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)

NPN General Purpose Amplifier

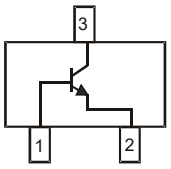
Maximum Ratings @ 25°C Unless Otherwise Specified

- 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
- Thermal Resistance: 185°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	350	mW

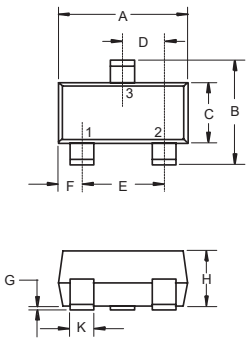
Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure



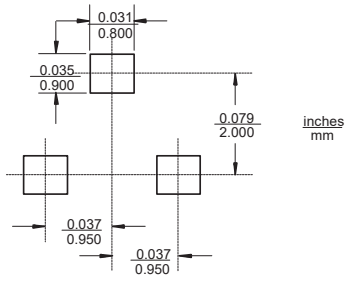
1.BASE
2.EMITTER
3.COLLECTOR

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

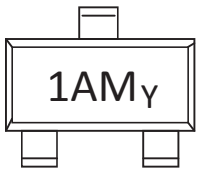


Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60			V	I_C=10μA, I_E=0
Collector-Emitter Breakdown Voltage*	$V_{(BR)CEO}$	40			V	I_C=1mA, I_B=0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	I_E=10μA, I_C=0
Collector-Base Cutoff Current	I_{CBO}			50	nA	V_{CB}=30V, I_E=0
Collector Cutoff Current	I_{CEX}			50	nA	V_{CE}=30V, V_{BE}=3V
DC Current Gain*	$h_{FE(1)}$	40				V_{CE}=1V, I_C=0.1mA
	$h_{FE(2)}$	70				V_{CE}=1V, I_C=1mA
	$h_{FE(3)}$	100		300		V_{CE}=1V, I_C=10mA
	$h_{FE(4)}$	60				V_{CE}=1V, I_C=50mA
	$h_{FE(5)}$	30				V_{CE}=1V, I_C=100mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.2	V	I_C=10mA, I_B=1mA
				0.3	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	300			MHz	V_{CE}=20V, I_C=10mA, f=100MHz
Output Capacitance	C_{cbo}			4.0	pF	V_{CB}=5V, I_E=0, f=1MHz,
Input Capacitance	C_{ibo}			8.0	pF	V_{BE}=0.5V, I_C=0, f=1MHz,
Noise Figure	NF			5	dB	V_{CE}=5V, I_C=0.1mA R_S=1KΩ, f=10Hz to 15.7KHz
Delay Time	t_d			35	ns	V_{CC}=3V, I_C=10mA
Rise Time	t_r			35	ns	V_{BE}=0.5V, I_{B1}=1mA
Storage Time	t_s			200	ns	V_{CC}=3V, I_C=10mA
Fall Time	t_f			50	ns	I_{B1}=I_{B2}=1mA

