COMPLEMENTARY SILICON TRANSISTORS

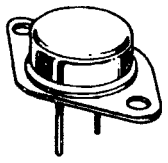
General Purpose use in power amplifier and switching circuits.

PNP	NPN
2N4901	2N5067
2N4902	2N5068
2N4903	2N5069

FEATURES:
*DC Current Gain Specified
HFE=20 - 80 @ I_C= 1.0 A
* Low Collector-Emitter Saturation Voltage -
$V_{CE(sat)}$ = 1.5 V (Max.) @ I_C = 5.0 A

Boca Semiconductor Corp
BSC
http://www.bocasemi.com

5.0 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
40-80 Volts
87.5 Watts



TO-3

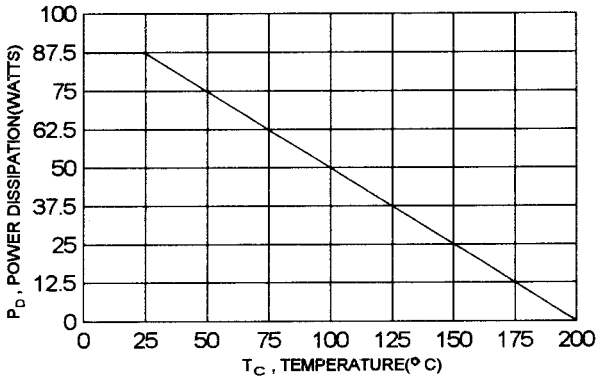
MAXIMUM RATINGS

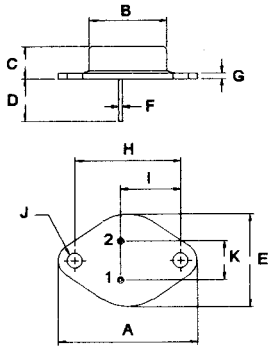
Characteristic	Symbol	2N4901 2N5067	2N4902 2N5068	2N4903 2N5069	Unit
Collector-Emitter Voltage	V_{CBO}	40	60	80	V
Collector-Emitter Voltage	V_{CEO}	40	60	80	V
Emitter-Base Voltage	V_{EB}	5.0			V
Collector Current-Continuous -Peak	I_C	5.0 10			A
Base current - Continuous	I_B	1.0			A
Total Power Dissipation @T_C=25°C Derate above 25°C	P_D	87.5 0.5			W W/°C
Operating and Storage Junction Temperature Range	T_J,T_{STG}	- 65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	2.0	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

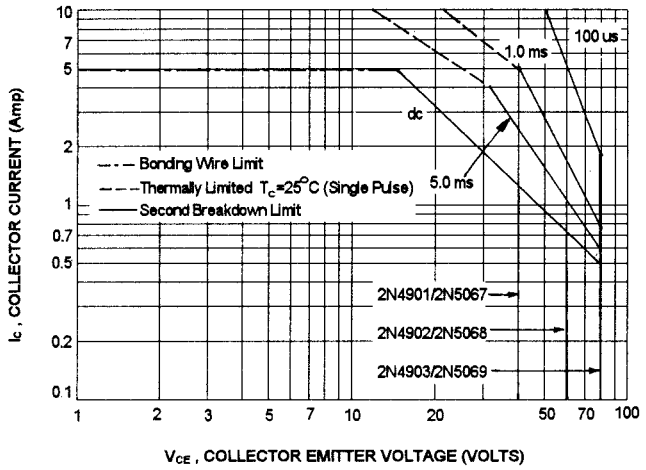
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Sustaining Voltage (1) (I_C = 200 mA, I_B = 0) 2N4901,2N5067 / 2N4902,2N5068 / 2N4903,2N5069	$V_{CEO(SUS)}$	40 / 60 / 80		V
Collector Cutoff Current (V_{CE} = Rated V_{CEO} , I_B = 0)	I_{CEO}		1.0	mA
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, $V_{BE(off)}$ = 1.5 V) (V_{CE} = Rated V_{CEO}, $V_{BE(off)}$ = 1.5 V, T_C = 150°C)	I_{CEX}		0.1 / 2.0	mA
Collector Cutoff Current (V_{CB} = Rated V_{CBO} , I_E = 0)	I_{CBO}		0.1	mA
Emitter Cutoff Current (V_{EB} = 5.0 V , I_C = 0)	I_{EBO}		1.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain (I_C = 1.0 A, V_{CE} = 2.0 V) (I_C = 5.0 A, V_{CE} = 2.0 V)	hFE	20 / 7.0	80	
Collector-Emitter Saturation Voltage (I_C = 1.0 A, I_B = 0.1 A) (I_C = 5.0 A, I_B = 1.0 A)	$V_{CE(sat)}$		0.4 / 1.5	V
Base-Emitter On Voltage (I_C = 1.0 A, V_{CE} = 2.0 V)	$V_{BE(on)}$		1.2	V
DYNAMIC CHARACTERISTICS				
Current - Gain -Bandwidth Product (2) (I_C = 1.0 A, V_{CE} = 10 V, f = 1.0 MHz)	f_T	4.0		MHz
Small-Signal Current Gain (I_C = 0.5 A, V_{CE} = 10 V, f = 1.0 KHz)	h_{fe}	20		

