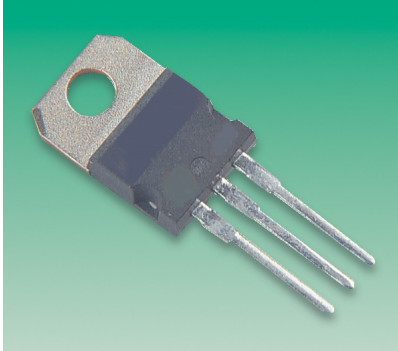


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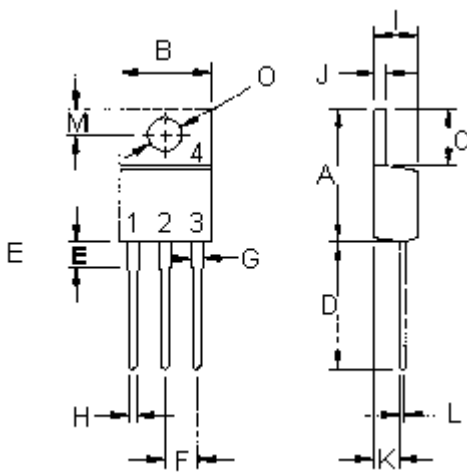
Complementary Power Transistors



Complementary Silicon Power Transistors are designed for use in general-purpose amplifier and switching applications.

Features:

- Power dissipation- $P_D = 75W$ at $T_C = 25^\circ C$.
- DC current gain $h_{FE} = 20$ (Minimum) at $I_C = 4.0A$.
- $V_{CE(sat)} = 1.1V$ (Maximum) at $I_C = 4.0A, I_B = 400mA$.



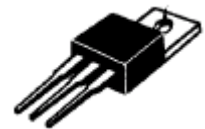
- Pin 1. Base
 2. Collector
 3. Emitter
 4. Collector (Case).

Dimensions	Minimum	Maximum
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

Dimensions : Millimetres

PNP	NPN
MJE2955T	MJE3055T

10 Ampere
 Complementary Silicon
 Power Transistors
 60 Volts
 75 Watts



TO-220



MJE2955T, 3055T



Complementary Power Transistors

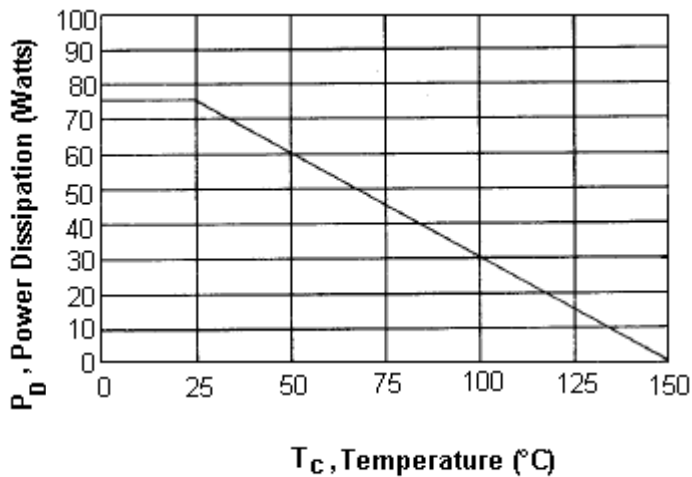
Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	60	V
Collector-Base Voltage	V_{CBO}	70	
Emitter-Base Voltage	V_{EBO}	5.0	
Collector Current-Continuous	I_C	10	A
Base Current	I_B	6.0	
Total Power Dissipation at $T_C = 25^\circ\text{C}$ 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 Characteristic

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

Figure - 1 Power Derating



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Complementary Power Transistors

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

Parameter	Symbol	Minimum	Maximum	Unit
Off Characteristics				
Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{mA}$, $I_B = 0$)	$V_{CEO(sus)}$	60	-	V
Collector Cut off Current ($V_{CE} = 30\text{V}$, $I_B = 0$)	I_{CEO}	-	0.7	mA
Collector Cut off 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	
Collector Cut off 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	
Emitter Cut off Current ($V_{EB} = 5.0\text{V}$, $I_C = 0$)	I_{EBO}	-	5.0	
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	
Dynamic Characteristics				
Current Gain-Bandwidth Product (2) ($I_C = 500\text{mA}$, $V_{CE} = 10\text{V}$, $f = 500\text{KHz}$)	f_T	2.0	-	MHz

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

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



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Complementary Power Transistors

