

### Features

- Audio Frequency Power Amplifier & Medium Speed Switching
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

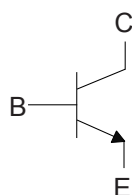
### Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 166.7°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	50	V
		60	
Collector-Emitter Voltage	$V_{CEO}$	60	V
		120	
Emitter-Base Voltage	$V_{EBO}$	6	V
Continuous Collector Current	$I_C$	1	A
Peak Collector Current	$I_{CM}$	2	A
Collector Power Dissipation	$P_C$	0.75	W

**Marking:**D1616 X

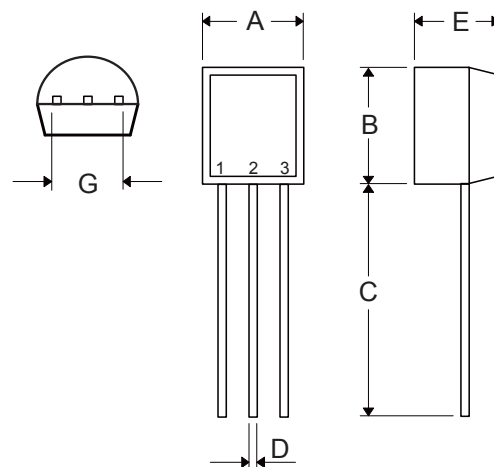
### Internal Structure



1.EMITTER  
2.COLLECTOR  
3.BASE

## NPN Silicon Epitaxial Transistors

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<sub>A</sub>=25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector Cut-off Current	I <sub>CBO</sub>			100	nA	V <sub>CB</sub> =60V, I <sub>E</sub> =0
Emitter Cutoff Current	I <sub>EBO</sub>			100	nA	V <sub>EB</sub> =6V, I <sub>C</sub> =0
DC Current Gain	h <sub>FE(1)</sub>	135			600	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
		135			400	
DC Current Gain	h <sub>FE(2)</sub>	81				V <sub>CE</sub> =2V, I <sub>C</sub> =1A
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>		0.15	0.3	V	I <sub>C</sub> =1A, I <sub>B</sub> =50mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>		0.9	1.2	V	I <sub>C</sub> =1.5A, I <sub>B</sub> =75mA
Base-Emitter On Voltage	V <sub>BE(on)</sub>	0.6	0.64	0.7	V	V <sub>CE</sub> =2V, I <sub>C</sub> =50mA
Transition Frequency	f <sub>T</sub>	100	160		MHz	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
Turn On Time	t <sub>ON</sub>		70		ns	V <sub>CC</sub> =10V, V <sub>BE(OFF)</sub> =-2~-3V, I <sub>C</sub> =100mA, I <sub>B1</sub> =I <sub>B2</sub> =10mA
Storage Time	t <sub>STG</sub>		950		ns	
Fall Time	t <sub>F</sub>		70		ns	
Output Capacitance	C <sub>ob</sub>		19		pF	V <sub>CE</sub> =10V, I <sub>E</sub> =0, f=1MHz