(1) Pulse Test: Pulse width = 300 us , Duty Cycle $\leq$ 2.0%

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

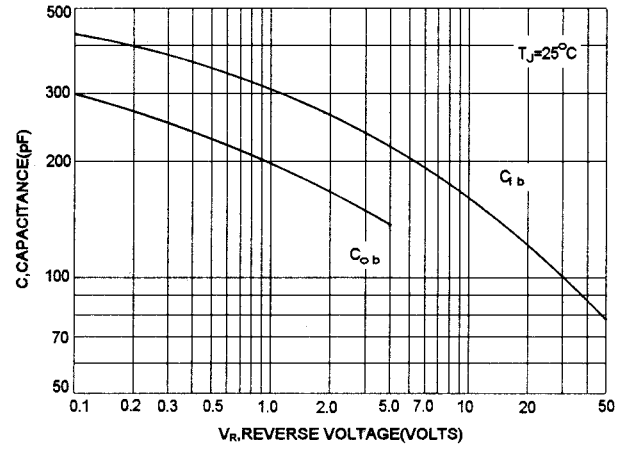
ACTIVE-REGION SAFE OPERATING AREA (SOA)



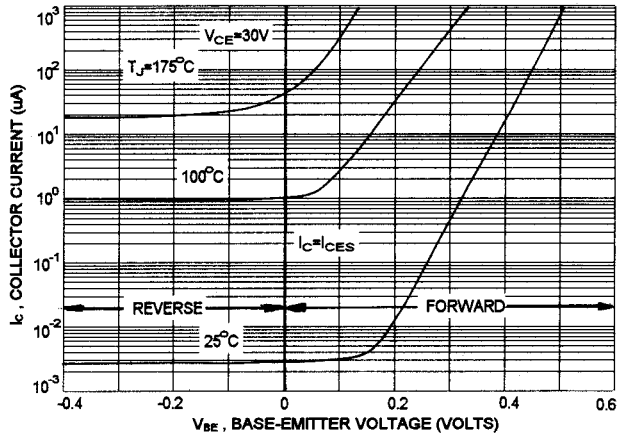
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation 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 $T_{J(PK)}$≤200°C,At high case temperatures, thermal limita - tion will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

