

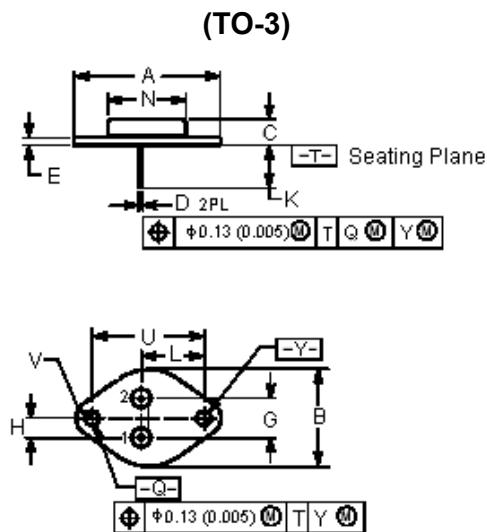


Silicon power transistors.

The MJ15024 powerbase power transistors designed for high power audio, disk head positioners and other linear applications.

Features:

- High safe operating area (100% tested) - 2A at 80V.
- High DC current gain - $h_{FE} = 15$ (minimum) at $I_C = 8A$ dc.
- Pb-free packages.



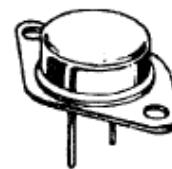
Style 1:

1. Base
2. Emitter
- Collector (Case)

Dimensions	Minimum	Maximum
A	1.550 (39.37) Reference	
B	-	1.050 (26.67)
C	0.250 (6.35)	0.335 (8.51)
D	0.038 (0.97)	0.043 (1.09)
E	0.055 (1.40)	0.070 (1.77)
G	0.430 (10.92) BSC	
H	0.215 (5.46) BSC	
K	0.440 (11.18)	0.480 (12.19)
L	0.665 (16.89) BSC	
N	-	0.830 (21.08)
Q	0.151 (3.84)	0.165 (4.19)
U	1.187 (30.15) BSC	
V	0.131 (3.33)	0.188 (4.77)

Dimensions : Inches (Millimetres)

16 Amperes
Silicon Power Transistors
200 - 250 Volts, 250 Watts



(TO-3)
Case 1-07
Style 1

Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	250	V dc
Collector-Base Voltage	V_{CBO}	400	
Emitter-Base Voltage	V_{EBO}	5	
Collector - Emitter Voltage	V_{CEX}	400	A dc
Collector Current - Continuous - Peak (Note 1)	I_C	16 30	
Base Current - Continuous	I_B	5	
Total Device Dissipation at $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	250 1.43	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

Thermal Characteristics

Characteristics	Symbol	Maximum	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.70	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Pulse test: pulse width = 5ms, duty cycle $\leq 10\%$.

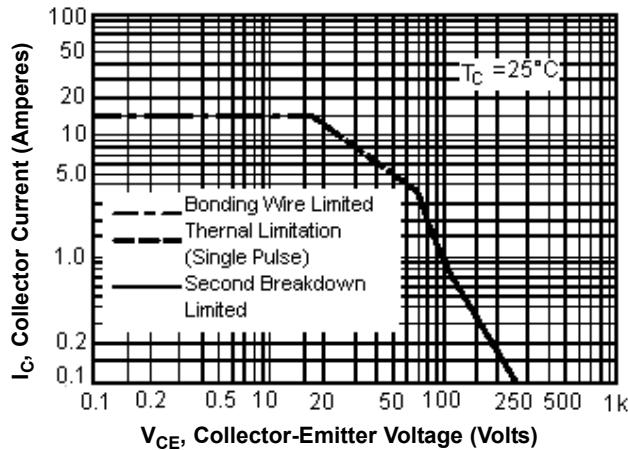
Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
Off Characteristics				
Collector-Emitter Sustaining Voltage (Note 2) ($I_C = 100\text{mA dc}, I_B = 0$)	$V_{EO}(\text{sus})$	250	-	-
Collector Cut off Current ($V_{CE} = 250\text{V dc}, V_{BE(\text{off})} = 1.5\text{V dc}$)	I_{CEX}	-	250	$\mu\text{A dc}$
Collector Cut off Current ($V_{CE} = 200\text{V dc}, I_B = 0$)	I_{CEO}	-	500	
Emitter Cut off Current ($V_{CE} = 5\text{V dc} I_B = 0$)	I_{EBO}	-		
Second Breakdown				
Second Breakdown Collector Current with Base Forward Biased ($V_{CE} = 50\text{V dc}, t = 0.5\text{s (Non-repetitive)}$) ($V_{CE} = 80\text{V dc}, t = 0.5\text{s (non-repetitive)}$)	$I_{S/b}$	5 2	-	A dc

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

Characteristic	Symbol	Minimum	Maximum	Unit
On Characteristic				
DC Current Gain ($I_C = 8\text{A dc}$, $V_{CE} = 4\text{V dc}$) ($I_C = 16\text{A dc}$, $V_{CE} = 4\text{V dc}$)	h_{FE}	15 5	60 -	-
Collector-Emitter Saturation Voltage ($I_C = 8\text{A dc}$, $I_B = 0.8\text{A dc}$) ($I_C = 16\text{A dc}$, $I_B = 3.2\text{A dc}$)	$V_{CE}(\text{sat})$	-	1.4 4.0	V dc
Base-Emitter On Voltage ($I_C = 8\text{A dc}$, $V_{CE} = 4\text{V dc}$)	$V_{BE}(\text{on})$	-	2.2	
Dynamic Characteristics				
Current-Gain - Bandwidth Product ($I_C = 1\text{A dc}$, $V_{CE} = 10\text{V dc}$, $f_{\text{test}} = 1\text{MHz}$)	f_T	4	-	MHz
Output Capacitance ($V_{CB} = 10\text{V dc}$, $I_E = 0$, $f_{\text{test}} = 1\text{MHz}$)	C_{ob}	-	500	pF

