

**Features**

- Low Saturation Voltage
- High Speed Switching Time
- Complementary to 2SA1213
- 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)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 250°C/W Junction to Ambient

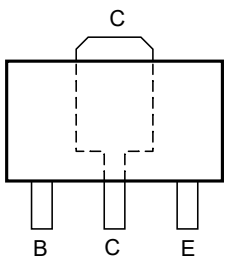
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	50	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	2	A
Collector Power Dissipation	$P_C$	500	mW

**Classification Of  $h_{FE1}$**

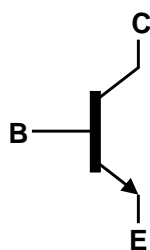
Rank	O	Y
Range	70-140	120-240
Marking	MO	MY

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

Pin Configuration - Top View

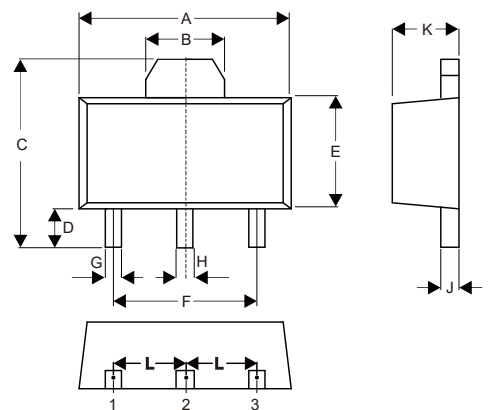


Internal Structure



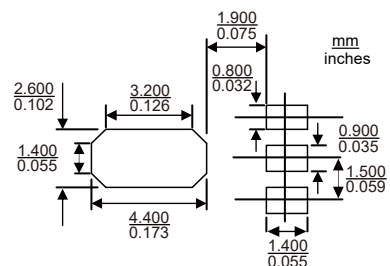
**NPN  
Silicon Epitaxial  
Transistors**

**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.

**Suggested Solder Pad Layout**



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50			V	$I_C=100\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50			V	$I_C=1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			0.1	$\mu A$	$V_{CB}=50V, I_E=0$
Emitter-Base Cutoff Current	$I_{EBO}$			0.1	$\mu A$	$V_{EB}=5V, I_C=0$
DC Current Gain	$h_{FE1}$	70		240		$V_{CE}=2V, I_C=0.5A$
DC Current Gain	$h_{FE2}$	20				$V_{CE}=2V, I_C=2A$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.5	V	$I_C=1A, I_B=50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1.2	V	$I_C=1A, I_B=50mA$
Transition Frequency	$f_T$		120		MHz	$V_{CE}=2V, I_C=0.5A$
Collector Output Capacitance	$C_{ob}$		30		pF	$V_{CB}=10V, I_E=0, f=1MHz$

