MOSPEC

MEDIUM-POWER HIGH VOLTAGE PNP POWER TRANSISTORS

Designed for high-speed switching and linear amplifier application for high-voltage operational amplifier,switching regulators,converters,inverters,deflection stages and hig fidelity amplifiers.

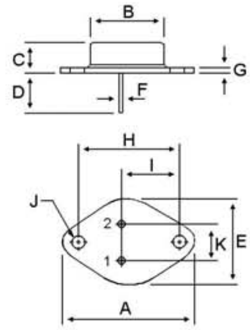
FEATURES:

* Collector-Emitter Sustaining Voltage-
$V_{CEO(SUS)}$=225-350V@I_C=200mA
*Usable DC Current Gain to 2.0A

PNP
2N6211
2N6212
2N6213

2 AMPERES
POWER TRANSISTOR
PNP SILICON
225-350 VOLTS
35 WATTS

TO-66



PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	30.60	32.52
B	13.85	14.16
C	6.54	7.22
D	9.50	10.50
E	17.26	18.46
F	0.76	0.92
G	1.38	1.65
H	24.16	24.78
I	13.84	15.60
J	3.32	3.92
K	4.86	5.34

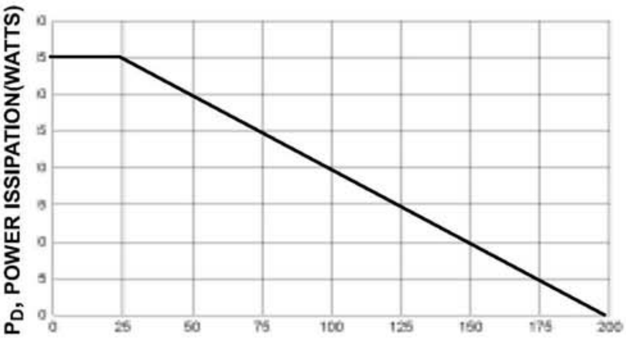
MAXIMUM RATINGS

Rating	Symbol	2N6211	2N6212	2N6213	Unit
Collector-Base Voltage	V_{CBO}	275	350	400	V
Collector-Emitter Voltage	V_{CEO}	225	300	350	V
Emitter-Base Voltage	V_{EBO}	6.0			V
Collector Current-Continuous Peak	I_C I_{CM}	2.0 5.0			A
Base Current	I_B	1.0			A
Total Device Dissipation @ T_C=25°C Derate above 25°C	P_D	35 0.2			Watts W/°C
Operating and Storage Junction Temperature Range	T_J , T_{STG}	-65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance to Case	$R_{θJC}$	5.0	°C/W

FIGURE-1 POWER DETATING



T_C, TEMPERATURE(℃)

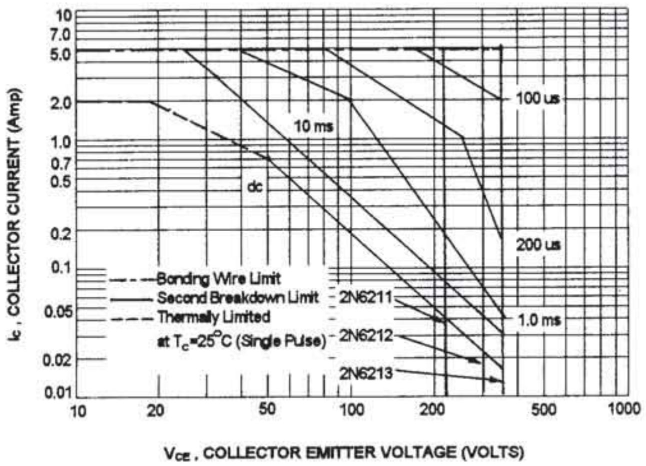
ELECTRICAL CHARACTERISTICS (T_c = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage(1) (I_C= 200mA, I_B= 0)	2N6211 2N6212 2N6213	$V_{CEO(sus)}$	225 300 350		V
Collector-Emitter Sustaining Voltage (I_C= 200mA, I_B= 0, R_{BE}= 50 Ω)	2N6211 2N6212 2N6213	$V_{CER(sus)}$	250 325 375		V
Emitter-Base Breakdown Voltage (I_E= 0.5mA, I_C= 0) (I_E= 1.0mA, I_C= 0)	2N6212 2N6213 2N6211	V_{EBO}	6.0 6.0		V
Collector Cutoff Current (V_{CE}= 250V, $V_{BE(off)}$= 1.5V) (V_{CE}= 315V, $V_{BE(off)}$= 1.5V) (V_{CE}= 360V, $V_{BE(off)}$= 1.5V)	2N6211 2N6212 2N6213	I_{CEV}		0.5 0.5 0.5	mA
Collector Cutoff Current (V_{CE}= 150 V, I_B= 0)	All Types	I_{CEO}		5.0	mA
Emitter Cutoff Current (V_{BE}= 6.0 V, I_C= 0)	2N6211 2N6212 2N6213	I_{EBO}		1.0 0.5 0.5	mA
ON CHARACTERISTICS (1)					
DC Current Gain (V_{CE}= 2.8 V , I_C= 1.0 A) (V_{CE}= 3.2 V, I_C= 1.0 A) (V_{CE}= 4.0 V, I_C= 1.0 A)	2N6211 2N6212 2N6213	h_{FE}	10 10 10	100 100 100	
Collector-Emitter Saturation Voltage (I_C =1.0 A, I_B= 125 mA)	2N6211 2N6212 2N6213	$V_{CE(sat)}$		1.4 1.6 2.0	V
Base-Emitter Saturation Voltage (I_C =1.0 A, I_B= 125 mA)		$V_{BE(sat)}$		1.4	V
DYNAMIC CHARACTERISTICS					
Current Gain-Bandwidth Product (2) (I_C= 200mA , V_{CE}= 10 V, f = 5 MHz)		f_T	10		MHz
Output Capacitance (V_{CB}= 10V, I_E= 0, f= 1.0 MHz)		C_{ob}		220	pF
SWITCHING CHARACTERISTICS					
Rise Time	V_{CC}= 200V, I_C= 1A I_{B1}= $-I_{B2}$= 125mA	t_r		0.6	us
Storage Time		t_s		2.5	us
Fall Time		t_f		0.6	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle ≦ 2.0%

