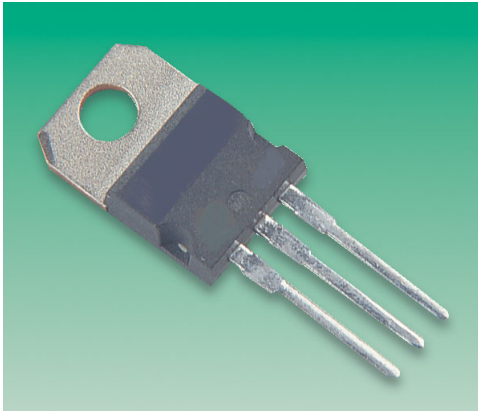


MJE15030, 15031

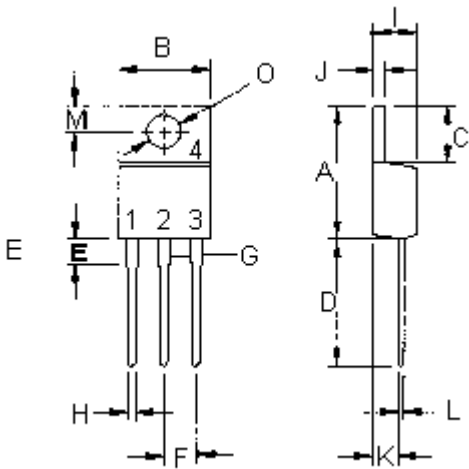
Complementary Power Transistors



Designed for use in high-frequency drivers in audio amplifier applications.

Features:

- Collector-Emitter sustaining voltage-
 $V_{CEO(sus)} = 150V$ (Minimum) - MJE15030, MJE15031.
- DC current gain specified to 8.0 Amperes
 $h_{FE} = 20$ (Minimum) at $I_C = 4.0A$.
- TO-220AB compact package.



- 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

NPN	PNP
MJE15030	MJE15031

8.0 Ampere
Complementary Silicon
Power Transistors
150 Volts
50 Watts



TO-220

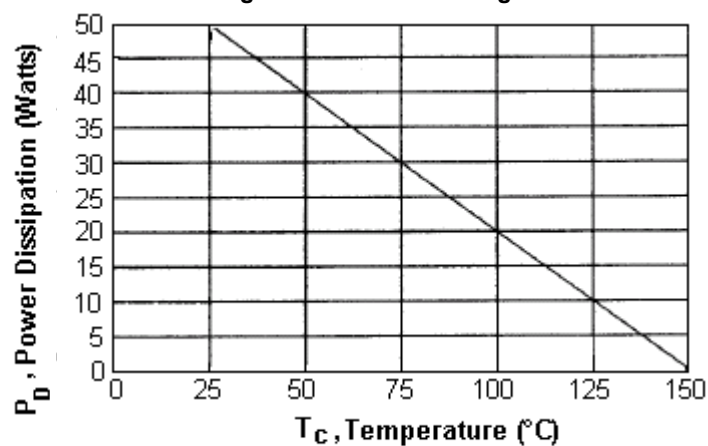
Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	150	V
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	5.0	
Collector Current-Continuous -Peak	I_C	8.0 16	A
Base Current	I_B	2.0	
Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.4	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Thermal Characteristic

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	2.50	$^\circ\text{C/W}$

Figure - 1 Power Derating



MJE15030,15031

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) ($I_C = 10\text{mA}$, $I_B = 0$)	$V_{CEO(sus)}$	150	-	V
Collector Cut off Current ($V_{CE} = 150\text{V}$, $I_B = 0$)	I_{CEO}	-	0.1	mA
Collector Cut off Current ($V_{CB} = 150\text{V}$, $I_E = 0$)	I_{CBO}	-	10	μA
Emitter Cut off Current ($V_{EB} = 5.0\text{V}$, $I_C = 0$)	I_{EBO}	-		

On Characteristics (1)

DC Current Gain ($I_C = 0.1\text{A}$, $V_{CE} = 2.0\text{V}$) ($I_C = 2.0\text{A}$, $V_{CE} = 2.0\text{V}$) ($I_C = 3.0\text{A}$, $V_{CE} = 2.0\text{V}$) ($I_C = 4.0\text{A}$, $V_{CE} = 2.0\text{V}$)	h_{FE}	40 40 40 20	-	-
Collector-Emitter Saturation Voltage ($I_C = 1.0\text{A}$, $I_B = 0.1\text{A}$)	$V_{CE(sat)}$	-	0.5	V
Base-Emitter On Voltage ($I_C = 1.0\text{A}$, $V_{CE} = 2.0\text{V}$)	$V_{BE(on)}$	-	1.0	

