MOSPEC

NPN SILICON TRANSISTORS

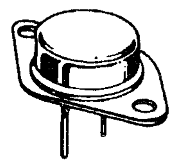
..designed for driver circuits, switching and amplifier applications.

FEATURES:

* Low Collector-Emitter Saturation Voltage
  $V_{CE(sat)}$=0.6 V (Max.) @ I_C = 1.0 A
* Excellent Safe Operating Area
* Gain Specified to I_C= 1.0 Amp.
* Complement to PNP 2N4900

NPN
2N4912

1 AMPERE
NPN SILICON
POWER TRANSISTOR
80 VOLTS
25 WATTS



TO-66

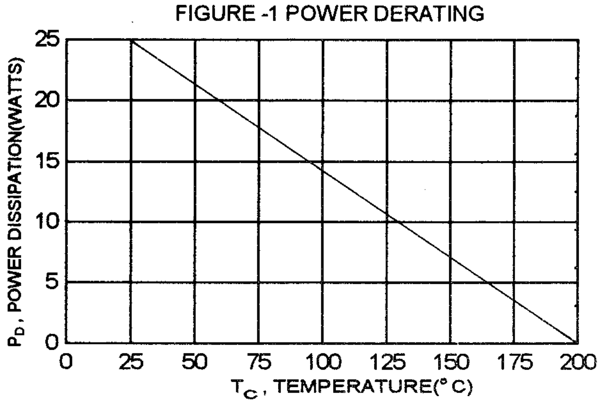
MAXIMUM RATINGS

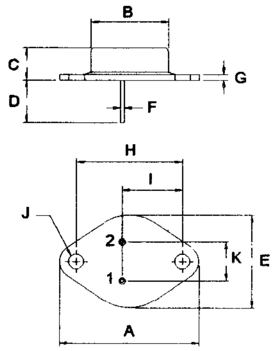
Characteristic	Symbol	2N4912	Unit
Collector-Emitter Voltage	V_{CEO}	80	V
COllector-Base Voltage	V_{CBO}	80	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current-Continuous -Peak	I_C I_{CM}	1.0 4.0	A
Base Current	I_B	1.0	A
Total Power Dissipation @T_C= 25°C Derate above 25°C	P_D	25 0.143	W W/°C
Operating 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	7.0	°C/W

FIGURE -1 POWER DERATING





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

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0)	$V_{CEO(sus)}$	80		V
Collector Cutoff Current (V_{CE} = 40 V, I_B = 0)	I_{CEO}		0.5	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 1.0	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 = 50 mA, V_{CE} = 1.0 V) (I_c = 500 mA, V_{CE} = 1.0 V) (I_c = 1.0 A, V_{CE} = 1.0 V)	hFE	40 20 10	100	
Collector-Emitter Saturation Voltage (I_C = 1.0 A, I_B = 0.1 A)	$V_{CE(sat)}$		0.6	V
Base-Emitter Saturation Voltage (I_C = 1.0 A, I_B = 0.1 A)	$V_{BE(sat)}$		1.3	V
Base-Emitter Saturation Voltage (I_C = 1.0 A, V_{CE} = 1.0 V)	$V_{BE(on)}$		1.3	V
DYNAMIC CHARACTERISTICS				
Current - Gain - Bandwidth Product (2) (I_C =250 mA, V_{CE} =10 V, f =1.0 MHz)	f_T	3.0		MHz
Output Capacitance (V_{CB} =10 V, I_E =0, f = 100 KHz)	C_{ob}		100	pF
Small-Signal Current Gain (I_C =250 mA, V_{CE} =10 V, f =1.0 KHz)	h_{fe}	25		

(1) Pulse Test: Pulse width = 300 us , Duty Cycle ≦ 2.0%
(2) $f_T = |h_{fe}| \circ f_{test}$

