

## Features

- Low Collector-Emitter Saturation Voltage
- High Current Capability
- 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: 416.7°C/W Junction to Ambient

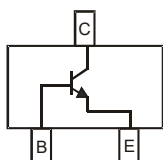
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	40	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Continuous Collector Current	$I_C$	2	A
Power Dissipation	$P_D$	300	mW

Note:

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

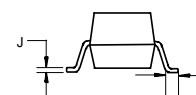
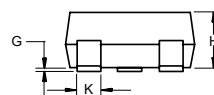
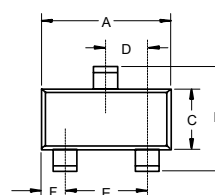
**Marking: ZE**

**Internal Structure**



# NPN Low $V_{CE(sat)}$ Transistor

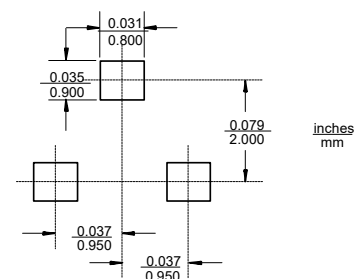
## SOT-23



### DIMENSIONS

DIM	INCHES		MM		NOTE
	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	0.014	0.020	0.35	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>	40			V	I <sub>C</sub> =100μA, I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	40			V	I <sub>C</sub> =1mA, 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 Cutoff Current	I <sub>CBO</sub>			100	nA	V <sub>CB</sub> =30V, I <sub>E</sub> =0
Emitter Cutoff Current	I <sub>EBO</sub>			100	nA	V <sub>EB</sub> =4V, I <sub>C</sub> =0
DC Current Gain	h <sub>FE</sub>	350				V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
		300				V <sub>CE</sub> =2V, I <sub>C</sub> =500mA
		300				V <sub>CE</sub> =2V, I <sub>C</sub> =1A
		150				V <sub>CE</sub> =2V, I <sub>C</sub> =2A
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			70	mV	I <sub>C</sub> =100mA, I <sub>B</sub> =1mA
				100	mV	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA
				180	mV	I <sub>C</sub> =750mA, I <sub>B</sub> =15mA
				180	mV	I <sub>C</sub> =1A, I <sub>B</sub> =50mA
				320	mV	I <sub>C</sub> =2A, I <sub>B</sub> =200mA
Equivalent On-Resistance	R <sub>CE(sat)</sub>			200	mΩ	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>			1.1	V	I <sub>C</sub> =2A, I <sub>B</sub> =200mA
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>			0.75	V	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
Transition Frequency	f <sub>T</sub>	100			MHz	V <sub>CE</sub> =10V, I <sub>C</sub> =100mA, f=100MHz
Collector-Base Capacitance	C <sub>cb</sub>			20	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz

**Curve Characteristics**

Fig. 1 - Static Characteristics

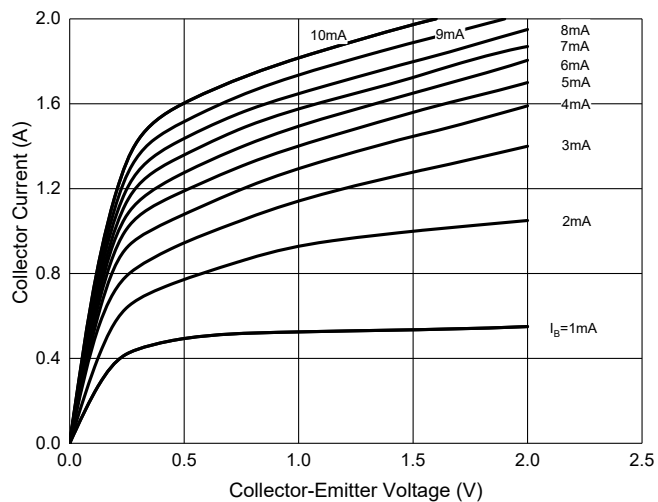
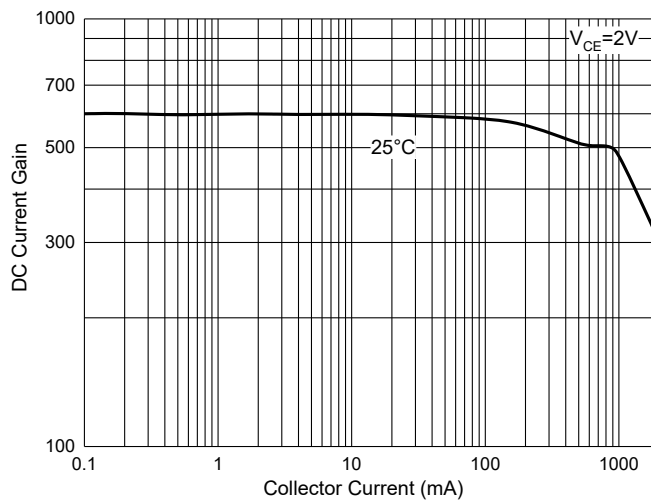