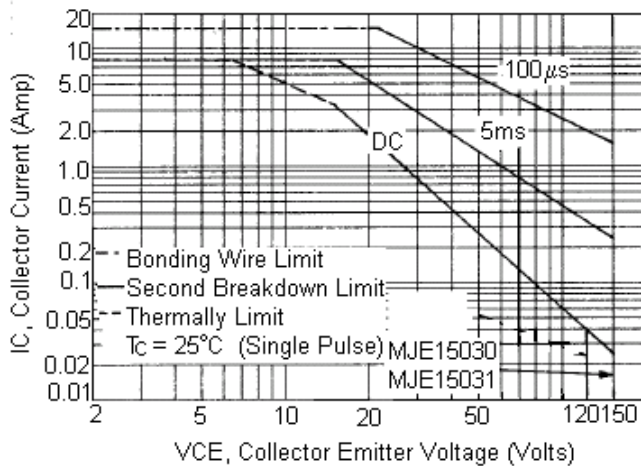
Dynamic Characteristics

Current Gain-Bandwidth Product (2) ($I_C = 0.5\text{A}$, $V_{CE} = 10\text{V}$, $f = 1.0\text{MHz}$)	f_T	30	-	MHz
---	-------	----	---	-----

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

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

Figure - 2 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 - 2 and 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.

