

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)

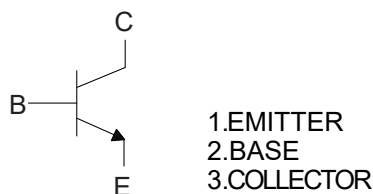
Maximum Ratings @ 25°C Unless Otherwise Specified

- 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}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	600	mA
Power Dissipation	P_D	625	mW

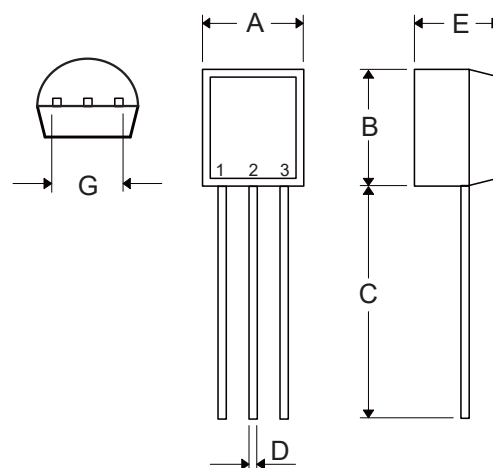
Marking: Type Number

Internal Structure



NPN General Purpose Amplifier

TO-92



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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	$V_{(BR)CBO}$	60			V	$I_C=100\mu\text{A}$, $I_E=0$
Collector-Emitter Breakdown Voltage*	$V_{(BR)CEO}$	40			V	$I_C=1\text{mA}$, $I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=100\mu\text{A}$, $I_C=0$
Base Cutoff Current	I_{BL}			0.1	μA	$V_{CE}=35\text{V}$, $V_{BE}=0.4\text{V}$
Collector Cut-off Current	I_{CEX}			0.1	μA	$V_{CE}=35\text{V}$, $V_{BE}=0.4\text{V}$
DC Current Gain*	$h_{FE(1)}$	20				$V_{CE}=1\text{V}$, $I_C=0.1\text{mA}$
	$h_{FE(2)}$	40				$V_{CE}=1\text{V}$, $I_C=1\text{mA}$
	$h_{FE(3)}$	80				$V_{CE}=1\text{V}$, $I_C=10\text{mA}$
	$h_{FE(4)}$	100		300		$V_{CE}=1\text{V}$, $I_C=150\text{mA}$
	$h_{FE(5)}$	40				$V_{CE}=1\text{V}$, $I_C=500\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.4	V	$I_C=150\text{mA}$, $I_B=15\text{mA}$
				0.75	V	$I_C=500\text{mA}$, $I_B=50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.75		0.95	V	$I_C=150\text{mA}$, $I_B=15\text{mA}$
				1.2	V	$I_C=500\text{mA}$, $I_B=50\text{mA}$
Transition Frequency	f_T	250			MHz	$V_{CE}=10\text{V}$, $I_C=20\text{mA}$, $f=100\text{MHz}$
Delay Time	t_d			15	ns	$V_{CC}=30\text{V}$, $V_{BE}=0.2\text{V}$, $I_C=150\text{mA}$, $I_{B1}=15\text{mA}$
Rise Time	t_r			20	ns	
Storage Time	t_s			225	ns	$V_{CC}=30\text{V}$, $I_C=150\text{mA}$, $I_{B1}=I_{B2}=15\text{mA}$
Fall Time	t_f			30	ns	
Collector-Base Capacitance	C_{cb}			6.5	pF	$V_{CB}=5\text{V}$, $I_E=0$, $f=100\text{KHz}$
Emitter-Base Capacitance	C_{eb}			30	pF	$V_{EB}=0.5\text{V}$, $I_C=0$, $f=100\text{KHz}$