Fig. 2 - DC Current Gain Characteristics



## Curve Characteristics

Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

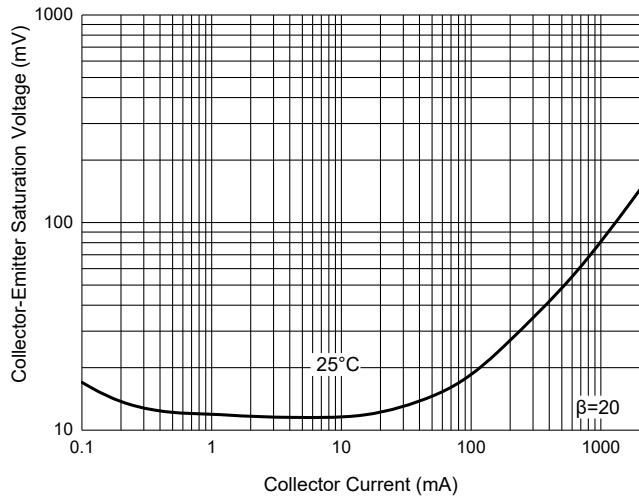


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

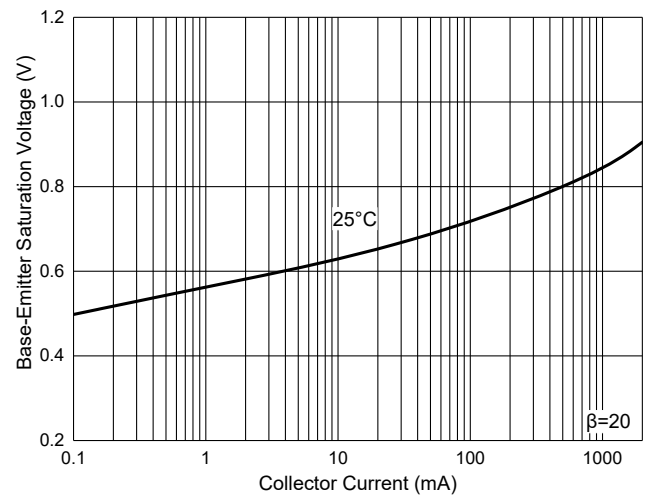


Fig. 5 - Base-Emitter on Voltage Characteristics

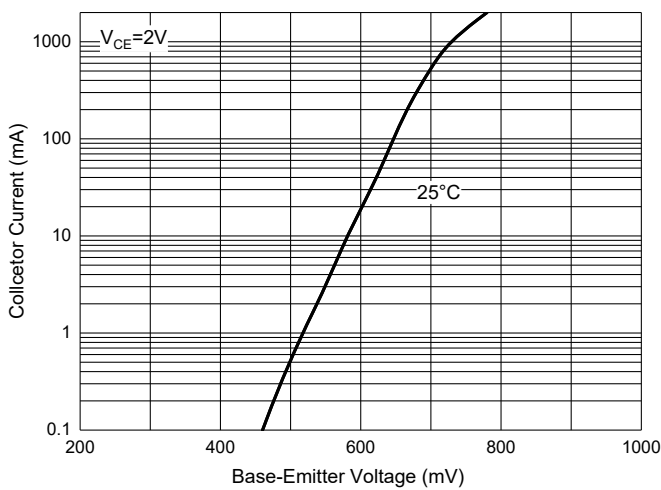


Fig. 6 -  $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

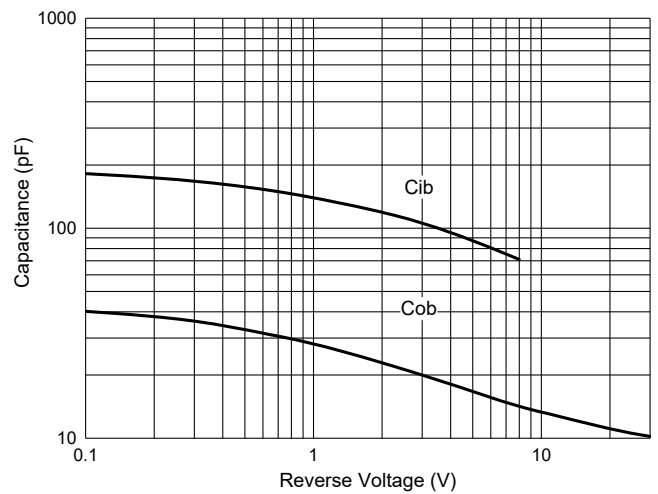
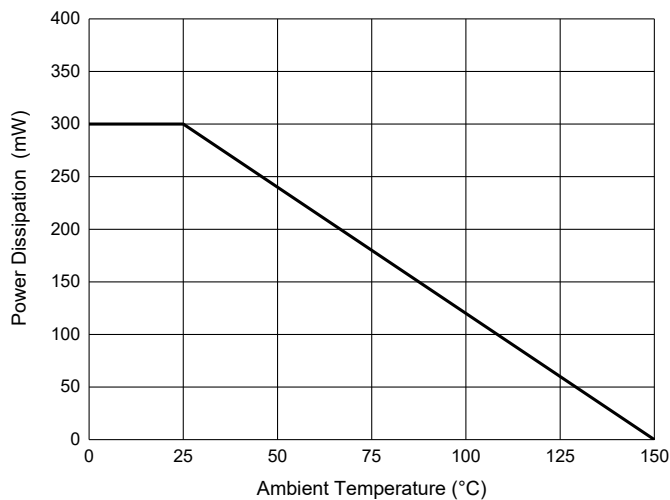


Fig. 7 - Power Derating Curve



## Ordering Information

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

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