

**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**

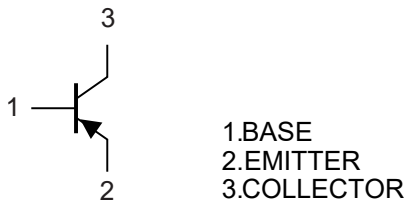
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 250°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	-80	V
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Continuous Collector Current	$I_C$	-1	A
Power Dissipation	$P_D$	500	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.

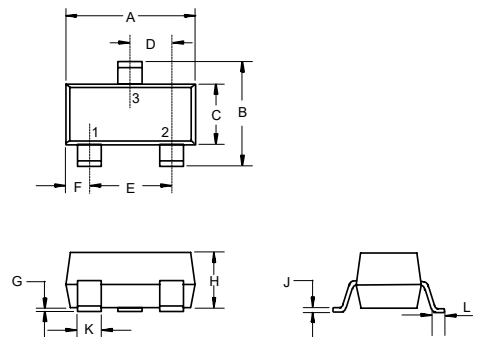
**Marking: 591**

**Internal Structure**



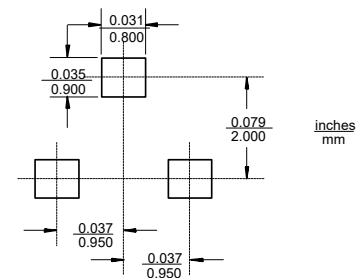
**PNP  
Plastic-Encapsulate  
Transistor**

**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**

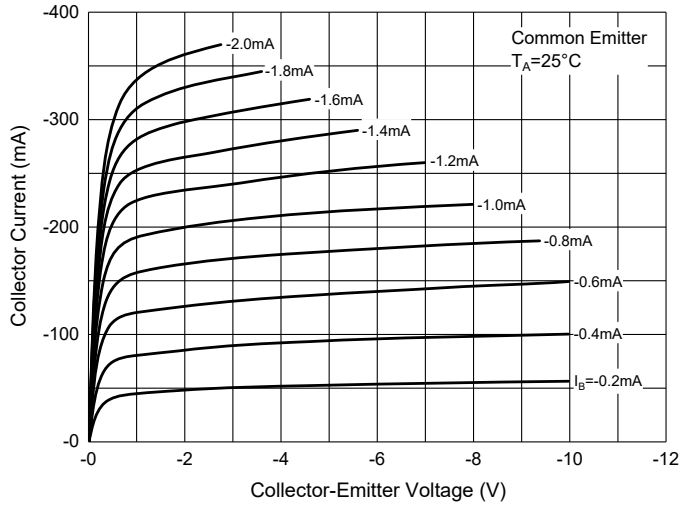


**Electrical Characteristics @ T<sub>A</sub>=25°C Unless Otherwise Specified**

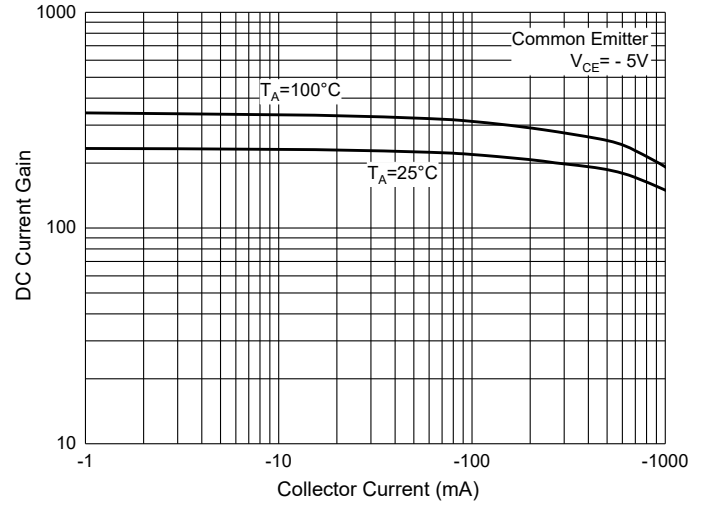
Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-80			V	I <sub>C</sub> =-100μA, I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-60			V	I <sub>C</sub> =-10mA, I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5			V	I <sub>E</sub> =-100μA, I <sub>C</sub> =0
Collector-Base Cutoff Current	I <sub>CBO</sub>			-0.1	μA	V <sub>CB</sub> =-60V, I <sub>E</sub> =0
Emitter-Base Cutoff Current	I <sub>EBO</sub>			-0.1	μA	V <sub>EB</sub> =-4V, I <sub>C</sub> =0
DC Current Gain	h <sub>FE(1)</sub>	100				V <sub>CE</sub> =-5V, I <sub>C</sub> =-1mA
	h <sub>FE(2)</sub>	100		300		V <sub>CE</sub> =-5V, I <sub>C</sub> =-500mA
	h <sub>FE(3)</sub>	80				V <sub>CE</sub> =-5V, I <sub>C</sub> =-1A
	h <sub>FE(4)</sub>	15				V <sub>CE</sub> =-5V, I <sub>C</sub> =-2A
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			-0.3	V	I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA
				-0.6	V	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>			-1.2	V	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA
Base-Emitter Voltage	V <sub>BE</sub>			-1.0	V	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1A
Transition Frequency	f <sub>T</sub>	150			MHz	V <sub>CE</sub> =-10V, I <sub>C</sub> =-50mA, f=100MHz
Output Capacitance	C <sub>ob</sub>			10	pF	V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz

