

**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)

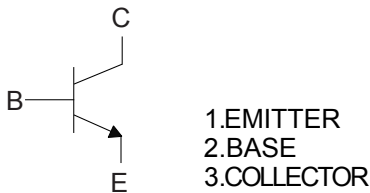
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 200°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	180	V
Collector-Emitter Voltage	$V_{CEO}$	160	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Continuous Collector Current	$I_C$	600	mA
Power Dissipation	$P_D$	625	mW

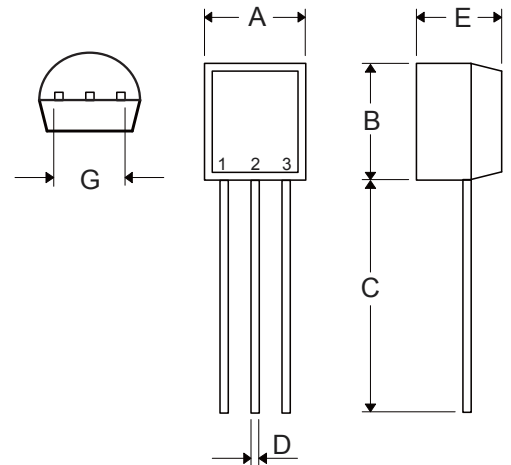
**Marking:**Type Number

**Internal Structure**



# NPN General Purpose Amplifier Transistor

TO-92



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.169	0.185	4.30	4.70	
C	0.500	-----	12.70	-----	
D	0.015	0.022	0.38	0.55	
E	0.130	0.146	3.30	3.70	
G	0.095	0.105	2.42	2.67	Straight Lead
	0.173	0.220	4.40	5.60	Bent

**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	180			V	$I_C=100\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage*	$V_{(BR)CEO}$	160			V	$I_C=1\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu\text{A}, I_C=0$
Collector Cut-off Current	$I_{CBO}$			0.05	$\mu\text{A}$	$V_{CB}=35\text{V}, I_E=0$
				50	$\mu\text{A}$	$V_{CB}=120\text{V}, I_E=0, T_A=100^\circ\text{C}$
Emitter Cut-off Current	$I_{EBO}$			0.05	$\mu\text{A}$	$V_{EB}=5\text{V}, I_C=0$
DC Current Gain*	$h_{FE(1)}$	80				$V_{CE}=5\text{V}, I_C=1\text{mA}$
	$h_{FE(2)}$	80		300		$V_{CE}=5\text{V}, I_C=10\text{mA}$
	$h_{FE(3)}$	30				$V_{CE}=5\text{V}, I_C=50\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.5	V	$I_C=50\text{mA}, I_B=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1	V	$I_C=50\text{mA}, I_B=5\text{mA}$
Transition Frequency	$f_T$	100		300	MHz	$V_{CE}=10\text{V}, I_C=10\text{mA}$
Collector Output Capacitance	$C_{ob}$			6	pF	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$
Input Capacitance	$C_{ibo}$			20	pF	$V_{CE}=10\text{V}, I_C=0, f=1\text{MHz}$

\*.Pulse test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 2.0\%$ .

