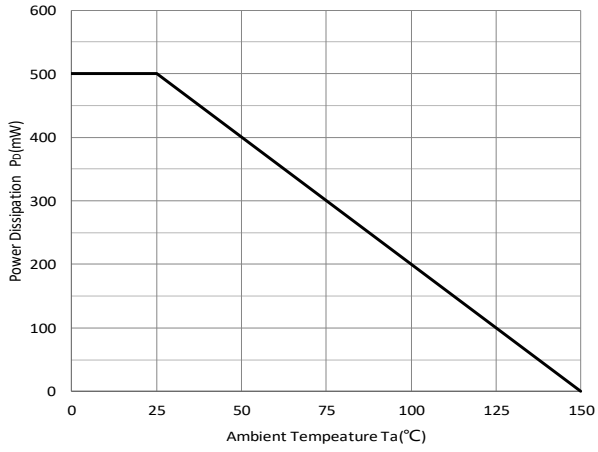


Fig 6: Cob/Cib-VCB/VEB





**Fig 7: P<sub>D</sub>-T<sub>a</sub> Curve**



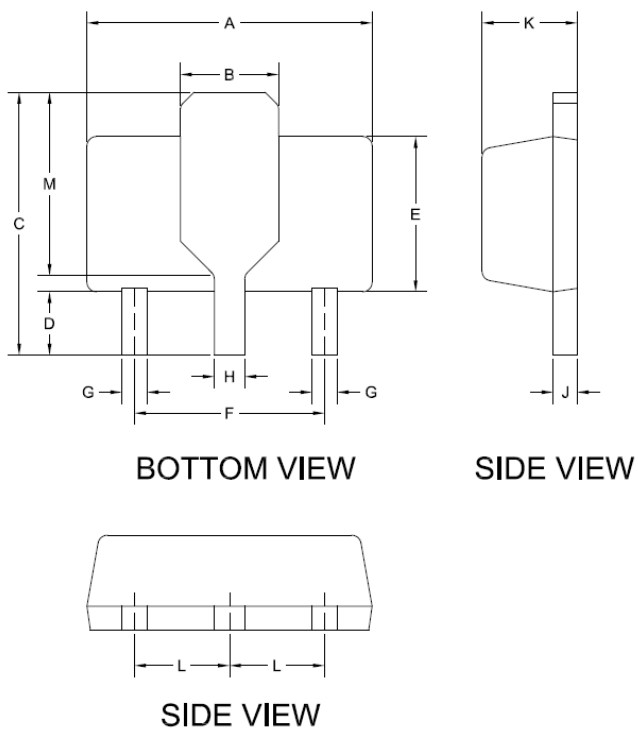


## 2SA1213-Y

### ■ Ordering Information

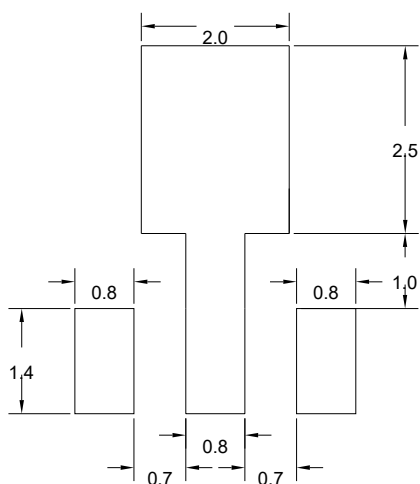
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
2SA1213	F2	Approximate 0.055	1000	8000	32000	7" reel

### ■ Outline Dimensions



DIM	DIMENSIONS			
	INCHES		MM	
	MIN.	MAX.	MIN.	MAX.
A	0.173	0.181	4.400	4.600
B	0.061 TYP.		1.550 TYP.	
C	0.155	0.167	3.940	4.250
D	0.031	0.047	0.800	1.200
E	0.094	0.102	2.400	2.600
F	0.118 TYP.		3.00 TYP.	
G	0.014	0.019	0.360	0.480
H	0.017	0.022	0.440	0.560
J	0.014	0.017	0.350	0.440
K	0.055	0.063	1.400	1.600
L	0.059 TYP.		1.500 TYP.	
M	0.108 TYP.		2.750 TYP.	

### ■ Suggested Pad Layout



UNIT:MM



## 2SA1213-Y

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