**Curve Characteristics**

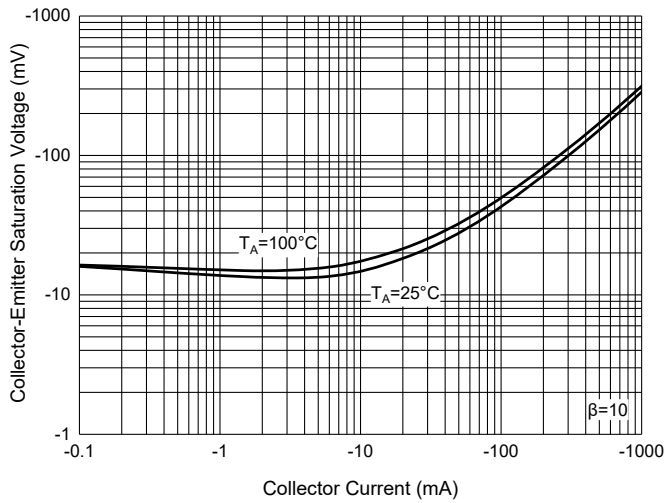
**Fig. 1 - Static Characteristics**



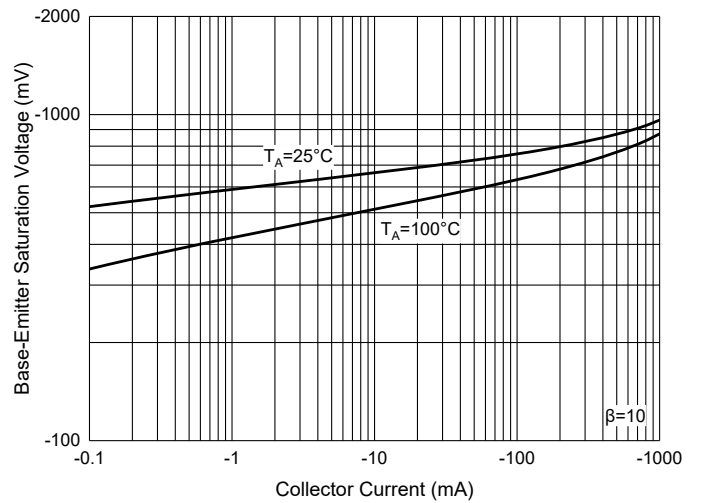
**Fig. 2 - DC Current Gain Characteristics**



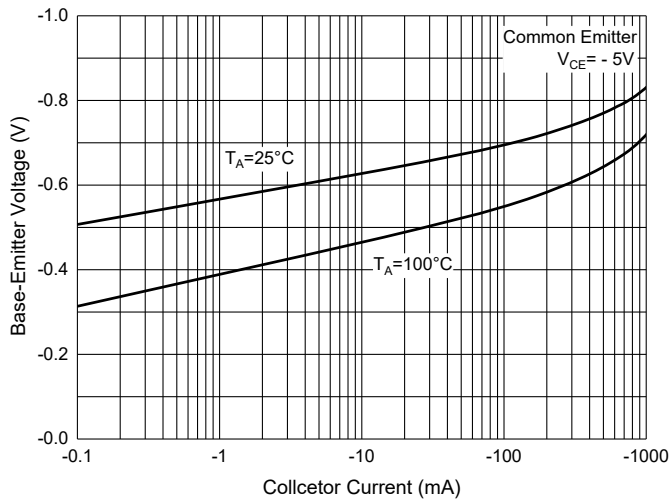
**Fig. 3 - Collector-Emitter Saturation Voltage Characteristics**



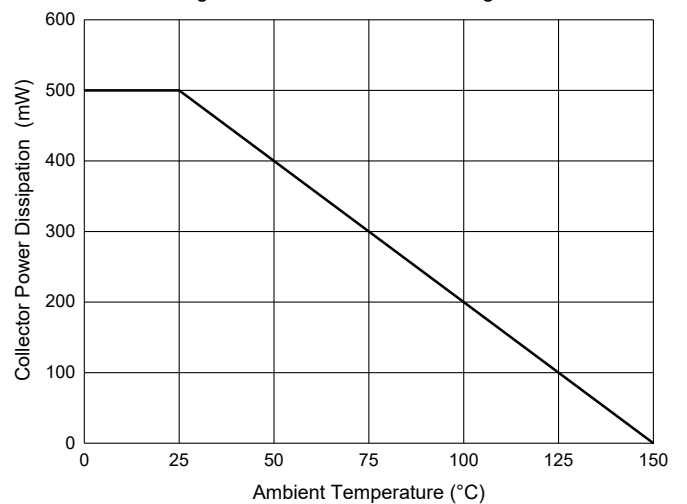
**Fig. 4 - Base-Emitter Saturation Voltage Characteristics**



**Fig. 5 - Base-Emitter Voltage Characteristics**



**Fig. 6 - Collector Power Derating Curve**



## Ordering Information

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

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