## Curve Characteristics

Fig. 1 - Static Characteristics

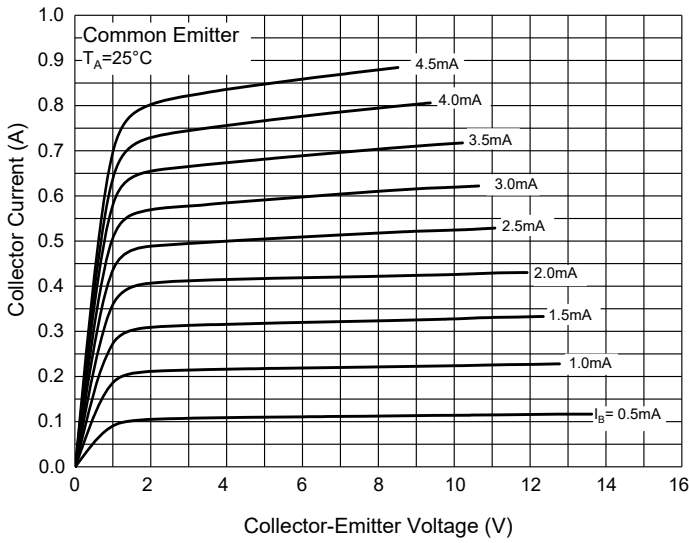


Fig. 2 - DC Current Gain Characteristics

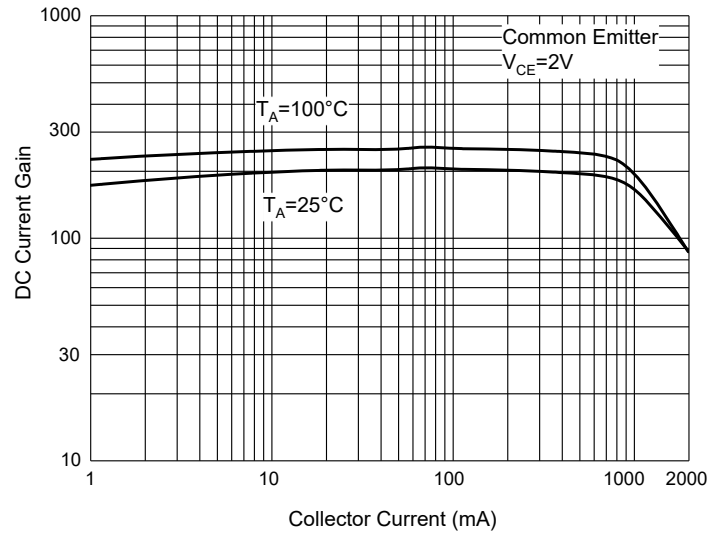


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

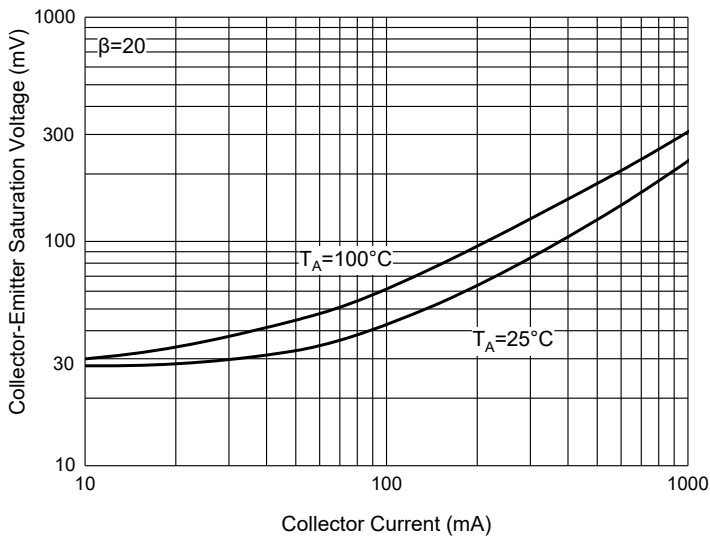


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

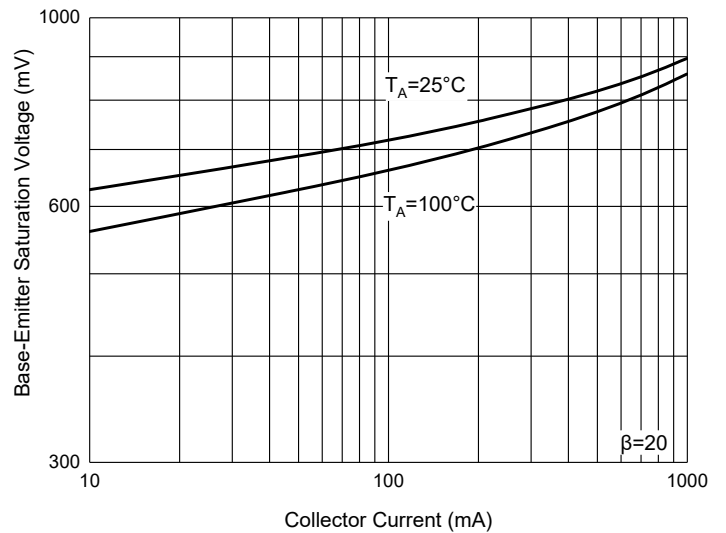


Fig. 5 - Base-Emitter Voltage Characteristics

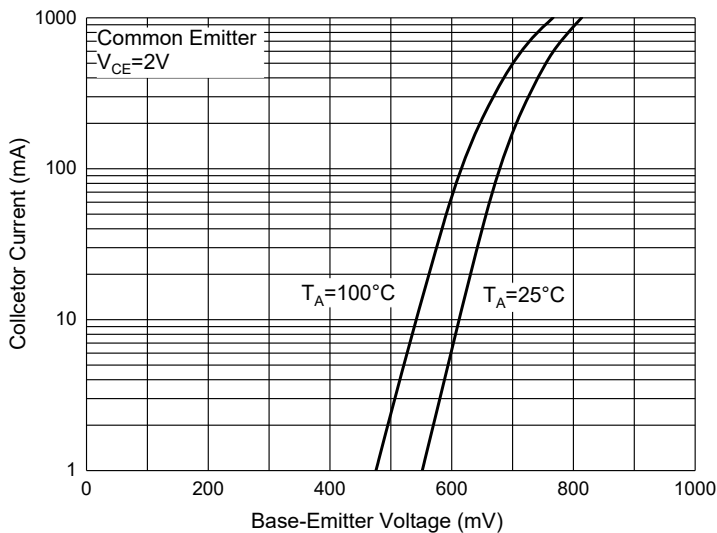
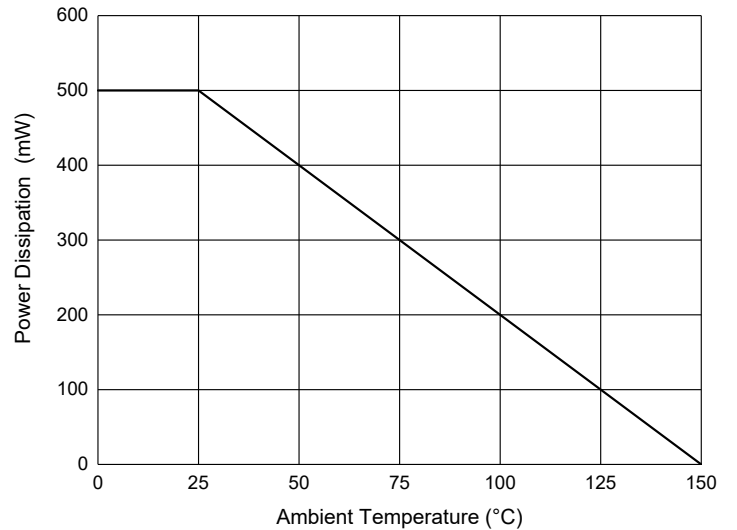


Fig. 6 - Power Derating Curve



## Ordering Information

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

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