

PNP SILICON POWER TRANSISTORS

...designed for use in power amplifier applications

FEATURES:

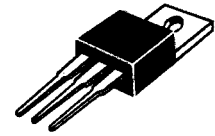
- * Low Collector-Emitter Saturation Voltage
 $V_{CE(sat)} = 0.4 \text{ V(Max) @ } I_C = 3.0\text{A}, I_B = 0.15\text{A}$
- * DC Current Gain
 $hFE = 70-240 @ I_C = 1.0\text{A}$
- * High Speed Switching Time
 $t_{stg} = 1.0 \text{ us (Typ.)}$

**PNP
2SA1012**

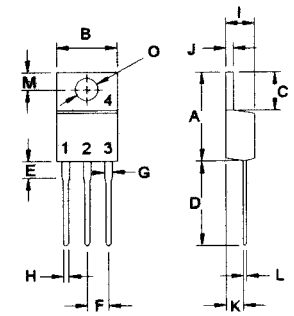
**5 AMPERE
POWER
TRANSISTORS
50 VOLTS
25 WATTS**

MAXIMUM RATINGS

Characteristic	Symbol	2SA1012	Unit
Collector-Emitter Voltage	V_{CEO}	50	V
Collector-Base Voltage	V_{CBO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current - Continuous - Peak	I_C I_{CM}	5 8	A
Base current	I_B	1	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	25 0.2	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$



TO-220



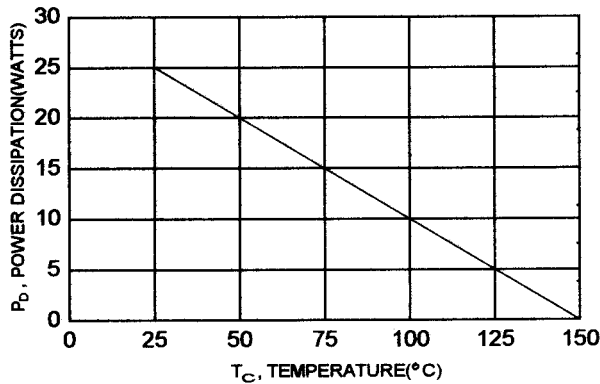
PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	5.0	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_c = 10 \text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	50		V
Collector Cutoff Current ($V_{CB} = 50 \text{ V}$, $I_E = 0$)	I_{CBO}		10	μA
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ V}$, $I_C = 0$)	I_{EBO}		10	μA

ON CHARACTERISTICS (1)

DC Current Gain ($I_c = 1.0 \text{ A}$, $V_{CE} = 1.0 \text{ V}$)* ($I_c = 3.0 \text{ A}$, $V_{CE} = 1.0 \text{ V}$)	$h_{FE(2)}$ h_{FE}	70 30	240	
Collector-Emitter Saturation Voltage ($I_c = 3.0 \text{ A}$, $I_B = 150 \text{ mA}$)	$V_{CE(sat)}$		0.4	V
Base-Emitter Saturation Voltage ($I_c = 3.0 \text{ A}$, $I_B = 150 \text{ mA}$)	$V_{BE(sat)}$		1.2	V

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_c = 1.0 \text{ A}$, $V_{CE} = 4.0 \text{ V}$, $f = 1.0 \text{ MHz}$)	f_T	10		MHz
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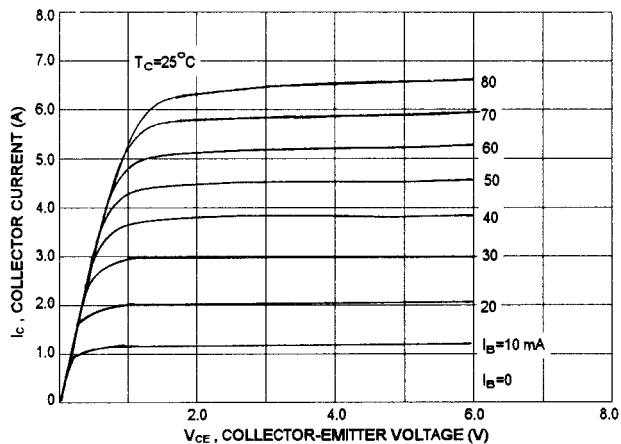
SWITCHING CHARACTERISTICS