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

Curve Characteristics

Fig. 1 - Static Characteristics

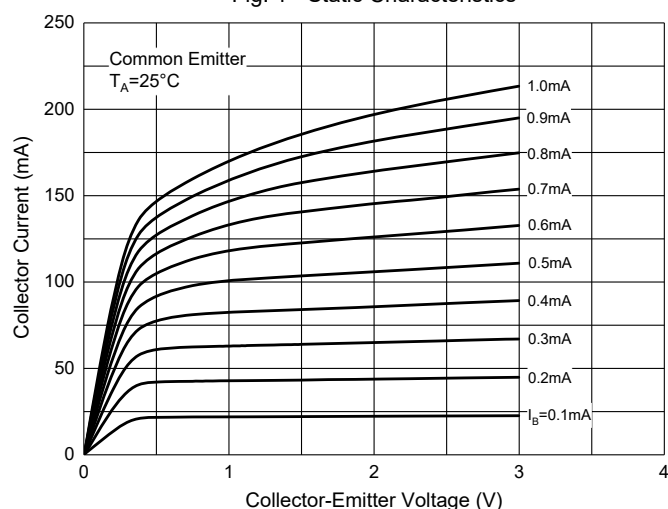


Fig. 2 - DC Current Gain Characteristics

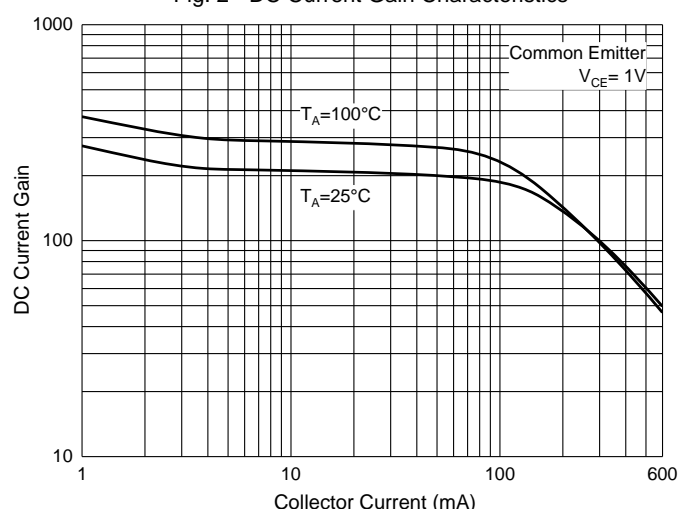


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

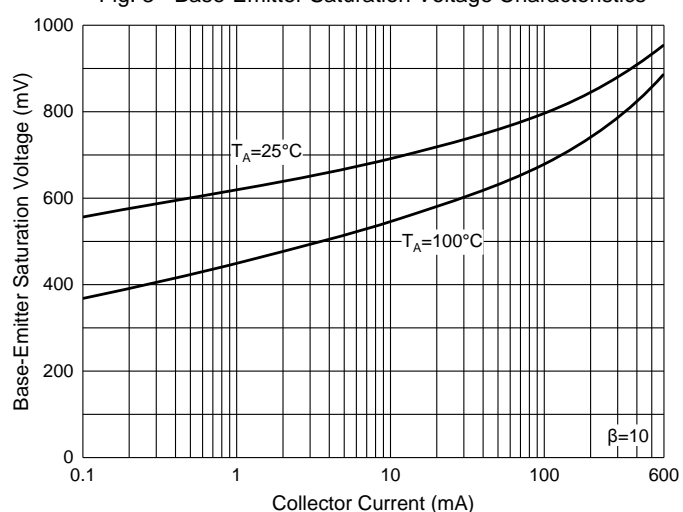


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

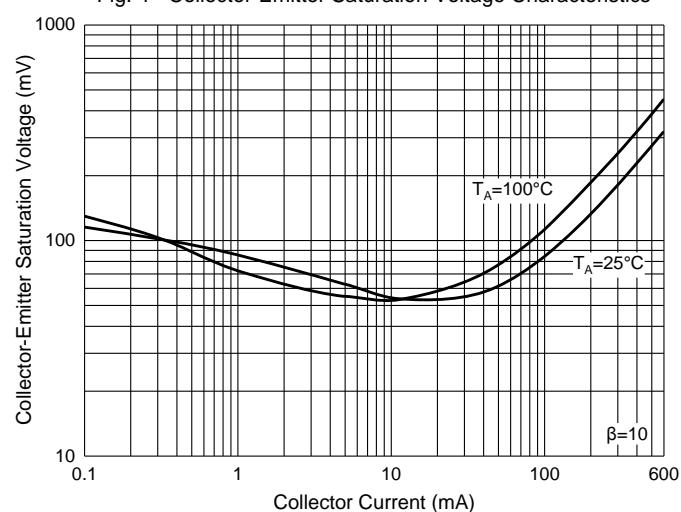


Fig. 5 - Base-Emitter Voltage Characteristics

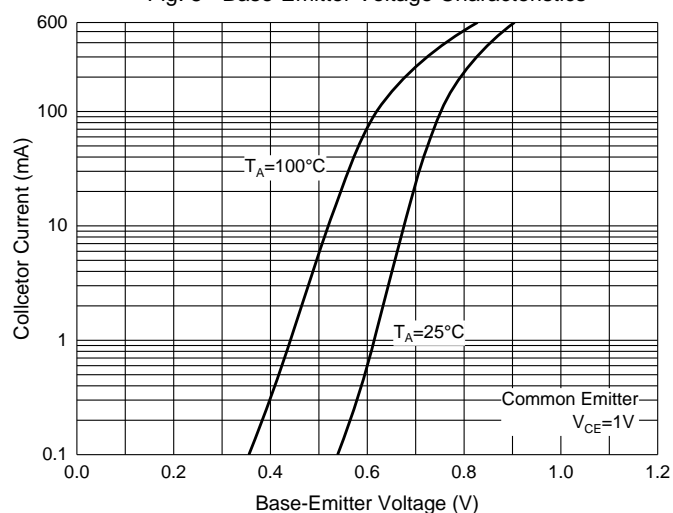
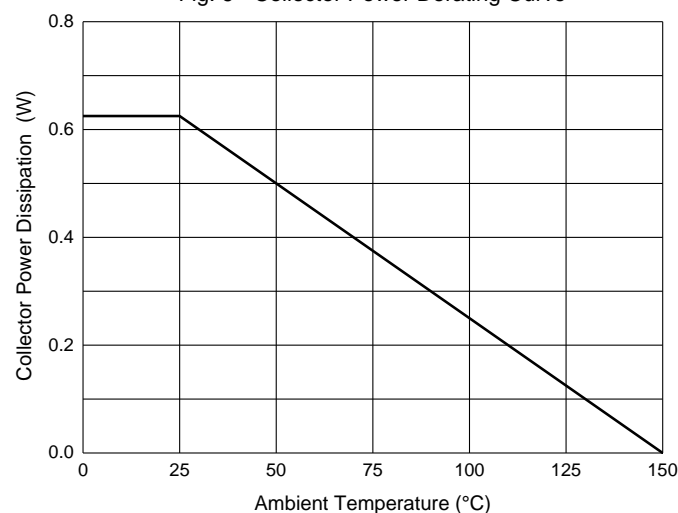


Fig. 6 - Collector Power Derating Curve



Ordering Information

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 1k/Bag, 100K/Ctn;

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

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