

**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)

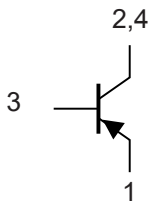
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- 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	$V_{CBO}$	-60	V
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-0.6	A
Power Dissipation	$P_D$	0.5	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**

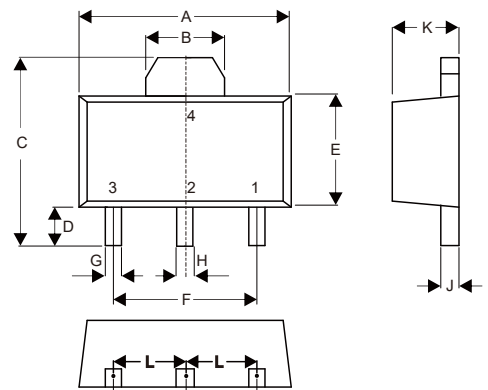


3.BASE  
2,4.COLLECTOR  
1.EMITTER

**Marking: p2F**

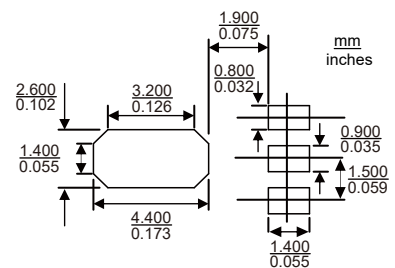
**PNP  
General Purpose  
Amplifier**

**SOT-89**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.061		1.55		TYP.
C	0.154	0.171	3.91	4.35	
D	0.031	0.047	0.80	1.20	
E	0.089	0.104	2.25	2.65	
F	0.118		3.00		TYP.
G	0.013	0.020	0.33	0.52	
H	0.015	0.021	0.38	0.53	
J	0.014	0.017	0.35	0.44	
K	0.055	0.063	1.40	1.60	
L	0.059		1.50		TYP.

**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	$I_C=-1mA, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60			V	$I_C=-10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-1mA, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			-10	nA	$V_{CB}=-50V, I_E=0$
Emitter-Base Cutoff Current	$I_{EBO}$			-10	nA	$V_{EB}=-5V, I_C=0$
DC Current Gain	$h_{FE(1)}$	75				$V_{CE}=-10V, I_C=-0.1mA$
	$h_{FE(2)}$	100				$V_{CE}=-10V, I_C=-1mA$
	$h_{FE(3)}$	100				$V_{CE}=-10V, I_C=-10mA$
	$h_{FE(4)}$	100		300		$V_{CE}=-10V, I_C=-150mA$
	$h_{FE(5)}$	50				$V_{CE}=-10V, I_C=-500mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.4	V	$I_C=-150mA, I_B=-15mA$
				-1.6	V	$I_C=-500mA, I_B=-50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.3	V	$I_C=-150mA, I_B=-15mA$
				-2.6	V	$I_C=-500mA, I_B=-50mA$
Transition Frequency	$f_T$	200			MHz	$V_{CE}=-10V, I_C=-20mA, f=100MHz$
Delay Time	$t_d$			12	ns	$V_{CC}=-30V, I_C=-150mA,$ $I_{B1}=-I_{B2}=-15mA$
Rise Time	$t_r$			30	ns	
Turn On Time	$t_{on}$			40	ns	
Storage Time	$t_s$			300	ns	
Fall Time	$t_f$			65	ns	
Turn Off Time	$t_{off}$			365	ns	

