

COMPLEMENTARY SILICON PLASTIC POWER TRANSISTORS

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

- DC Current Gain Specified to 10 Amperes
- High Current Gain - Bandwidth Product - $f_T = 2.0 \text{ MHz (Min) @ } I_C = 500 \text{ mAdc}$
- Choice of Packages - MJE3055, MJE2955 - TO-225AB (TO-127)
 MJE3055T, MJE2955T - TO-220AB

MAXIMUM RATINGS

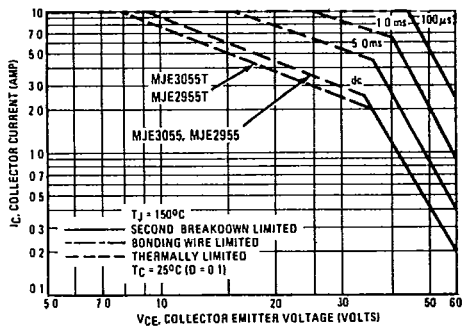
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	60	Vdc
Collector-Base Voltage	V_{CB}	70	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current	I_C	10	Adc
Base Current	I_B	6.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_{Dt}		Watts
MJE3055, MJE2955		90	W/°C
MJE3055T, MJE2955T		75	W/°C
Derate above 25°C			
MJE3055, MJE2955		0.72	W/°C
MJE3055T, MJE2955T		0.6	W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case MJE3055, MJE2955 MJE3055T, MJE2955T	θ_{JC}	1.39 1.67	°C/W

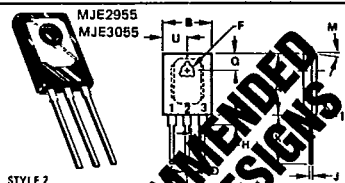
Safe Area Curves are indicated by Figure 1. Both limits are applicable and must be observed

FIGURE 1 - ACTIVE-REGION SAFE OPERATING AREA



These are two limitations 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. The transistor must not be subjected to greater dissipation than the curves indicate. The data of Figure 1 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 limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown (See AN 415A).

10 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS
60 VOLTS
75, 90 WATTS

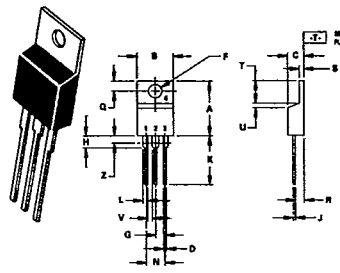


STYLE 2
 PIN 1 EMITTER
 2 COLLECTOR
 3 BASE

DIMENSIONS		INCHES	
	MIN	MAX	
A	0.16	0.23	0.635
B	0.13	0.15	0.305
C	0.10	0.12	0.254
D	0.10	0.12	0.254
E	0.10	0.12	0.254
F	0.10	0.12	0.254
G	0.10	0.12	0.254
H	0.10	0.12	0.254
I	0.10	0.12	0.254
J	0.10	0.12	0.254
K	0.10	0.12	0.254
L	0.10	0.12	0.254
M	0.10	0.12	0.254
N	0.10	0.12	0.254
O	0.10	0.12	0.254
P	0.10	0.12	0.254
Q	0.10	0.12	0.254
R	0.10	0.12	0.254
S	0.10	0.12	0.254
T	0.10	0.12	0.254
U	0.10	0.12	0.254
V	0.10	0.12	0.254

NOT RECOMMENDED FOR NEW DESIGNS

CASE 90-05 TO-225AB TYPE (TO-127 TYPE)



DIMENSIONS		INCHES	
	MIN	MAX	
A	0.14	0.17	0.508
B	0.10	0.12	0.254
C	0.07	0.09	0.178
D	0.04	0.05	0.102
E	0.04	0.05	0.102
F	0.04	0.05	0.102
G	0.04	0.05	0.102
H	0.04	0.05	0.102
I	0.04	0.05	0.102
J	0.04	0.05	0.102
K	0.04	0.05	0.102
L	0.04	0.05	0.102
M	0.04	0.05	0.102
N	0.04	0.05	0.102
O	0.04	0.05	0.102
P	0.04	0.05	0.102
Q	0.04	0.05	0.102
R	0.04	0.05	0.102
S	0.04	0.05	0.102
T	0.04	0.05	0.102
U	0.04	0.05	0.102
V	0.04	0.05	0.102
W	0.04	0.05	0.102
X	0.04	0.05	0.102
Y	0.04	0.05	0.102
Z	0.04	0.05	0.102