(2) $f_T = |h_{fe}| \cdot f_{test}$

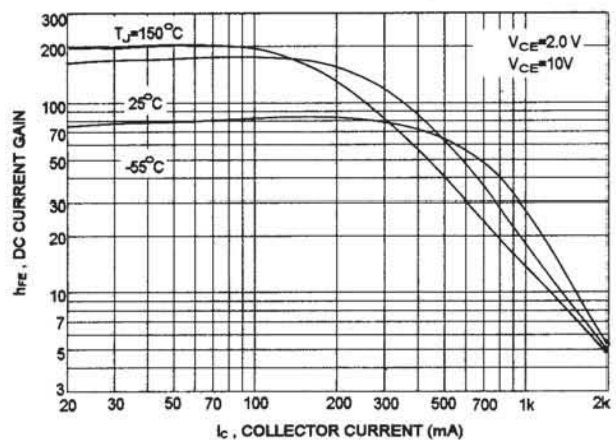
ACTIVE-REGION SAFE OPERATING AREA (SOA)



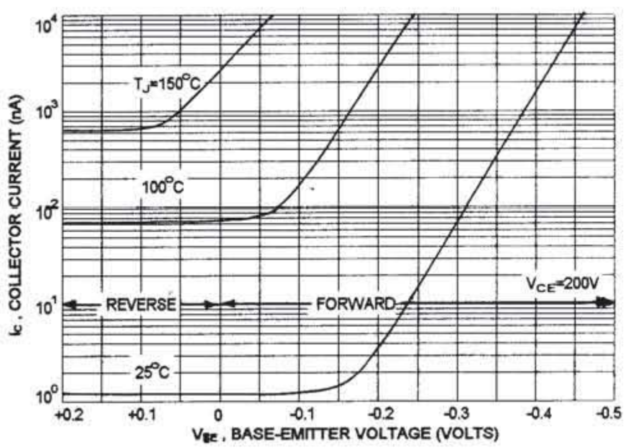
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 200$°C,At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

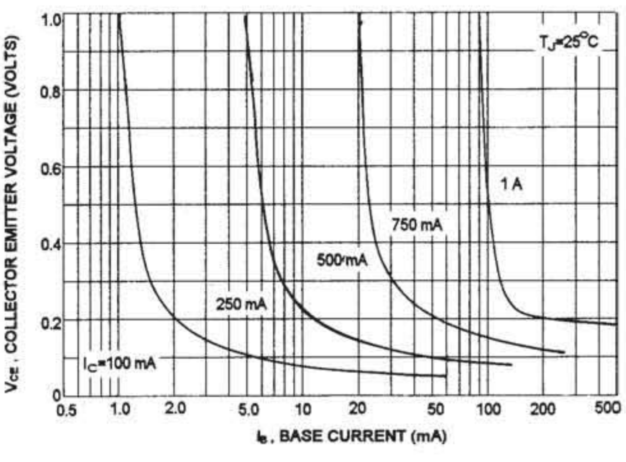
DC CURRENT GAIN



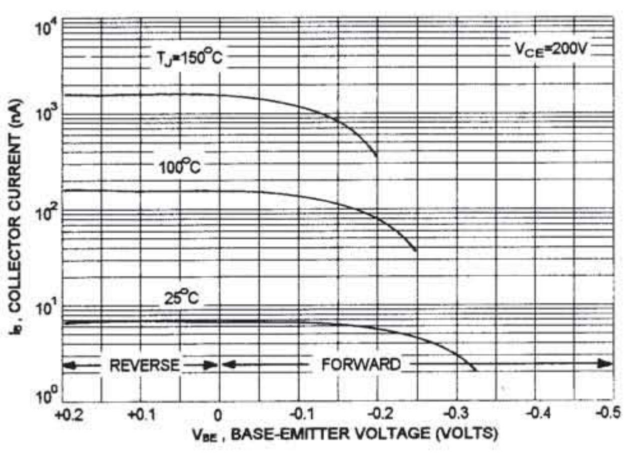
COLLECTOR CUT-OFF REGION



COLLECTOR SATURATION REGION



BASE CUT-OFF REGION



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