FIGURE 2 — SWITCHING TIME EQUIVALENT CIRCUIT

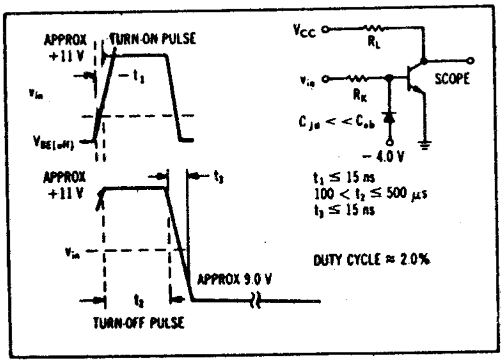


FIG-3 TURN-ON TIME

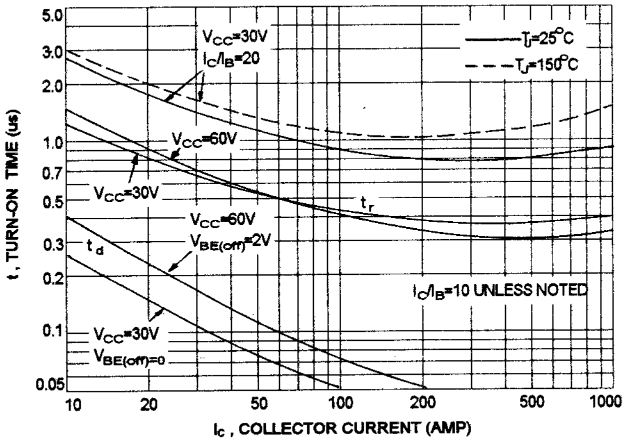


FIG-4 STORAGE TIME

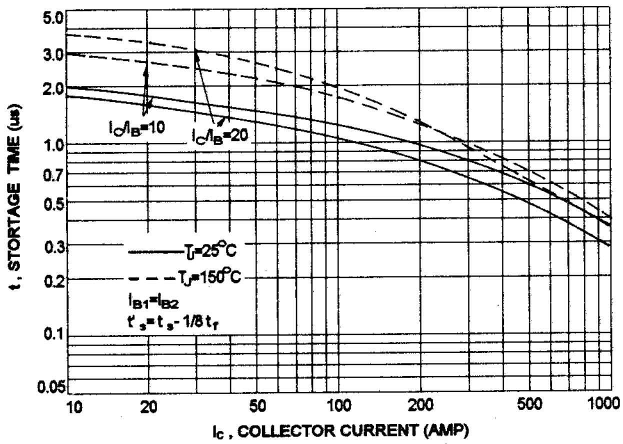


FIG-5 FALL TIME

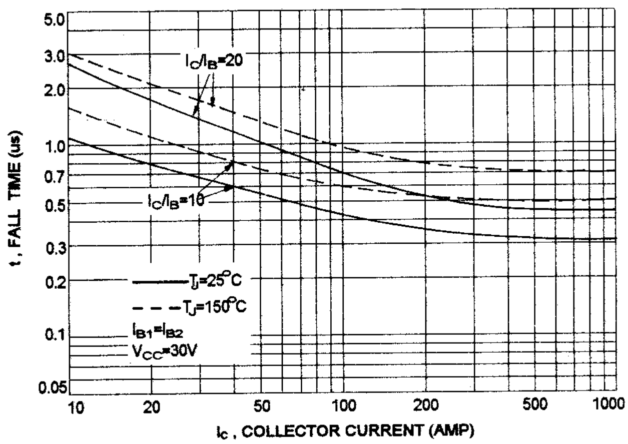
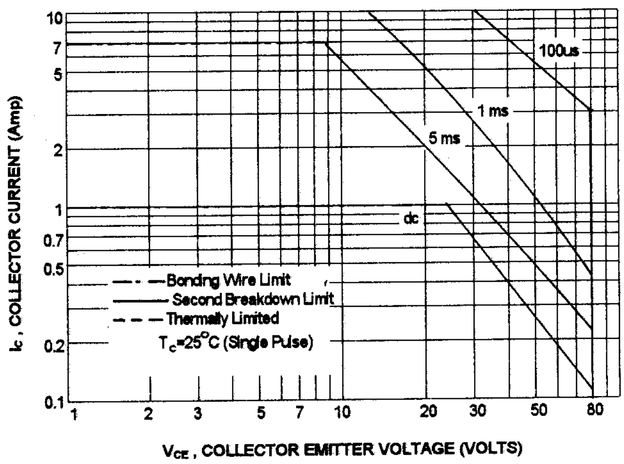


FIG-6 ACTIVE REGION SAFE OPERATING AREA



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 FIG-6 is base on $T_{J(PK)}$=200 °C;T_C is variable depending on power level.second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \le 200$°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.