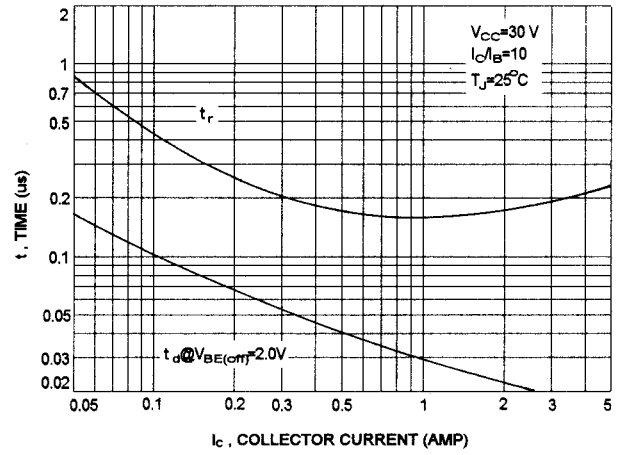
CAPACITANCES



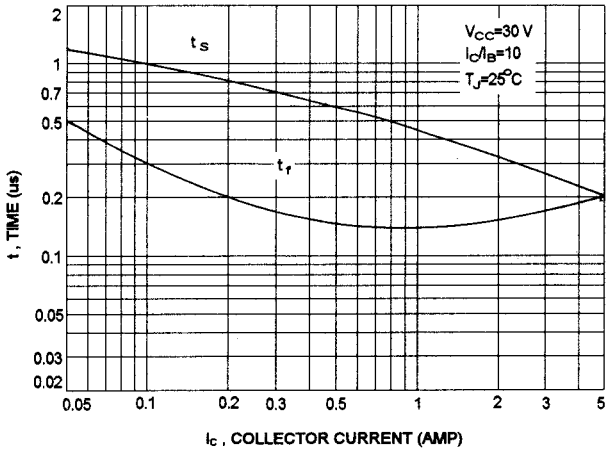
COLLECTOR CUT-OFF REGION



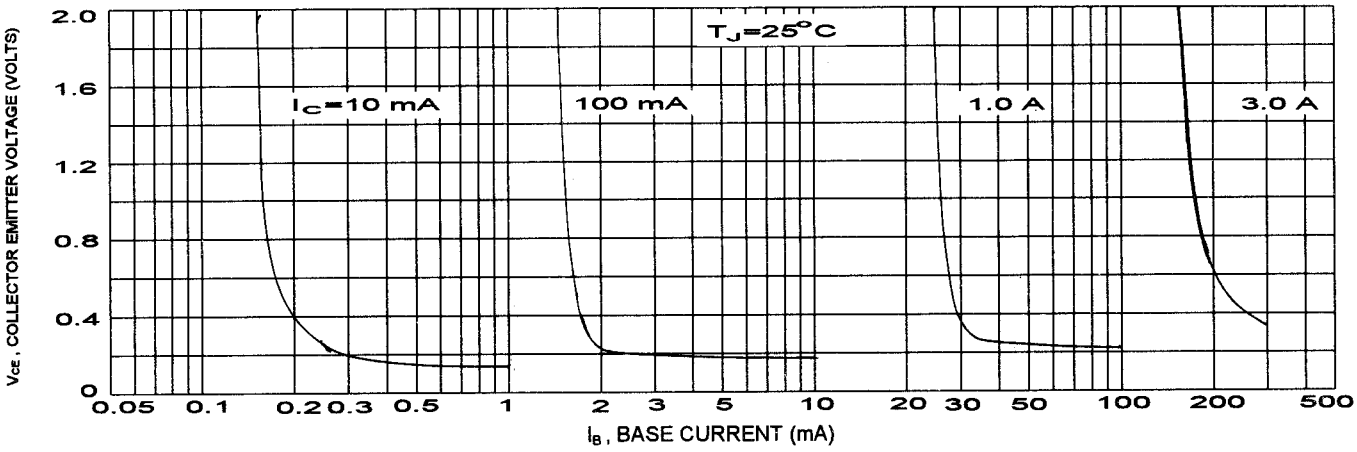
TURN-ON TIME



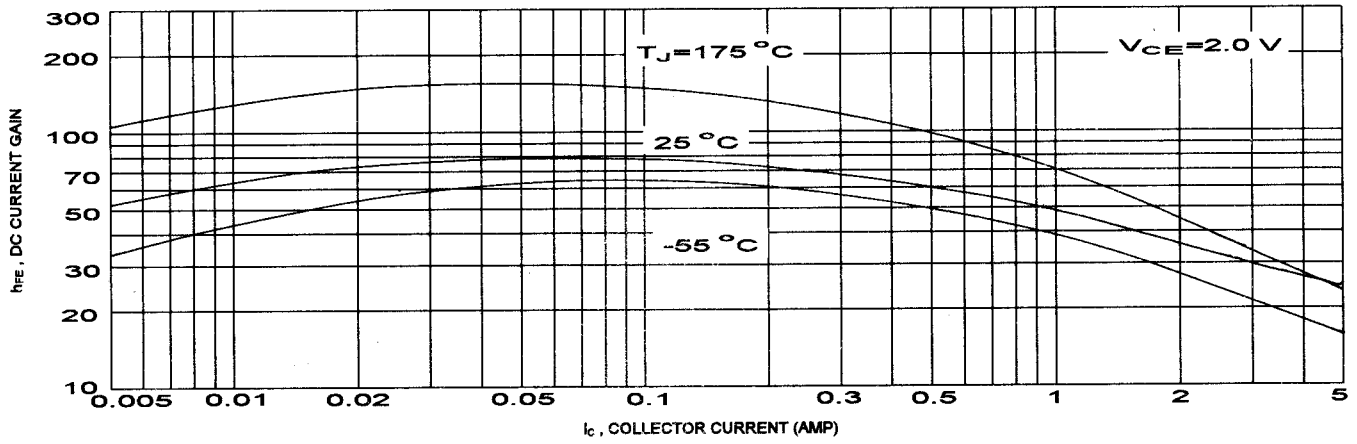
TURN-OFF TIME



COLLECTOR SATURATION REGION



DC CURRENT GAIN



"ON" VOLTAGE