Figure - 3 Reverse Bias Safe Operating Area

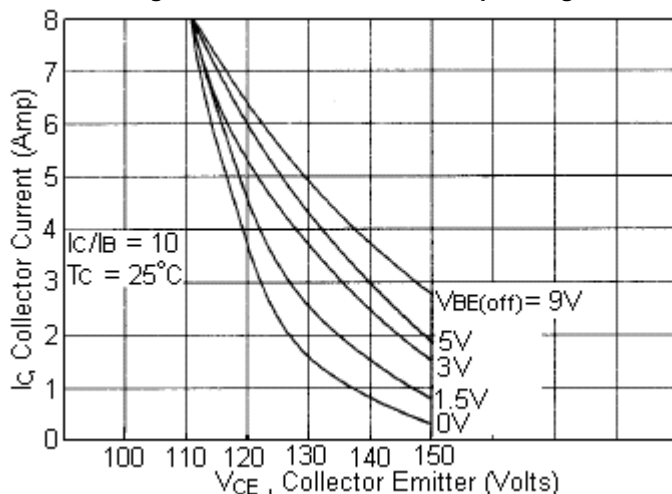


Figure - 4 Capacitances

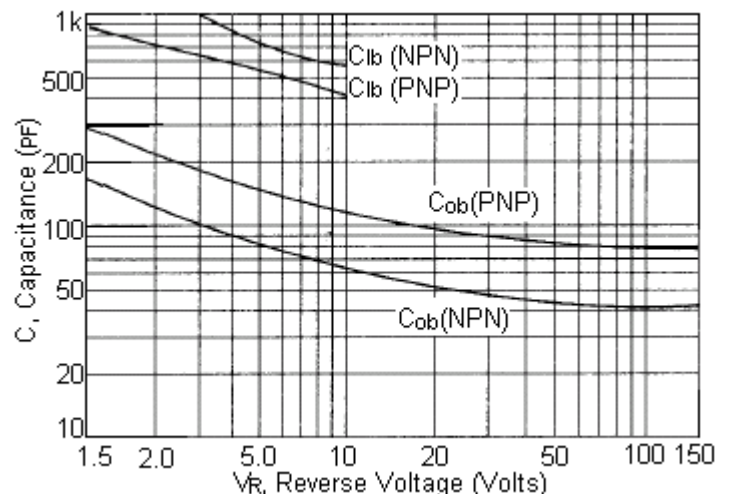


Figure - 5 Small Signal Current Gain

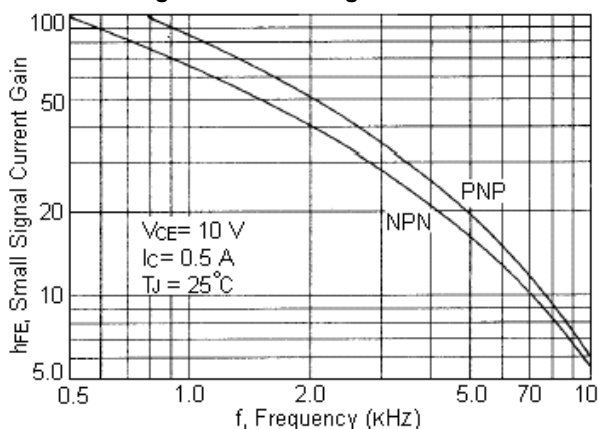


Figure - 6 Current Gain-Bandwidth Product

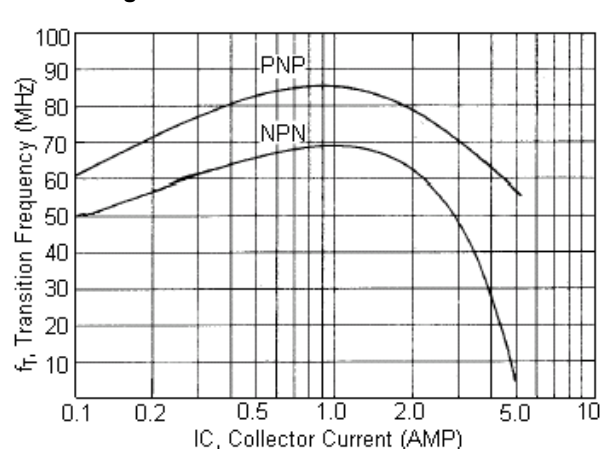


Figure - 7 DC Current Gain

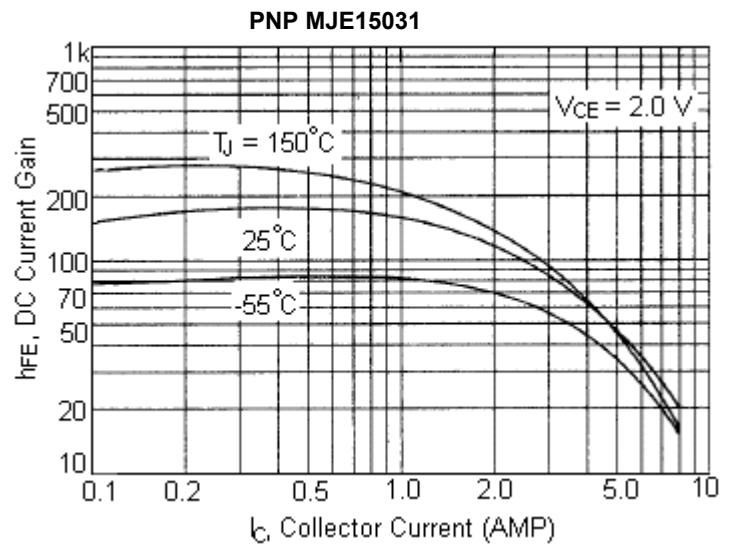
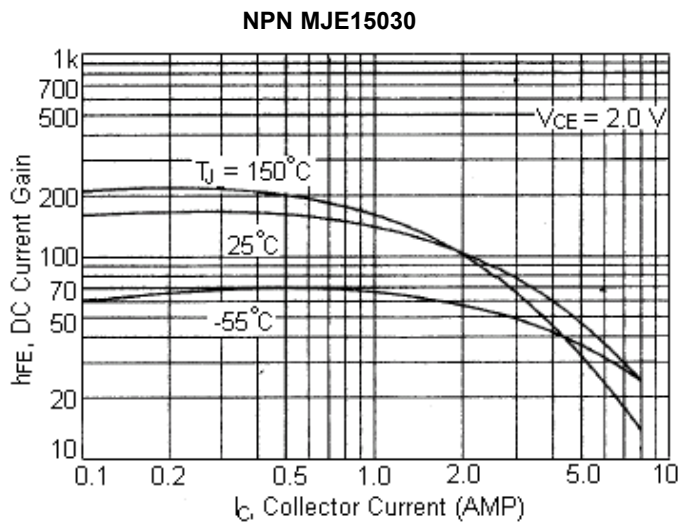
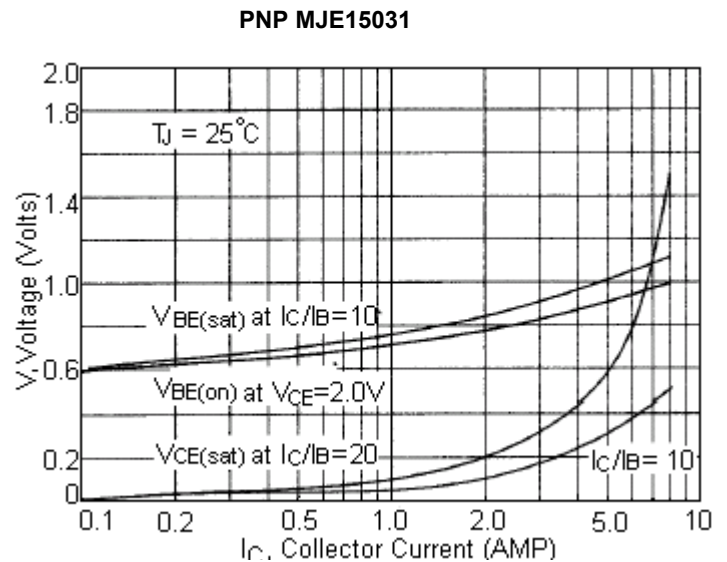
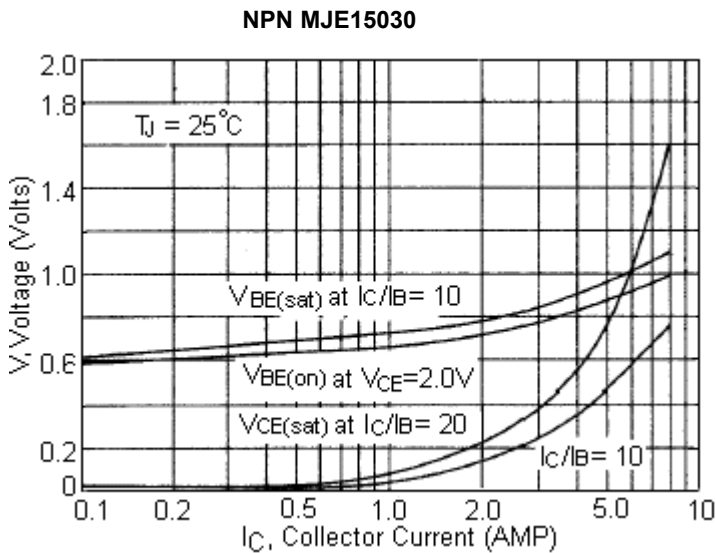


