

**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)

**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: 357°C/W Junction to Ambient <sup>(Note 2)</sup>

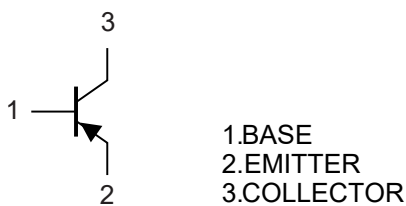
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Continuous Collector Current	I <sub>C</sub>	-600	mA
Power Dissipation	P <sub>D</sub>	350	mW

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. For the Device Mounted on 15mm x 15mm x 1.6mm FR4 PCB with High Coverage of Single Sided 1oz Copper, in Still Air Conditions.

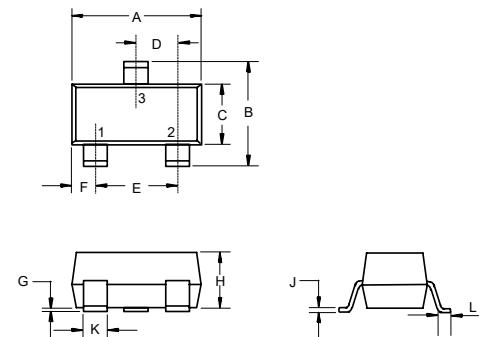
**Marking: 2T**

**Internal Structure**



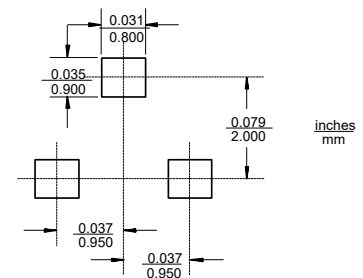
**PNP General Purpose Amplifier**

**SOT-23**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

**Suggested Solder Pad Layout**



**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40			V	$I_C=-100\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage <sup>(3)</sup>	$V_{(BR)CEO}$	-40			V	$I_C=-1\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-100\mu\text{A}, I_C=0$
Base Cutoff Current	$I_{BL}$			-0.1	$\mu\text{A}$	$V_{CE}=-30\text{V}, V_{BE}=-3\text{V}$
Collector Cutoff Current	$I_{CEX}$			-0.1	$\mu\text{A}$	$V_{CE}=-30\text{V}, V_{BE}=-3\text{V}$
DC Current Gain <sup>(3)</sup>	$h_{FE(1)}$	30				$V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$
	$h_{FE(2)}$	60				$V_{CE}=-1\text{V}, I_C=-1\text{mA}$
	$h_{FE(3)}$	100				$V_{CE}=-1\text{V}, I_C=-10\text{mA}$
	$h_{FE(4)}$	100		300		$V_{CE}=-2\text{V}, I_C=-150\text{mA}$
	$h_{FE(5)}$	20				$V_{CE}=-2\text{V}, I_C=-500\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.4	V	$I_C=-150\text{mA}, I_B=-15\text{mA}$
				-0.75	V	$I_C=-500\text{mA}, I_B=-50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.75	-0.95	V	$I_C=-150\text{mA}, I_B=-15\text{mA}$
				-1.3	V	$I_C=-500\text{mA}, I_B=-50\text{mA}$
Transition Frequency	$f_T$	200			MHz	$V_{CE}=-10\text{V}, I_C=-20\text{mA}, f=100\text{MHz}$
Delay Time	$t_d$			15	ns	$V_{CC}=-30\text{V}, V_{BE}=-0.5\text{V}, I_C=-150\text{mA}, I_{B1}=-15\text{mA}$
Rise Time	$t_r$			20	ns	
Storage Time	$t_s$			225	ns	$V_{CC}=-30\text{V}, I_C=-150\text{mA}, I_{B1}=I_{B2}=-15\text{mA}$
Fall Time	$t_f$			30	ns	
Collector-Base Capacitance	$C_{cb}$			8.5	pF	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$
Emitter-Base Capacitance	$C_{eb}$			30	pF	$V_{EB}=-0.5\text{V}, I_C=0, f=1\text{MHz}$

 Note :3. Pulse test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 2.0\%$ .