**Classification of h<sub>FE(1)</sub>**

Rank	Y	G	L
Range	135-270	200-400	300-600

**Curve Characteristics**

Fig. 1 - Static Characteristics

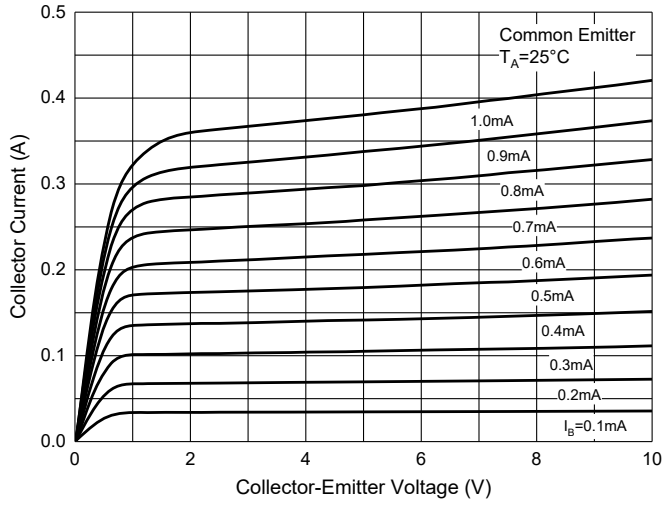


Fig. 2 - DC Current Gain Characteristics

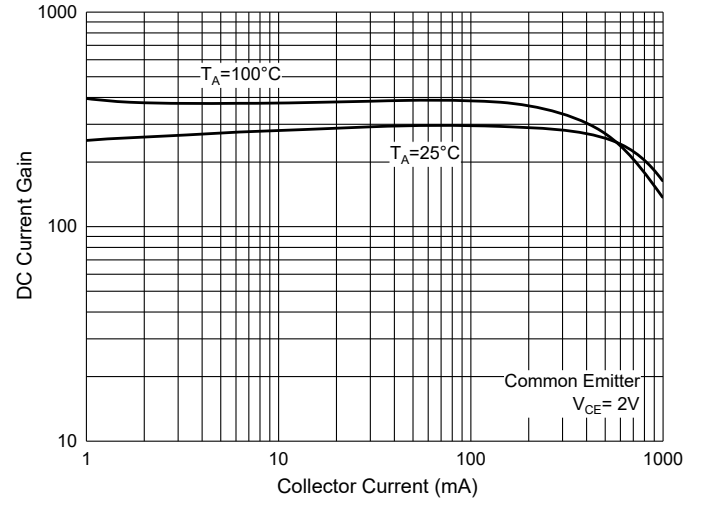


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

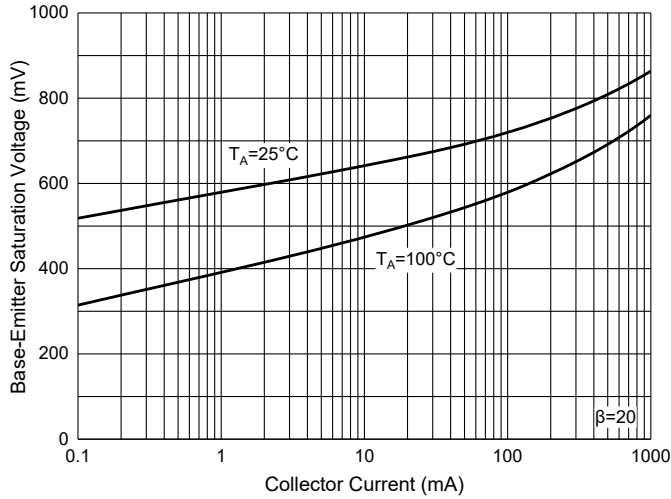


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

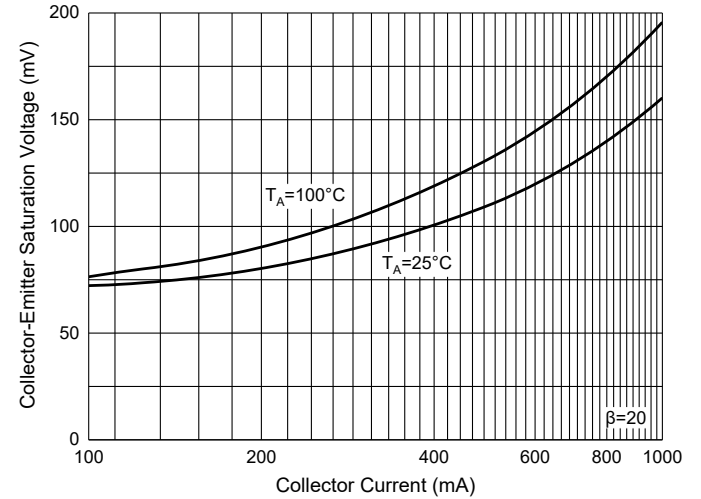


Fig. 5 - Base-Emitter Voltage Characteristics

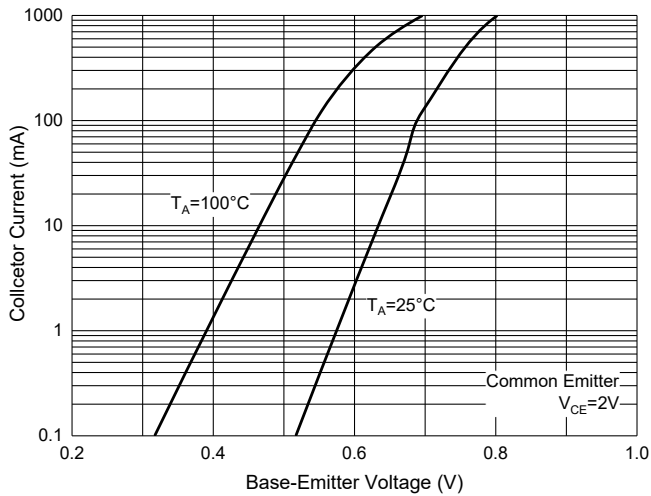
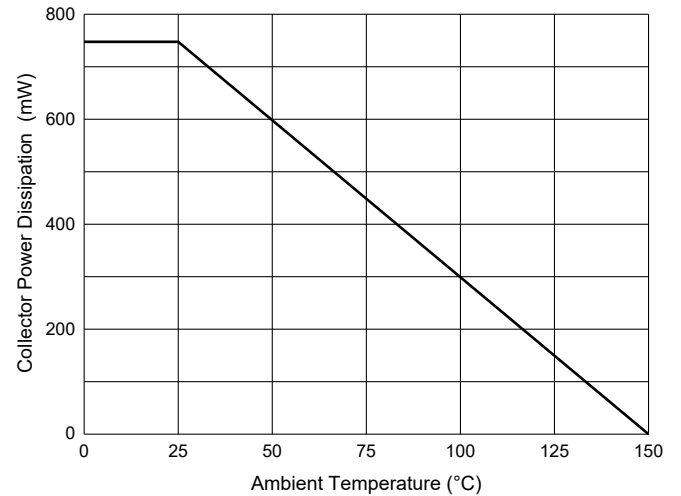


Fig. 6 - Collector Power Derating Curve



## 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-AP-HF

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