

## Features

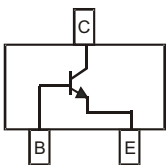
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	75	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	600	mA
Collector Power Dissipation	$P_C$	150	mW

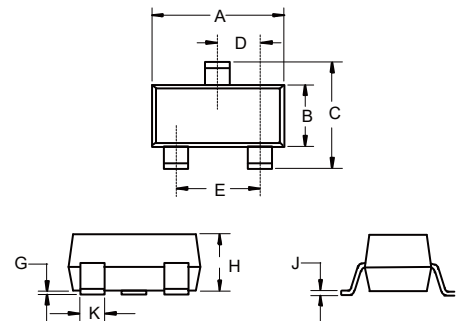
## Internal Structure



Marking: 1P

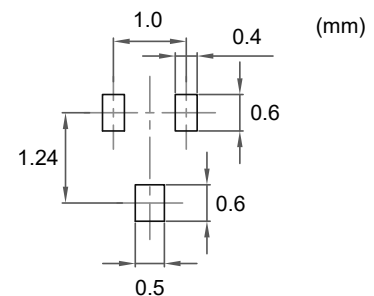
# NPN General Purpose Amplifier

## SOT-523



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.059	0.067	1.50	1.70	
B	0.030	0.033	0.75	0.85	
C	0.057	0.069	1.45	1.75	
D	0.020		0.50		TYP.
E	0.035	0.043	0.90	1.10	
G	0.000	0.004	0.00	0.10	
H	0.024	0.031	0.60	0.80	
J	0.004	0.008	0.10	0.20	
K	0.006	0.014	0.15	0.35	

## Suggested Solder Pad Layout



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

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75			V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C=10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			100	nA	$V_{CB}=70V, I_E=0$
Collector Cutoff Current	$I_{CEX}$			10	nA	$V_{CE}=\hat{I} \text{ €V}, X_{BO}=\text{HX}$
Emitter-Base Cutoff Current	$I_{EBO}$			100	nA	$V_{EB}=3V, I_C=0$
DC Current Gain <sup>(Note1)</sup>	$h_{FE(1)}$	35				$V_{CE}=10V, I_C=0.1mA$
	$h_{FE(2)}$	50				$V_{CE}=10V, I_C=1mA$
	$h_{FE(3)}$	75				$V_{CE}=10V, I_C=10mA$
	$h_{FE(4)}$	100		300		$V_{CE}=10V, I_C=150mA$
	$h_{FE(5)}$	40				$V_{CE}=10V, I_C=500mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_C=150mA, I_B=15mA$
				1.0	V	$I_C=500mA, I_B=50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1.2	V	$I_C=150mA, I_B=15mA$
				2.0	V	$I_C=500mA, I_B=50mA$
Transition Frequency	$f_T$	300			MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$
Output Capacitance	$C_{ob}$			8	pF	$V_{CB}=10V, I_E=0, f=100KHz$
Delay Time	$t_d$			10	ns	$V_{CC}=30V, V_{BE}=0.5V$
Rise Time	$t_r$			25	ns	$I_C=150mA, I_{B1}=15mA$
Storage Time	$t_s$			225	ns	$V_{CC}=30V, I_C=150mA$
Fall Time	$t_f$			60	ns	$I_{B1}=I_{B2}=15mA$

