

## 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)

## PNP General Purpose Amplifier

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

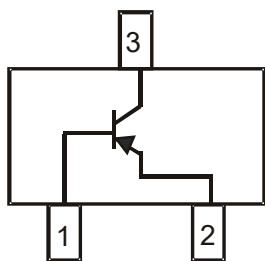
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-40	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-200	mA
Power Dissipation	$P_D$	300	mW

### Thermal characteristics

Parameter	Symbol	Rating	Unit
Operating Junction Temperature Range	$T_{OPR}$	-55~+150	°C
Storage Temperature Range	$T_{STR}$	-55~+150	°C
Thermal Resistance from Junction to Ambient	$R_{th(j-a)}$	417	°C/W

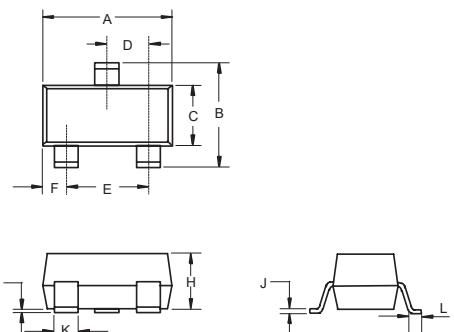
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

### Internal Structure



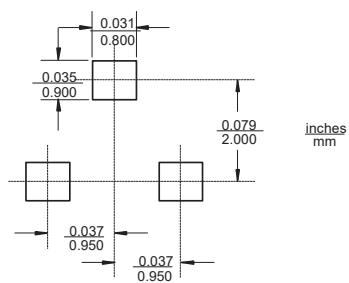
1.BASE  
2.EMITTER  
3.COLLECTOR

### 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	0.014	0.020	0.35	0.51	
L	0.007	0.020	0.20	0.50	

### Suggested Solder Pad Layout



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

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40			V	$I_C=-10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage <sup>(2)</sup>	$V_{(BR)CEO}$	-40			V	$I_C=-1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-10\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			-100	nA	$V_{CB}=-40V, I_E=0$
Collector Cutoff Current	$I_{CEX}$			-50	nA	$V_{CE}=-30V, V_{BE}=-3V$
Emitter-Base Cutoff Current	$I_{EBO}$			-100	nA	$V_{EB}=-5V, I_C=0$
DC Current Gain <sup>(2)</sup>	$h_{FE(1)}$	100		300		$V_{CE}=-1V, I_C=-10mA$
	$h_{FE(2)}$	60				$V_{CE}=-1V, I_C=-50mA$
	$h_{FE(3)}$	30				$V_{CE}=-1V, I_C=-100mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.25	V	$I_C=-10mA, I_B=-1mA$
				-0.4	V	$I_C=-50mA, I_B=-5mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-0.65		-0.85	V	$I_C=-10mA, I_B=-1mA$
				-0.95	V	$I_C=-50mA, I_B=-5mA$
Transition Frequency	$f_T$	250			MHz	$V_{CE}=-20V, I_C=-10mA, f=100MHz$
Output Capacitance	$C_{cbo}$			4.5	pF	$V_{CB}=-5V, I_E=0, f=1MHz$
Input Capacitance	$C_{ibo}$			10	pF	$V_{BE}=-0.5V, I_C=0, f=1MHz$
Noise Figure	NF			4	dB	$V_{CE}=-5V, I_C=100\mu A, R_S=1K, f=1KHz$
Delay Time	$t_d$			35	ns	$V_{CC}=-3V, I_C=-10mA$
Rise Time	$t_r$			35	ns	$V_{BE}=-0.5V, I_{B1}=I_{B2}=-1mA$
Storage Time	$t_s$			225	ns	$V_{CC}=-3V, I_C=-10mA$
Fall Time	$t_f$			75	ns	$I_{B1}=I_{B2}=-1mA$