**Curve Characteristics**

Fig. 1 - Static Characteristics

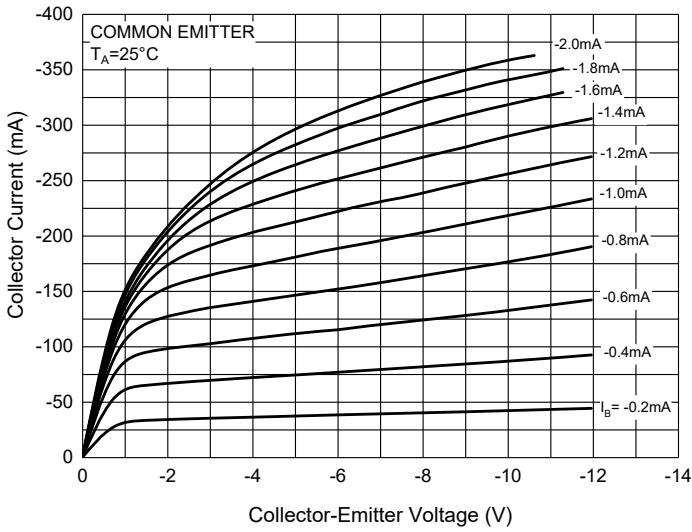


Fig. 2 - DC Current Gain Characteristics

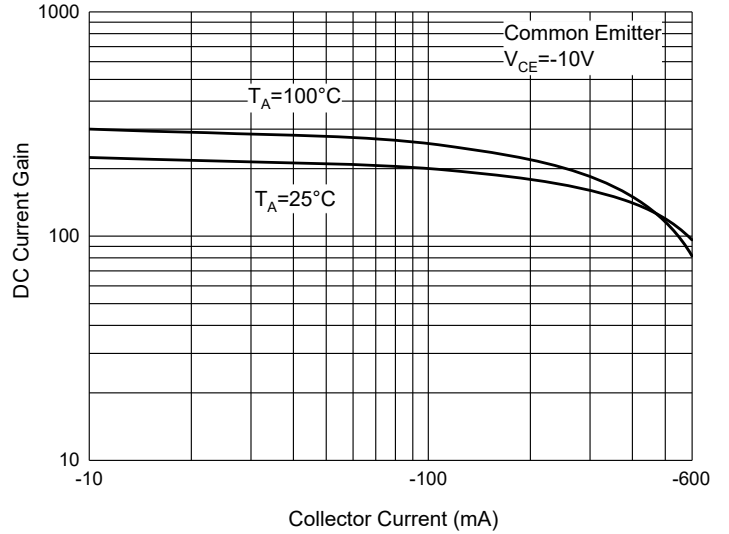


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

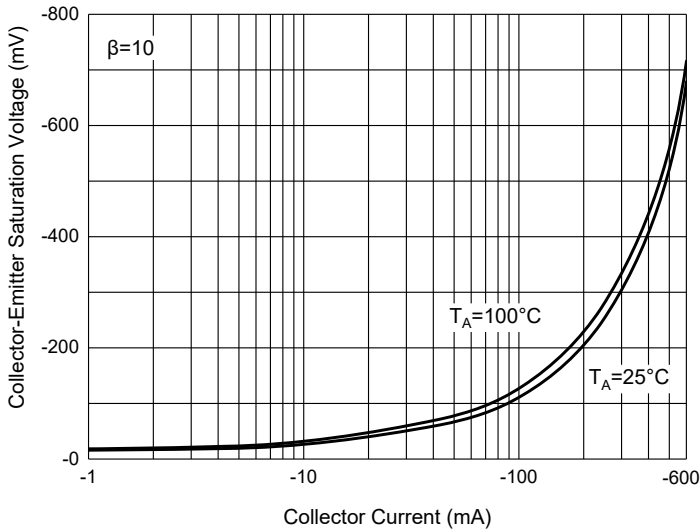


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

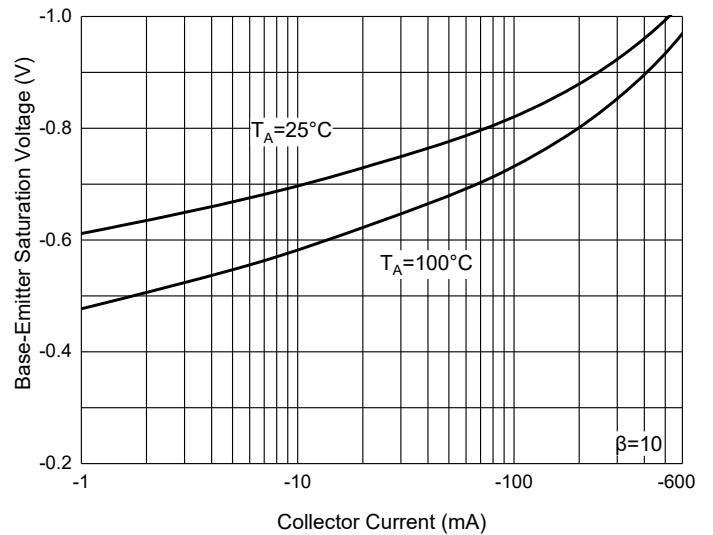


Fig. 5 - Base-Emitter Voltage Characteristics

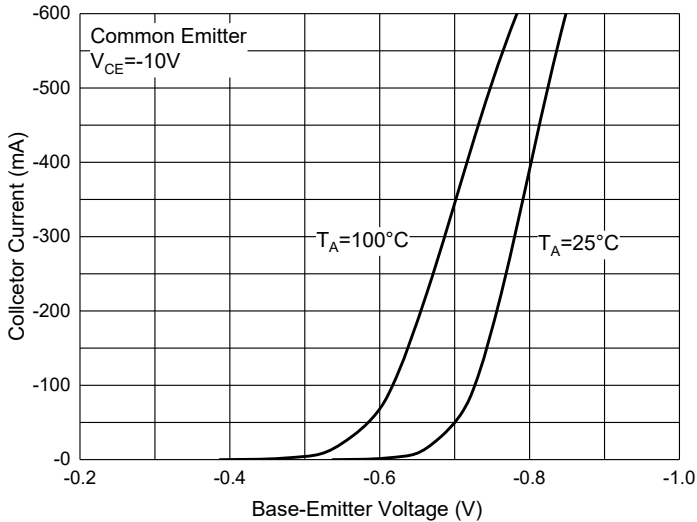
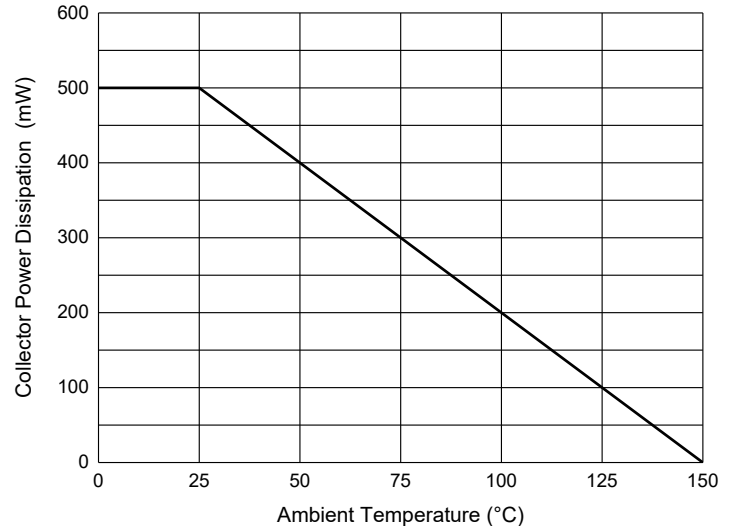


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 1Kpcs/Reel

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