Figure - 2 "ON" Voltage

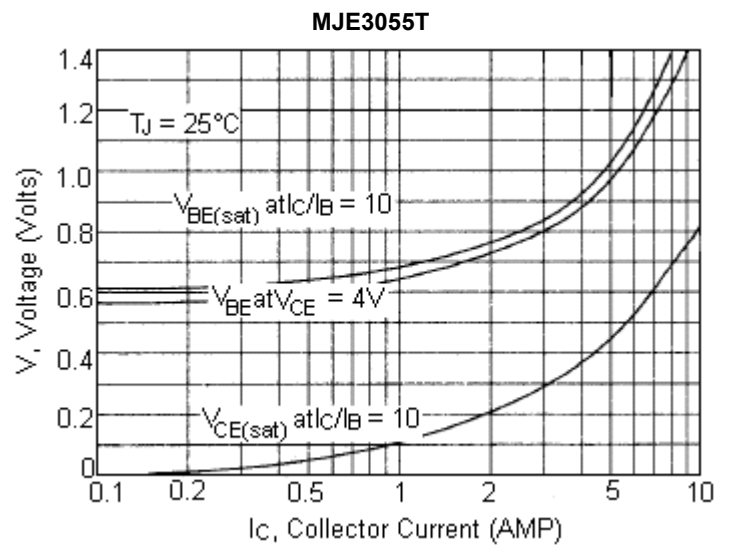
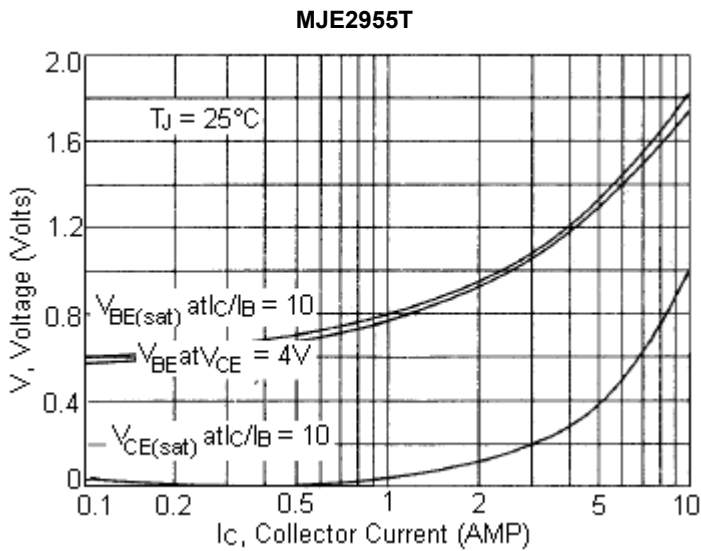
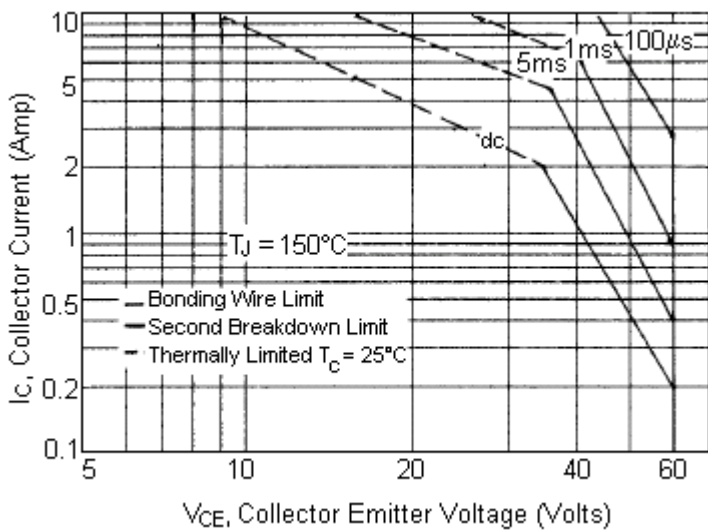


Figure - 3 Active-Region Safe Operating Area



There 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 i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

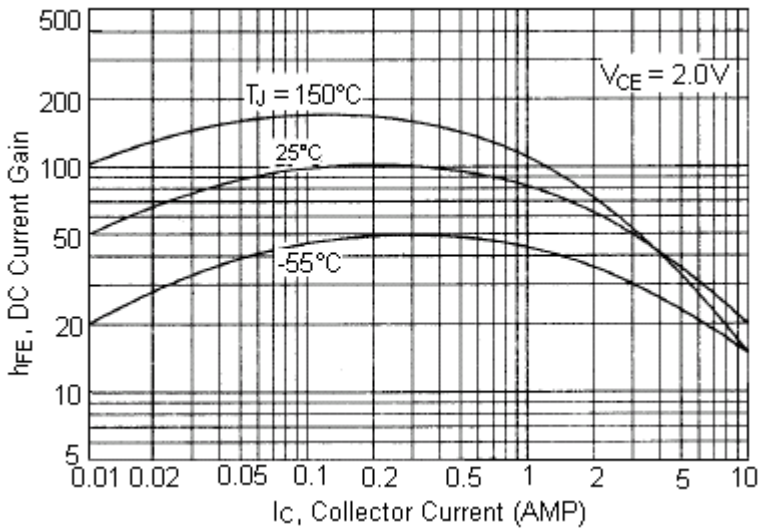
The data of Figure - 3 is based on $T_{J(PK)} = 150^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 150^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

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Complementary Power Transistors

Figure - 4 DC Current Gain



Specifications

$I_{C(av)}$ maximum (A)	V_{CE0} maximum (V)	h_{FE} minimum at $I_C = 4A$	P_{tot} at $25^\circ C$ (W)	Type	Part Number
10	60	20	75	NPN	MJE3055T
				PNP	MJE2955T

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Complementary Power Transistors



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