Turn-on Time	$V_{CC} = 30 \text{ V}$, $I_c = 3.0 \text{ A}$ $I_{B1} = -I_{B2} = 150 \text{ mA}$ $PW = 20 \text{ us}$	t_{on}	0.2(typ)		μs
Storage Time		t_s	1.0(typ)		μs
Fall Time		t_f	0.2(typ)		μs

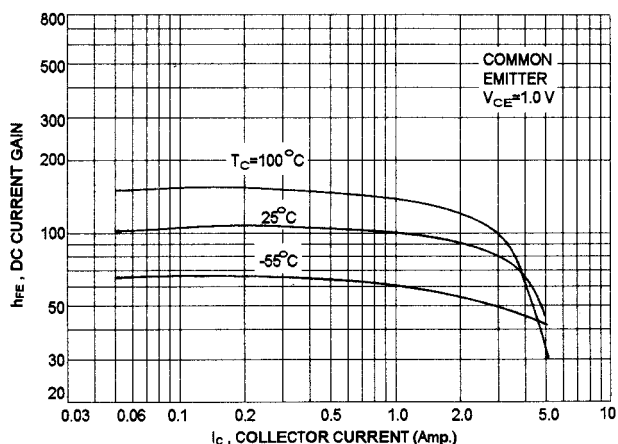
(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$ * $h_{FE(2)}$ Classification :

70	O	140	120	Y	240
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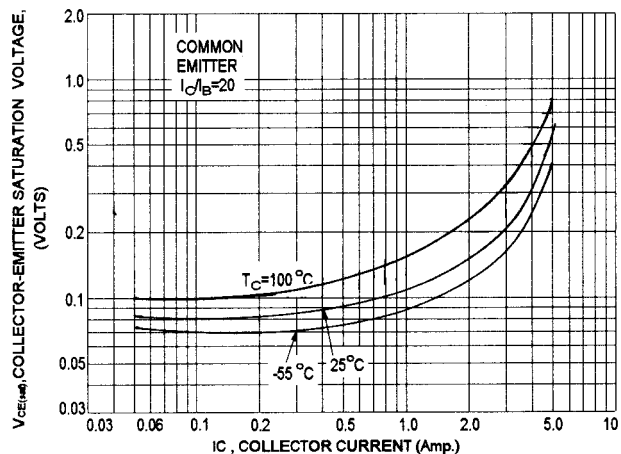
Ic - Vce



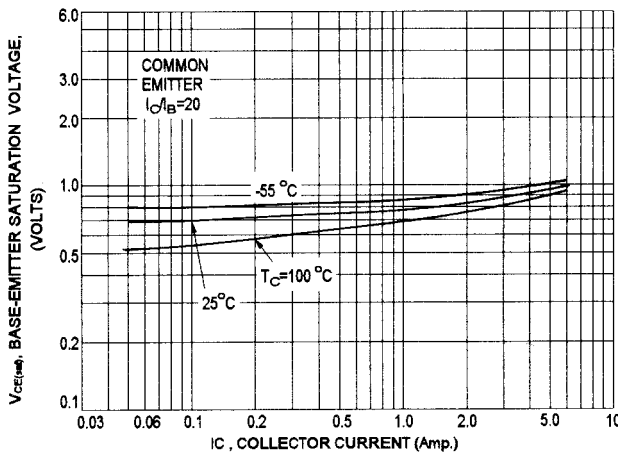
DC CURRENT GAIN



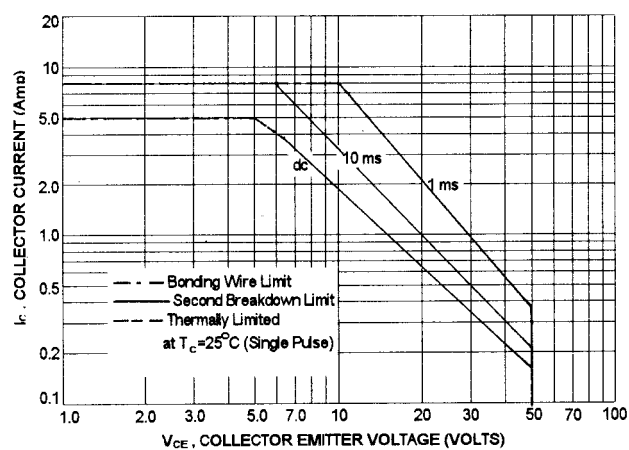
$V_{CE(sat)}$ -Ic



$V_{BE(sat)}$ -Ic



ACTIVE-REGION SAFE OPERATING AREA



Ic - Vbe