 Note: 1.Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

**Curve Characteristics**

Fig. 1 - Static Characteristics

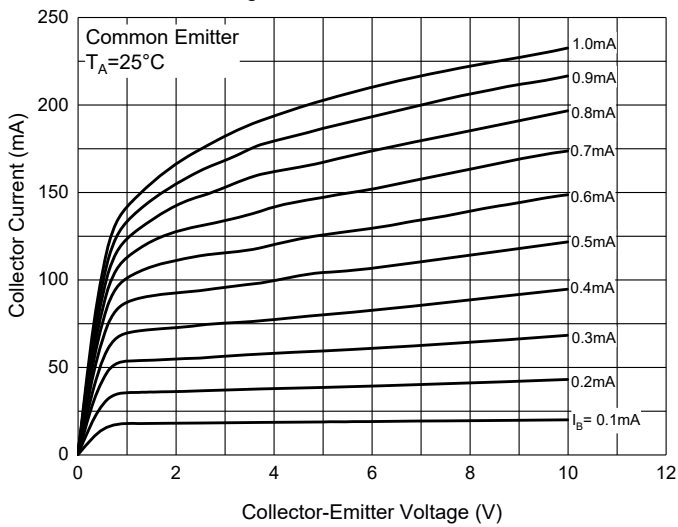


Fig. 2 - DC Current Gain Characteristics

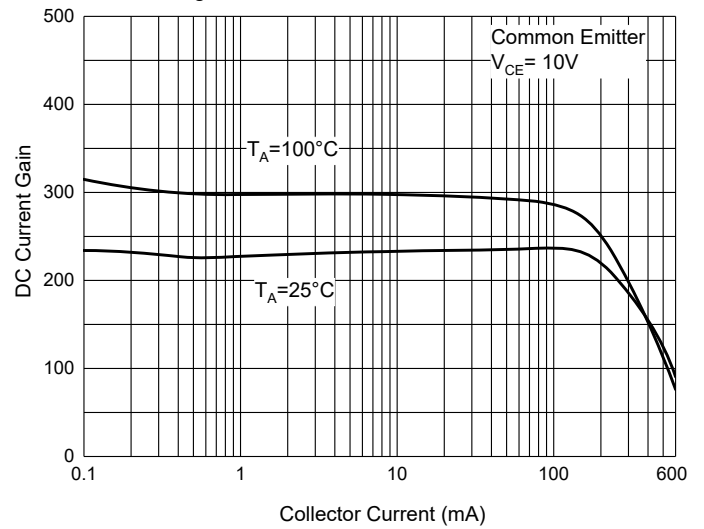


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

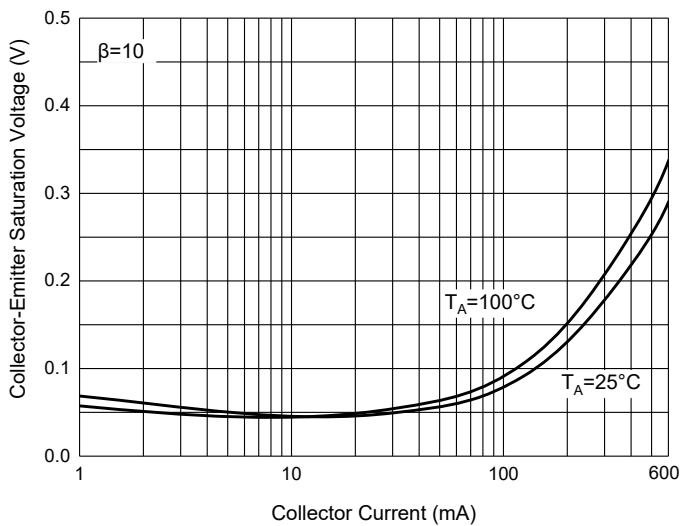


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

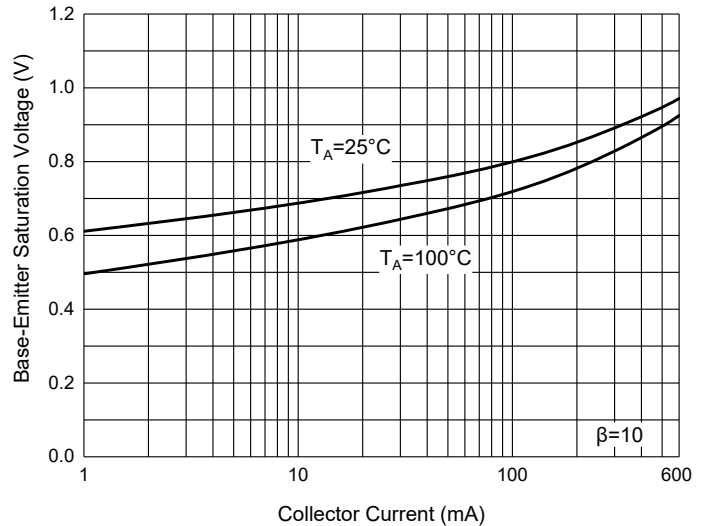


Fig. 5 - Base-Emitter Voltage Characteristics

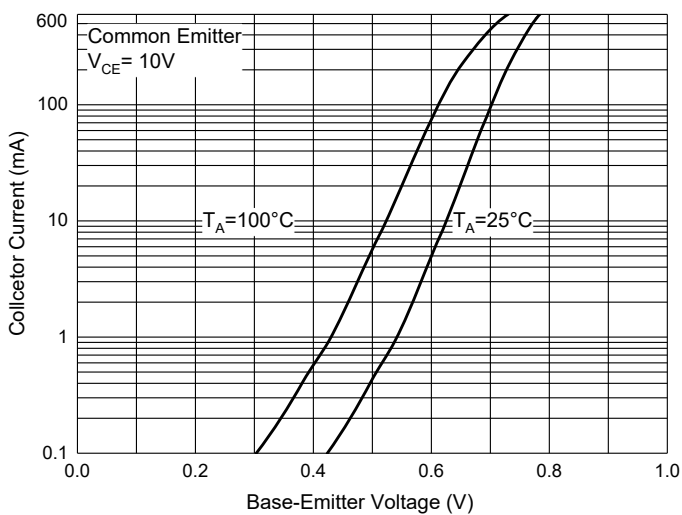
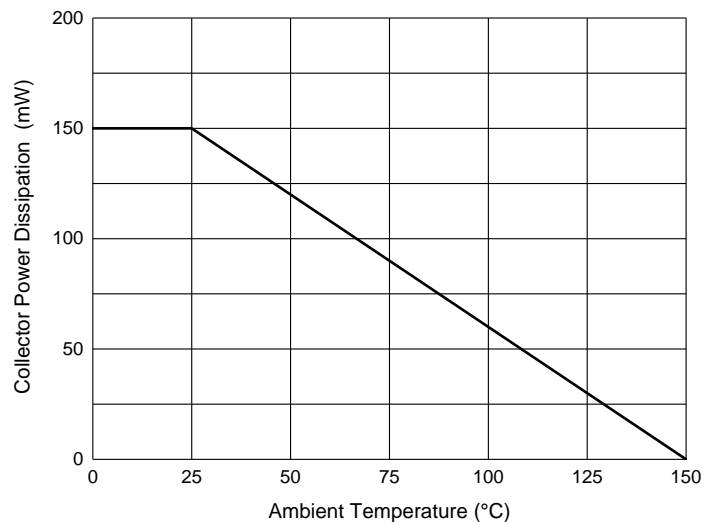


Fig. 6 - Collector Power Derating Curve



## Ordering Information

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

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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