

COMPLEMENTARY SILICON POWER TRANSISTORS

...designed for use in general-purpose amplifier and switching applications

FEATURES:

- * Power Dissipation - $P_D = 75 \text{ W @ } T_C = 25^\circ\text{C}$
- * DC Current Gain $h_{FE} = 20 \sim 100 @ I_C = 4.0 \text{ A}$
- * $V_{CE(sat)} = 1.1 \text{ V (Max.) @ } I_C = 4.0 \text{ A, } I_B = 400 \text{ mA}$

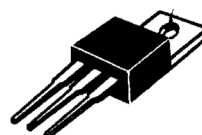
MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	60	V
Collector-Base Voltage	V_{CBO}	70	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current-Continuous	I_C	10	A
Base Current	I_B	6.0	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	75 0.6	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	- 55 to +150	$^\circ\text{C}$

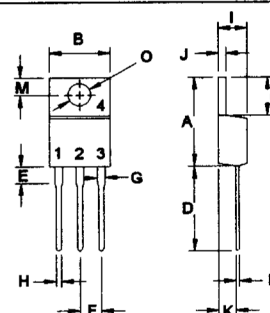
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.67	$^\circ\text{C/W}$

10 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60 VOLTS
75 WATTS



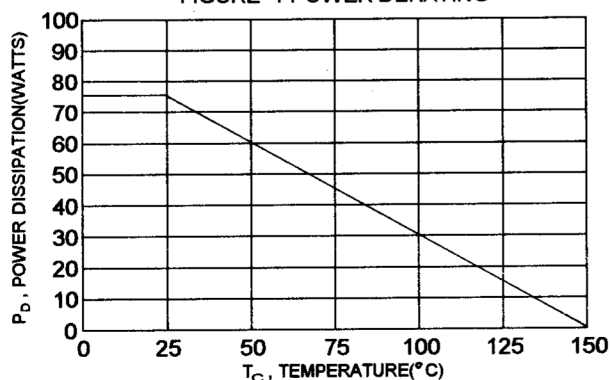
TO-220



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

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 Sustaining Voltage (1) ($I_C = 200\text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	60		V
Collector Cutoff Current ($V_{CE} = 30\text{ V}$, $I_B = 0$)	I_{CEO}		0.7	mA
Collector Cutoff Current ($V_{CE} = 70\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 70\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_C = 150^\circ\text{C}$)	I_{CEX}		1.0 5.0	mA
Collector Cutoff Current ($V_{CB} = 70\text{ V}$, $I_E = 0$) ($V_{CB} = 70\text{ V}$, $I_E = 0$, $T_C = 150^\circ\text{C}$)	I_{CBO}		1.0 10	mA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)	I_{EBO}		5.0	mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 4.0\text{ A}$, $V_{CE} = 4.0\text{ V}$) ($I_C = 10\text{ A}$, $V_{CE} = 4.0\text{ V}$)	h_{FE}	20 5.0	100	
Collector - Emitter Saturation Voltage ($I_C = 4.0\text{ A}$, $I_B = 0.4\text{ A}$) ($I_C = 10\text{ A}$, $I_B = 3.3\text{ A}$)	$V_{CE(sat)}$		1.1 8.0	V
Base - Emitter On Voltage ($I_C = 4.0\text{ A}$, $V_{CE} = 4.0\text{ V}$)	$V_{BE(on)}$		1.8	V

DYNAMIC CHARACTERISTICS

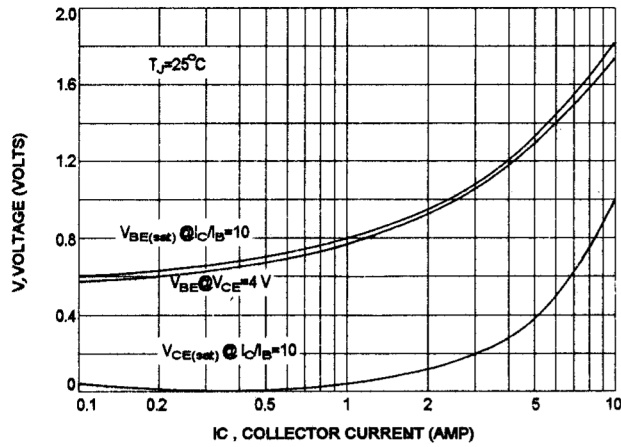
Current Gain - Bandwidth Product (2) ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$, $f_i = 500\text{ KHz}$)	f_T	2.0		MHz
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(1) Pulse Test: Pulse width = 300 μs , Duty Cycle $\leq 2.0\%$

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

MJE2955T

FIG-2 "ON" VOLTAGE



MJE3055T

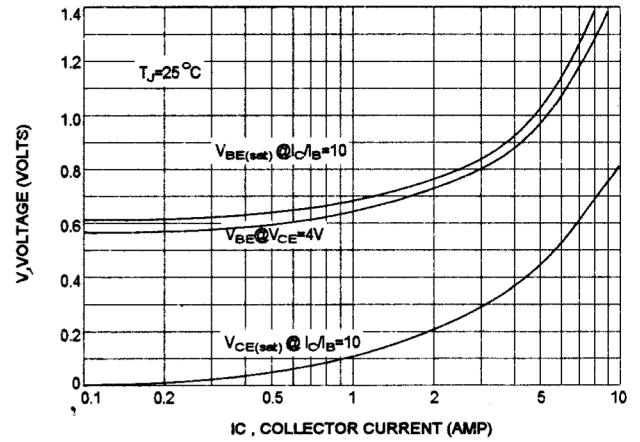
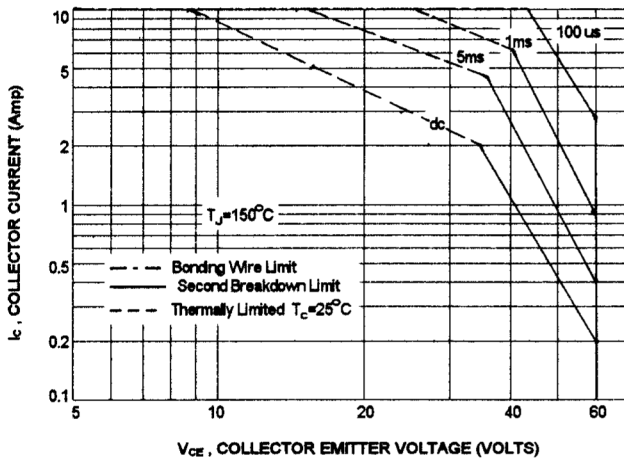


FIG-3 ACTIVE-REGION SAFE OPERATING AREA



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-3 is based on $T_{J(PK)} = 150^\circ\text{C}$; T_c is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 150^\circ\text{C}$. 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-4 DC CURRENT GAIN