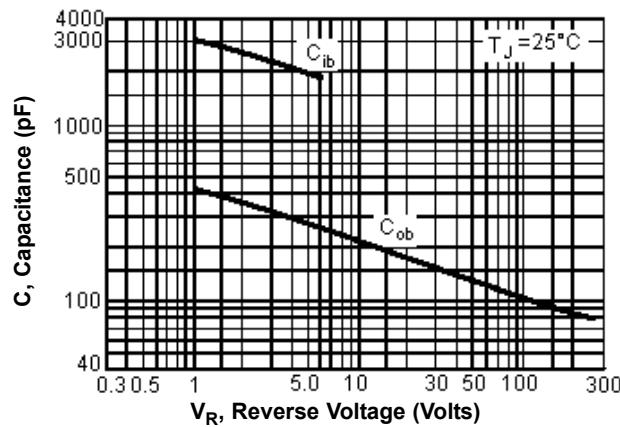
2. Pulse Test : Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

Active - Region Safe Operating Area


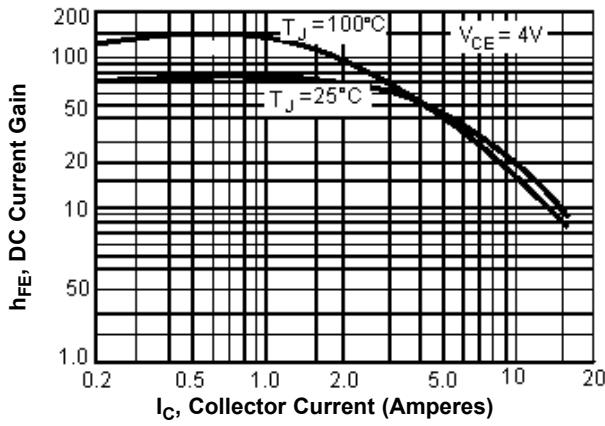
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than curves indicate. The data is based on $T_J(\text{PK}) = 200^\circ\text{C}$; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Typical Characteristics

Capacitances



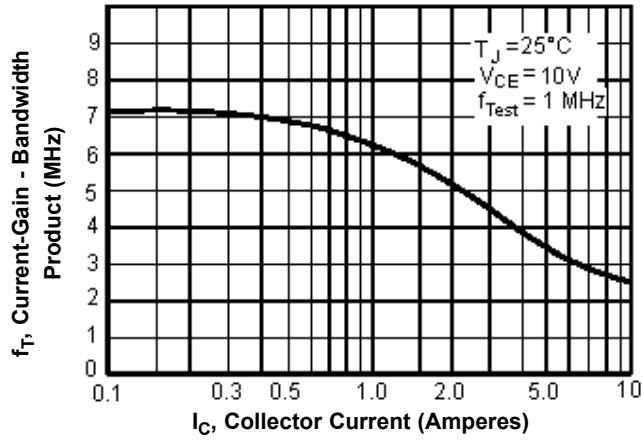
DC Current Gain



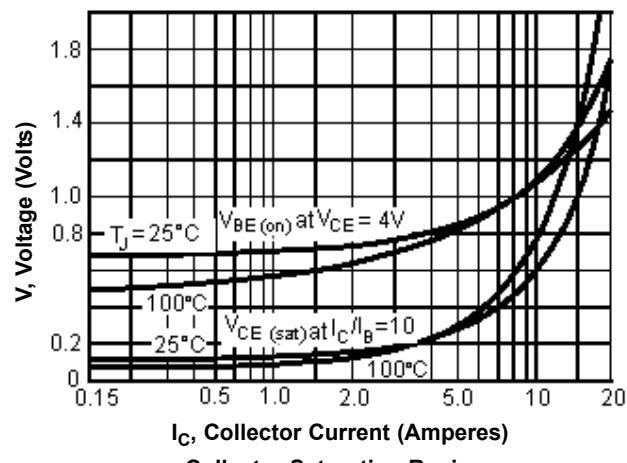
Part Number Table

Description	Part Number
Transistor, NPN, TO-3	MJ15024

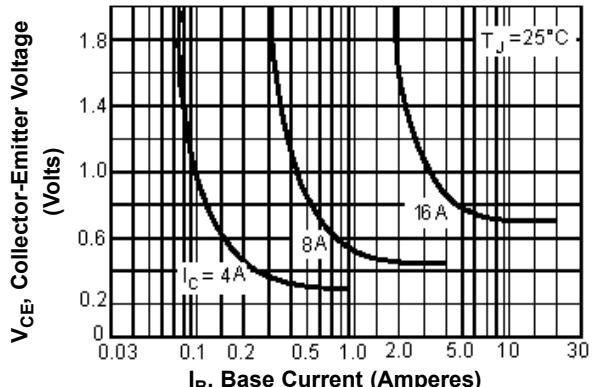
Current-Gain - Bandwidth Product



"On" Voltage



Collector Saturation Region



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