FIG-7 COLLECTOR SATURATION REGION

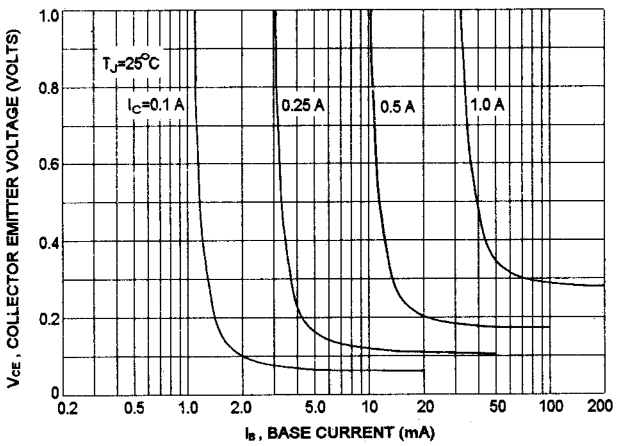


FIG-8 DC CURRENT GAIN

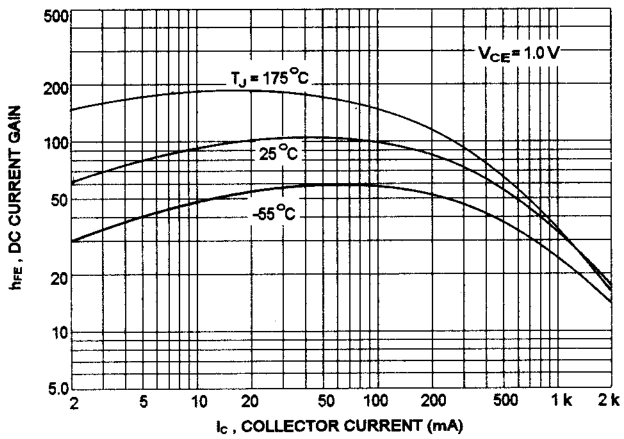


FIG-9 "ON" VOLTAGE

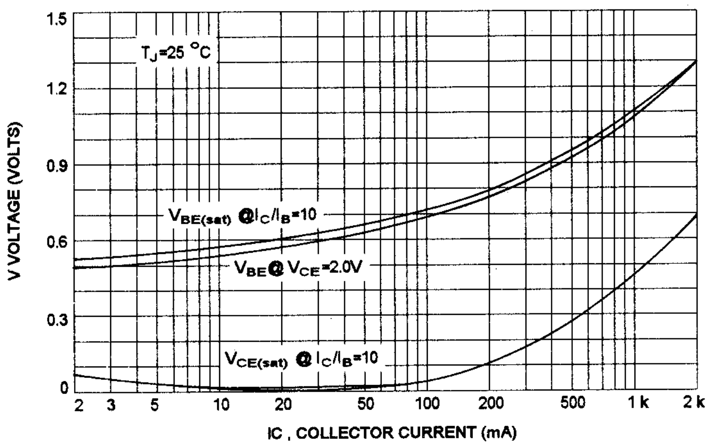
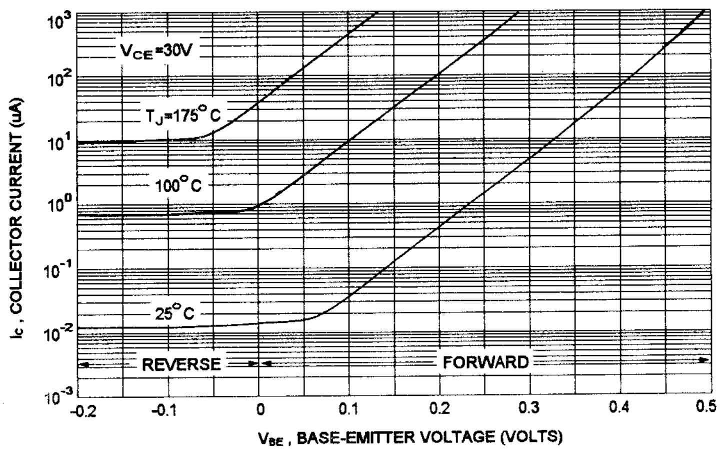


FIG-10 COLLECTOR CUT-OFF REGION



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