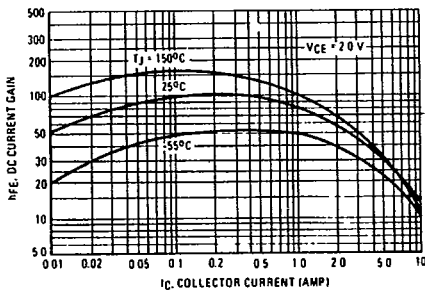
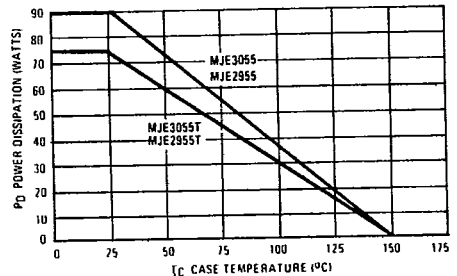
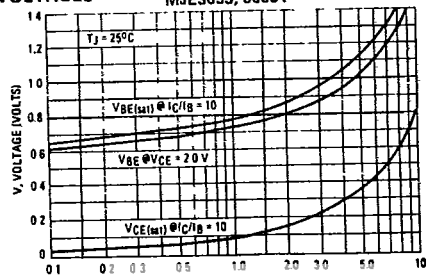
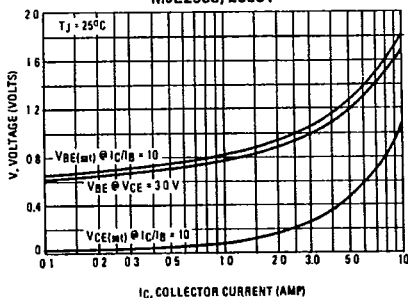
STYLE 1
 PIN 1 BASE
 2 COLLECTOR
 3 EMITTER
 4 COLLECTOR

NOTES:
 1. OVERSHOOTS AND TOLERANCES PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION IS INCH.
 3. DIM Z DETERMINES A ZONE WHERE ALL BODY AND LEAD BREAK PARTS ARE ALLOWED.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	60	—	Vdc
Collector Cutoff Current ($V_{CE} = 30\text{ Vdc}$, $I_B = 0$)	I_{CEO}	—	700	μAdc
Collector Cutoff Current ($V_{CE} = 70\text{ Vdc}$, $V_{EB(off)} = 1.5\text{ Vdc}$) ($V_{CE} = 70\text{ Vdc}$, $V_{EB(off)} = 1.5\text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	—	1.0 5.0	mAdc
Collector Cutoff Current ($V_{CB} = 70\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 70\text{ Vdc}$, $I_E = 0$, $T_C = 150^\circ\text{C}$)	I_{CBO}	—	1.0 10	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	5.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (1) ($I_C = 4.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$) ($I_C = 10\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	h_{FE}	20 5.0	100 —	—
Collector-Emitter Saturation Voltage (1) ($I_C = 4.0\text{ Adc}$, $I_B = 0.4\text{ Adc}$) ($I_C = 10\text{ Adc}$, $I_B = 3.3\text{ Adc}$)	$V_{CE(sat)}$	—	1.1 8.0	Vdc
Base-Emitter On Voltage (1) ($I_C = 4.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	$V_{BE(on)}$	—	1.8	Vdc
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 500\text{ kHz}$)	f_T	2.0	—	MHz

 (1) Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

FIGURE 2 – DC CURRENT GAIN

FIGURE 3 – POWER DERATING

MJE2955, 2955T
FIGURE 4 – "ON" VOLTAGES
MJE3055, 3055T

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