Note: 2. Pulse Width ≤ 300μs, Duty Cycle≤2.0%

## Marking Information



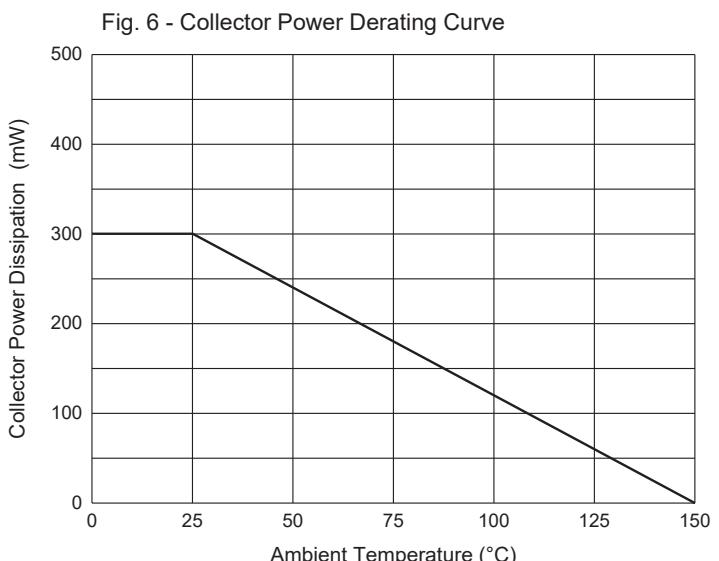
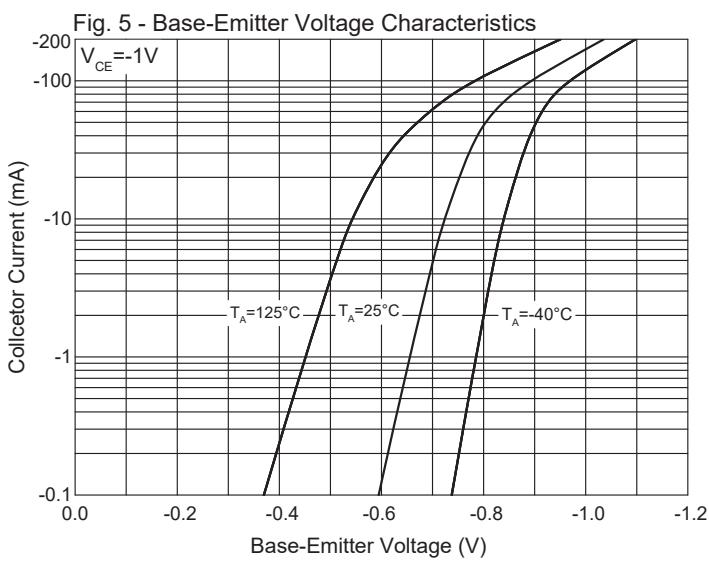
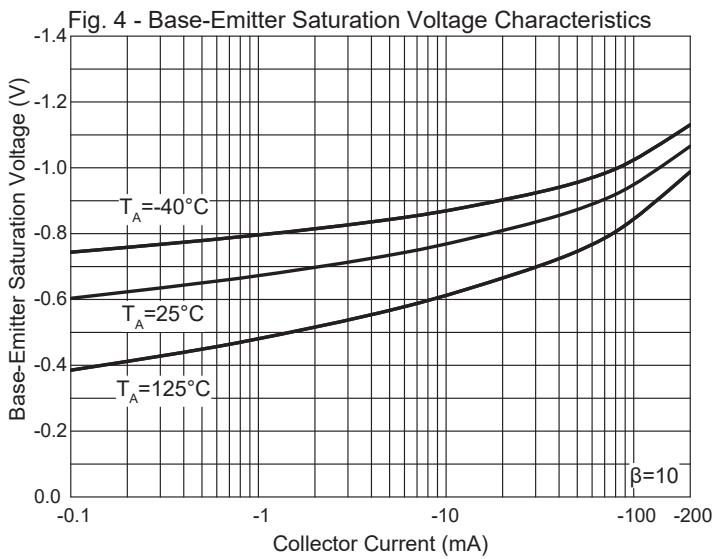
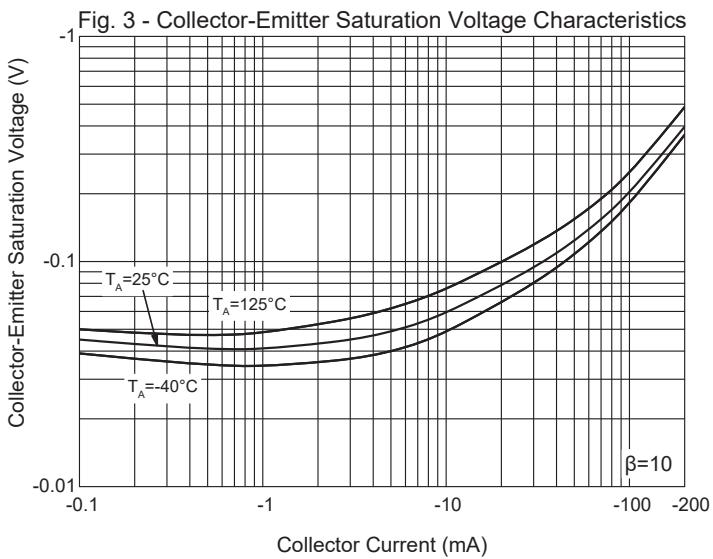
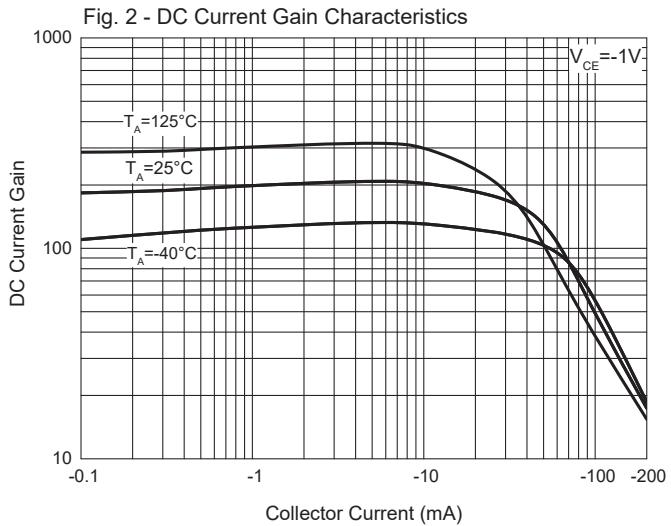
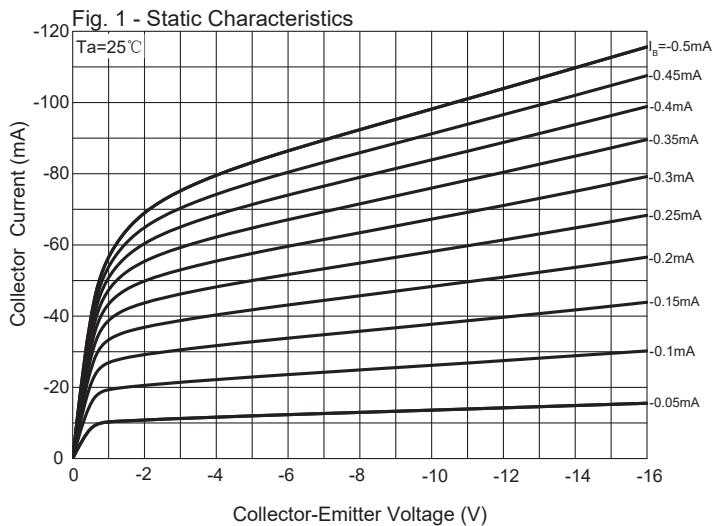
2A = Product Type Marking Code  
Y=Date Code Marking

Date code Key (2 years a cycle)

Year	2011											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	J	O	L	C	K	B	P	D	M	E	G	F

Year	2012											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	W	N	Y	T	R	H	A	I	U	X	Z	S

## Curve Characteristics



## Ordering Information

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

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