## Curve Characteristics

Fig. 1 - Static Characteristics

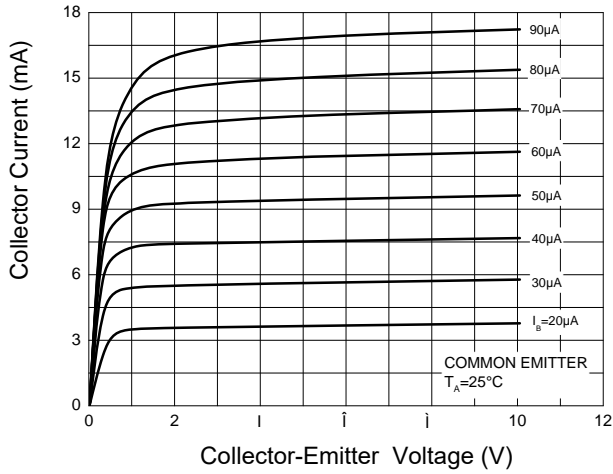


Fig. 2 - DC Current Gain Characteristics

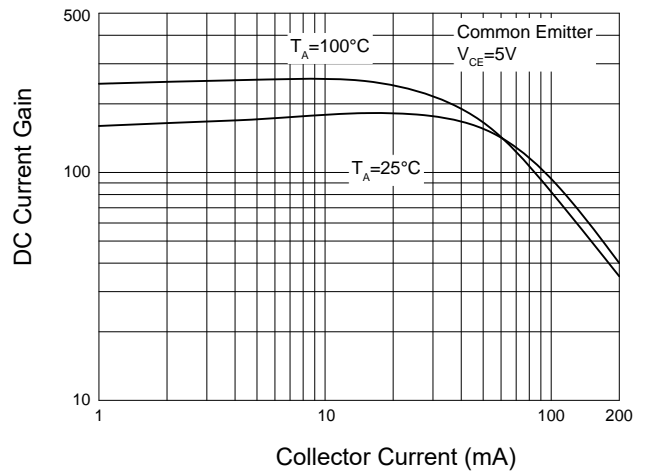


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

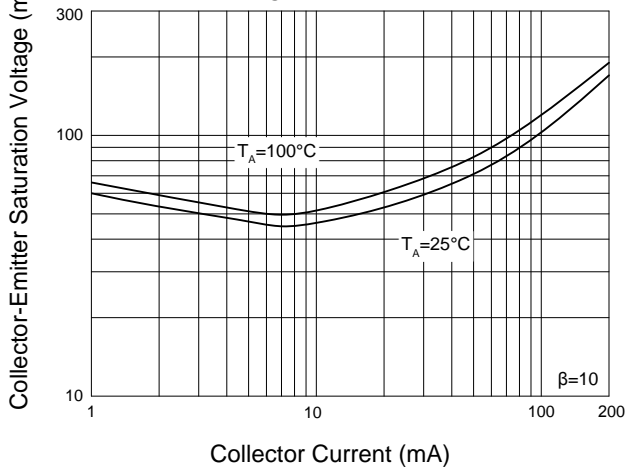


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

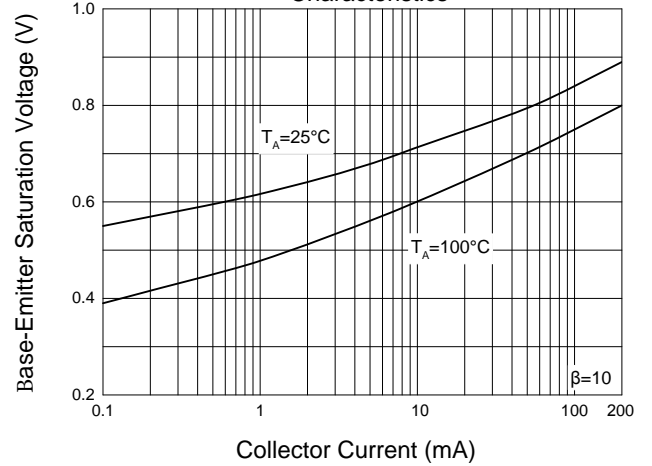


Fig. 5 - Base-Emitter Voltage Characteristics

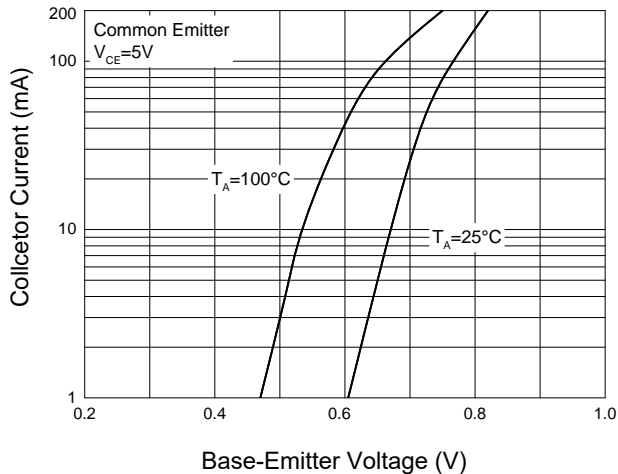
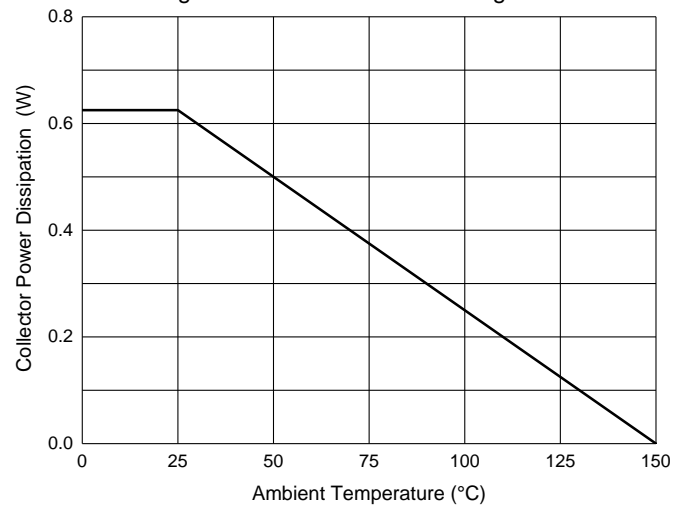


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 100Kpcs/Carton

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

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