Figure - 8 "ON" Voltage



MJE15030,15031

Complementary Power Transistors



Figure - 9 Turn-On Time

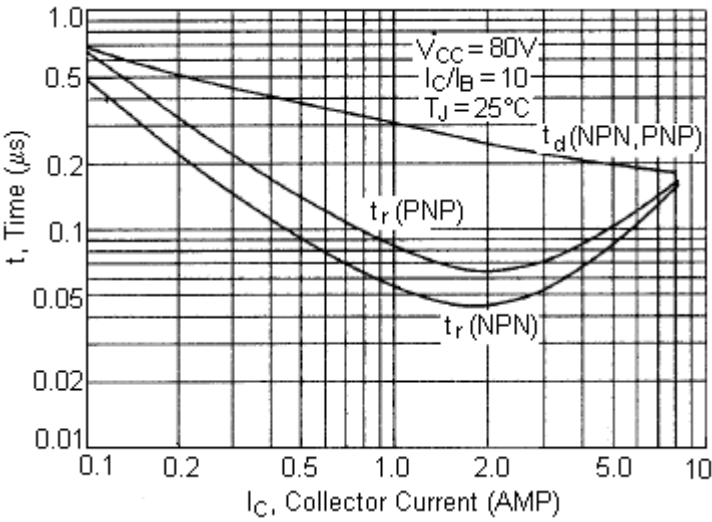
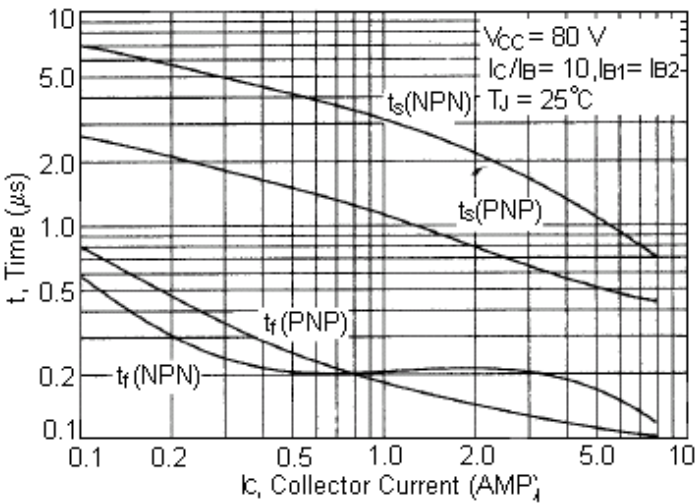


Figure - 10 Turn-Off Time



Specifications

$I_{C(av)}$ maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum at $I_C = 4A$	P_{tot} at $25^\circ C$ (W)	Package	Type	Part Number
8	150	20	50	TO-220	NPN	MJE15030
					PNP	MJE15031