**Curve Characteristics**

Fig. 1 - Static Characteristics

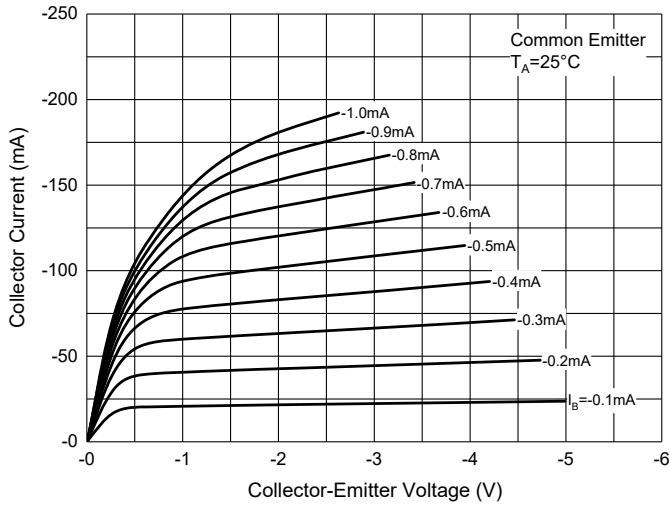


Fig. 2 - DC Current Gain Characteristics

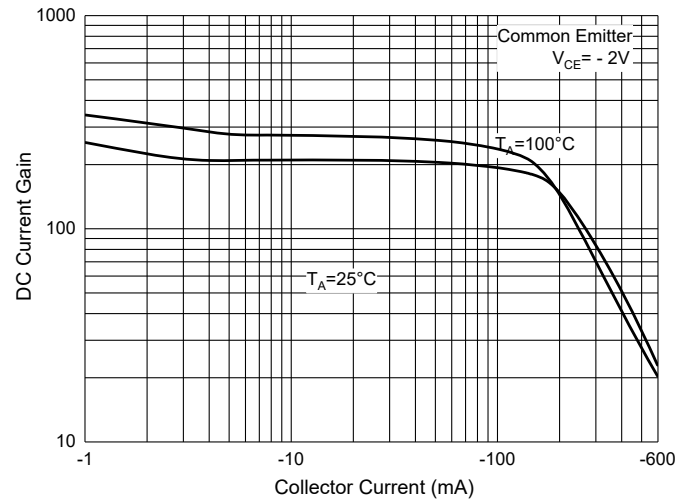


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

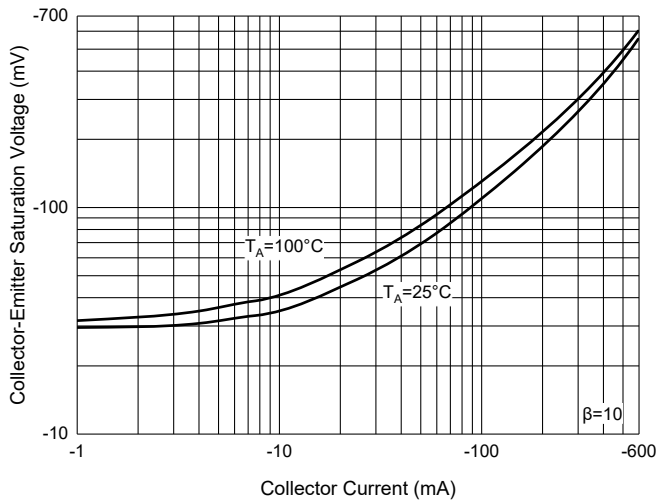


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

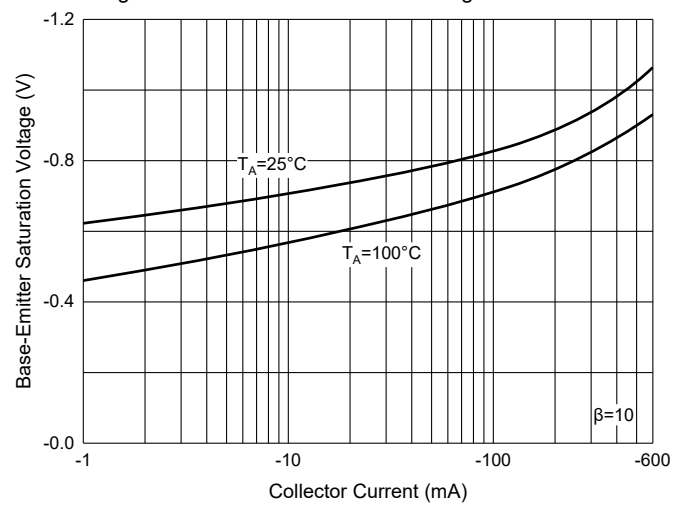


Fig. 5 - Base-Emitter Voltage Characteristics

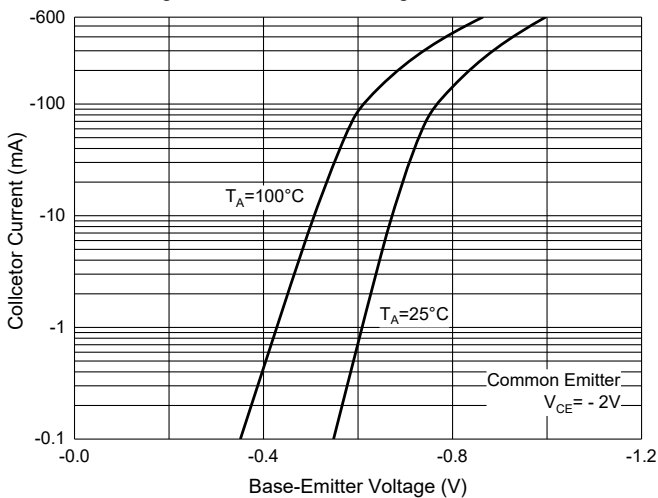
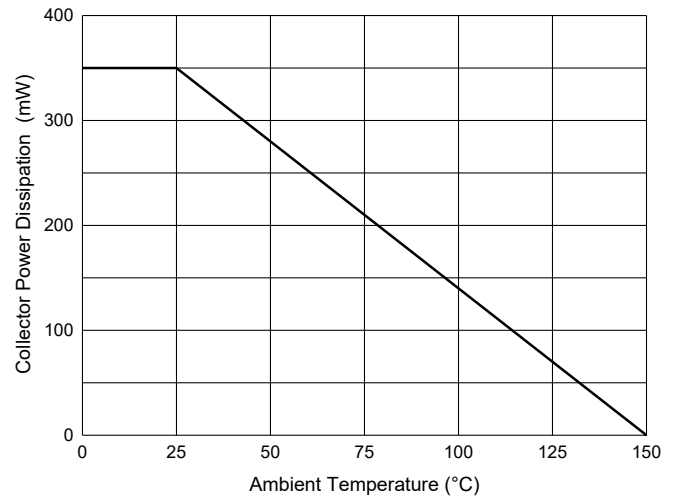


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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