



**TRANSISTOR (PNP)**

**FEATURES**

- Epitaxial Planar Die Construction
- Complementary NPN Type Available
- Also Available in Lead Free Version

**MARKING:3N**



**MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)**

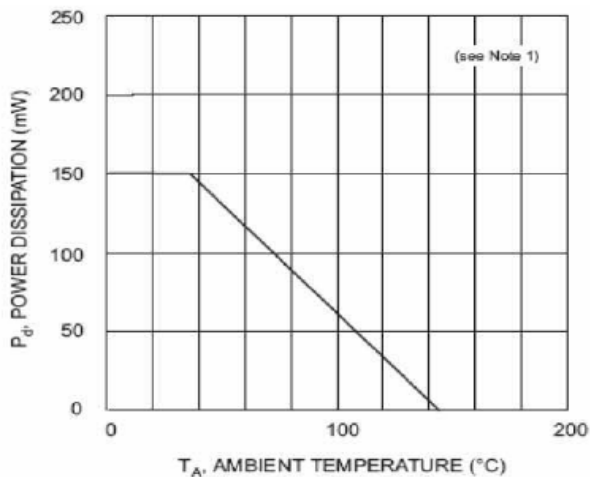
Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	-40	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-40	V
V <sub>EBO</sub>	Emitter-Base Voltage	-5.0	V
I <sub>C</sub>	Collector Current -Continuous	-200	mA
P <sub>C</sub>	Collector Power Dissipation	150	mW
R <sub>eJA</sub>	Thermal Resistance, Junction to Ambient	833	°C/W
T <sub>J</sub>	Operating Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

**ELECTRICAL CHARACTERISTICS(T<sub>amb</sub>=25°C unless otherwise specified)**

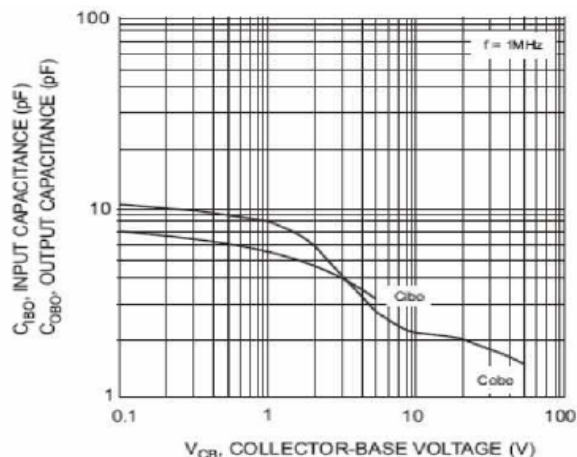
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	-40			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-40			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-30V, I <sub>E</sub> =0			-0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-5V, I <sub>C</sub> =0			-0.1	μA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-0.1mA	60			
	h <sub>FE(2)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-1mA	80			
	h <sub>FE(3)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-10mA	100		300	
	h <sub>FE(4)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-50mA	60			
	h <sub>FE(5)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-100mA	30			
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-0.25	V
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-0.4	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA	-0.65		-0.85	V
	V <sub>BE(sat)2</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-0.95	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =-10mA, f=100MHz	250			MHz
Collector output capacitance	C <sub>obo</sub>	V <sub>CB</sub> =-5V, I <sub>E</sub> =0, f=1MHz			4.5	pF
Input capacitance	C <sub>iob</sub>	V <sub>EB</sub> =-0.5V, I <sub>E</sub> =0, f=1MHz			10	pF
Noise figure	NF	V <sub>CE</sub> =-5V, I <sub>C</sub> =0.1mA,			4	dB
Delay time	t <sub>d</sub>	V <sub>CC</sub> =-3V, V <sub>BE(OFF)</sub> =-0.5V			35	nS
Rise time	t <sub>r</sub>	I <sub>C</sub> =-10mA, I <sub>B1</sub> =-1mA			35	nS
Storage time	t <sub>s</sub>	V <sub>CC</sub> =-3V, I <sub>C</sub> =-10mA			225	nS
Fall time	t <sub>f</sub>	I <sub>B1</sub> = I <sub>B2</sub> =- 1mA			75	nS



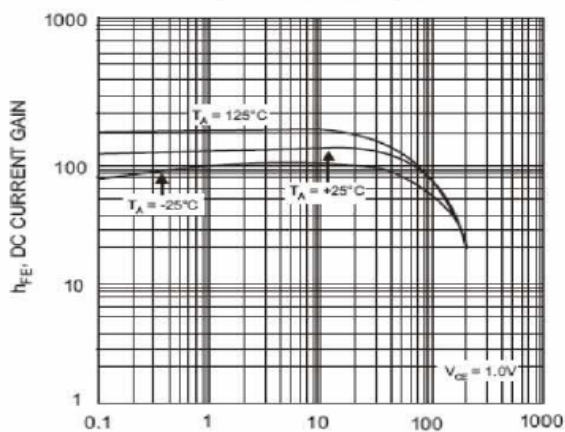
# Typical Characteristics



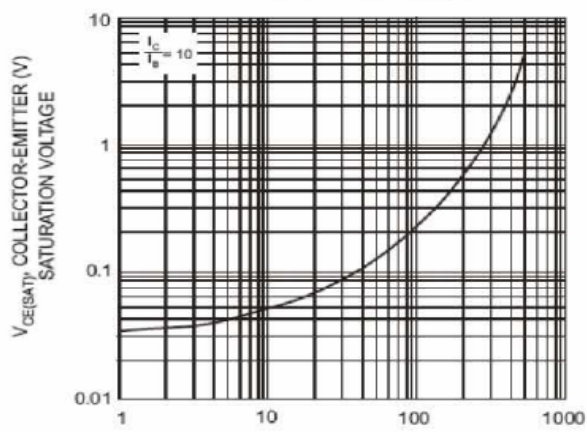
$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 1, Power Derating Curve



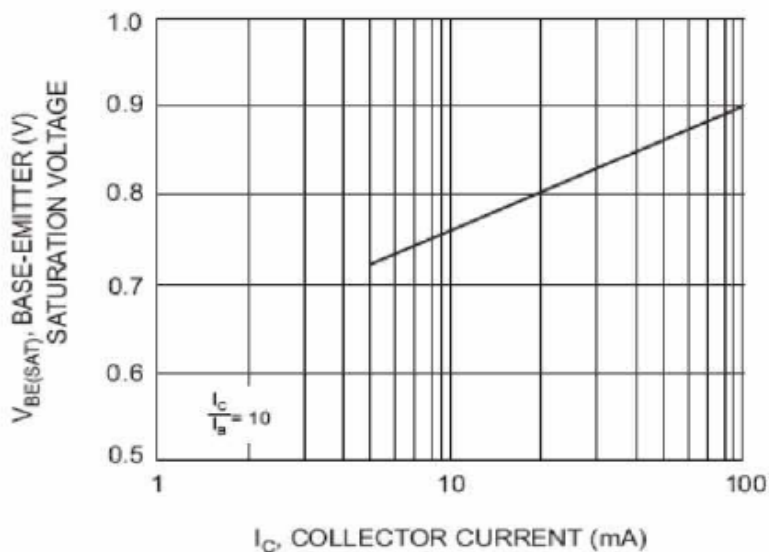
$V_{CB}$ , COLLECTOR-BASE VOLTAGE (V)  
Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 3, Typical DC Current Gain vs. Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current