*Pulse Width ≤ 300μs, Duty Cycle≤2.0%

Marking Information



1AM=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

Fig. 1 - Static Characteristics

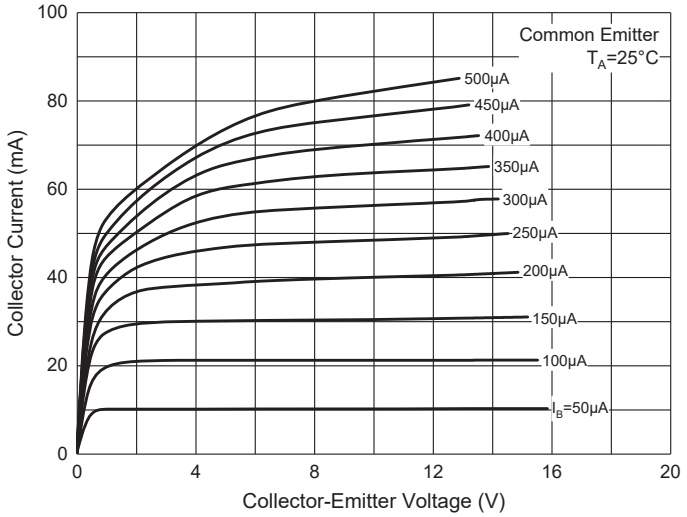


Fig. 2 - DC Current Gain Characteristics

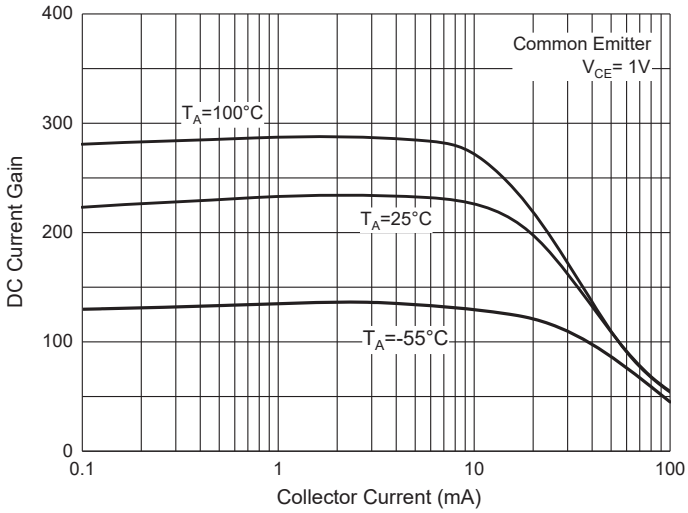


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

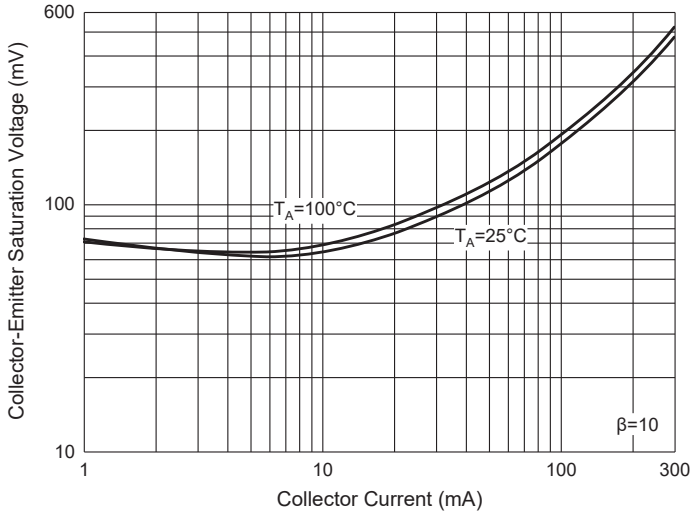


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

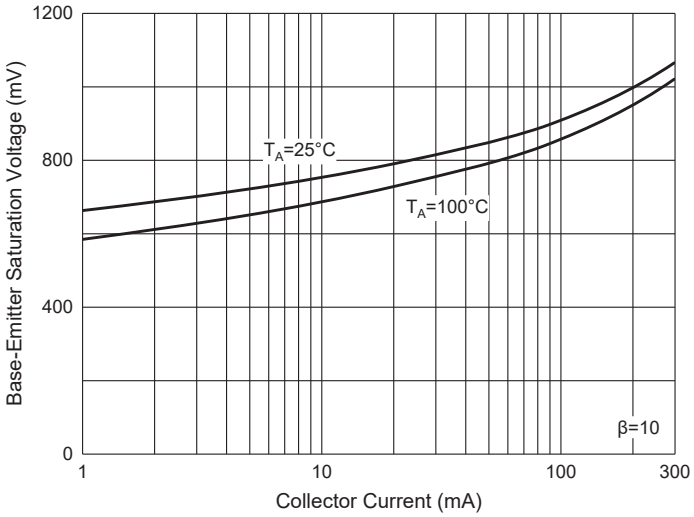


Fig. 5 - Base-Emitter Voltage Characteristics

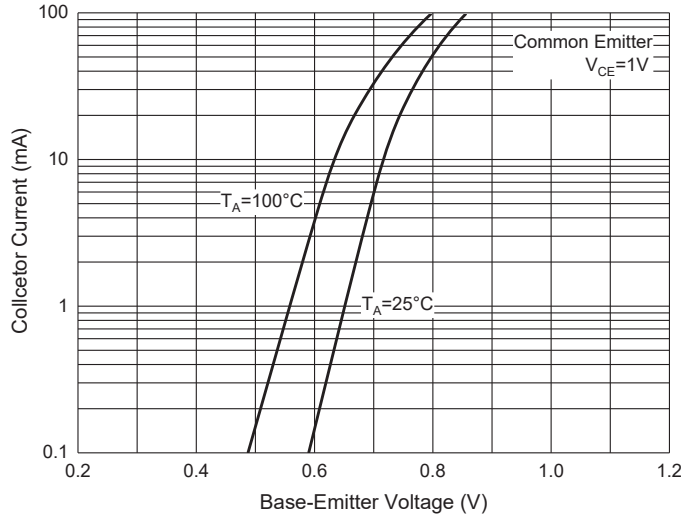
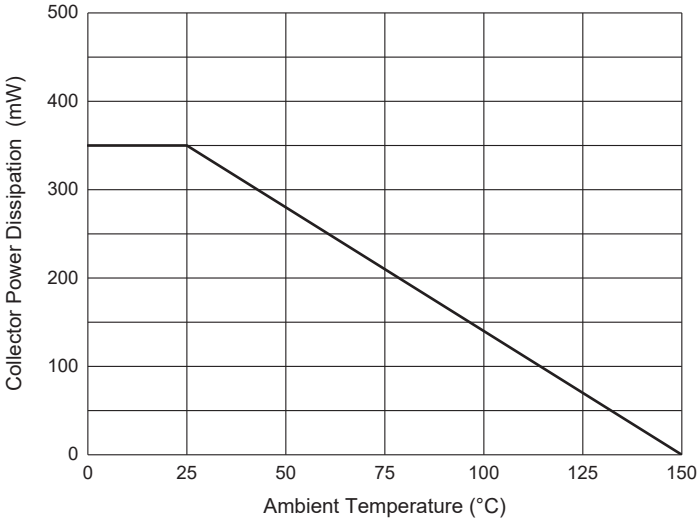


Fig. 6 - Collector Power Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel