



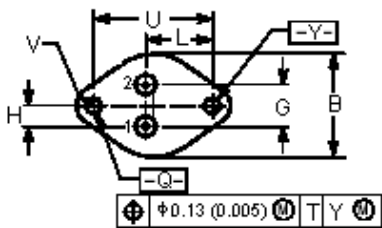
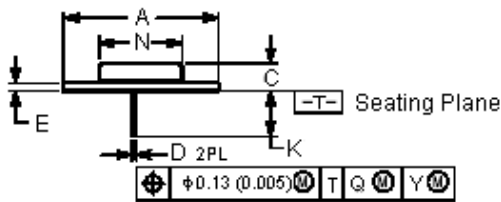
Silicon power transistors.

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.

(TO-3)



Style 1:
 Pin 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	MJ15024	V_{CEO}	250
Collector-Base Voltage	MJ15024	V_{CBO}	400
Emitter-Base Voltage		V_{EBO}	5
Collector - Emitter Voltage		V_{CEX}	400
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
Operating and Storage Junction Temperature Range		T_J, T_{stg}	-65 to +200

Thermal Characteristics

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

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)

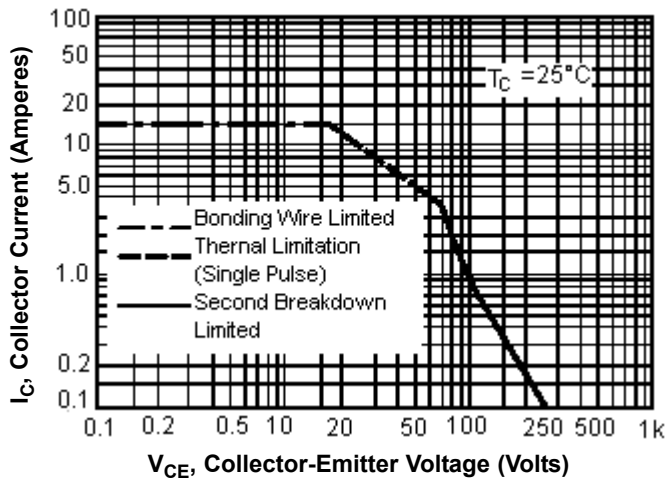
Characteristic	Symbol	Minimum	Maximum	Unit
Off Characteristics				
Collector-Emitter Sustaining Voltage (Note 2) ($I_C = 100\text{mA dc}, I_B = 0$)	MJ15024	$V_{EO(sus)}$	250	-
Collector Cut off Current ($V_{CE} = 250\text{V dc}, V_{BE(off)} = 1.5\text{V dc}$)	MJ15024	I_{CEX}	-	250
Collector Cut off Current ($V_{CE} = 200\text{V dc}, I_B = 0$)	MJ15024	I_{CEO}	-	500
Emitter Cut off Current ($V_{CE} = 5\text{V dc}, I_B = 0$)		I_{EBO}	-	$\mu\text{A dc}$
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 ($I_C = 8\text{A dc}, I_B = 0.8\text{A dc}$) ($I_C = 16\text{A dc}, I_B = 3.2\text{A dc}$)	$V_{CE(sat)}$	-	1.4 4.0	V dc
Base-Emitter On Voltage ($I_C = 8\text{A dc}, V_{CE} = 4\text{V dc}$)	$V_{BE(on)}$	-	2.2	
Dynamic Characteristics				
Current-Gain - Bandwidth Product ($I_C = 1\text{A dc}, V_{CE} = 10\text{V dc}, f_{test} = 1\text{MHz}$)	f_T	4	-	MHz
Output Capacitance ($V_{CB} = 10\text{V dc}, I_E = 0, f_{test} = 1\text{MHz}$)	C_{ob}	-	500	pF

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

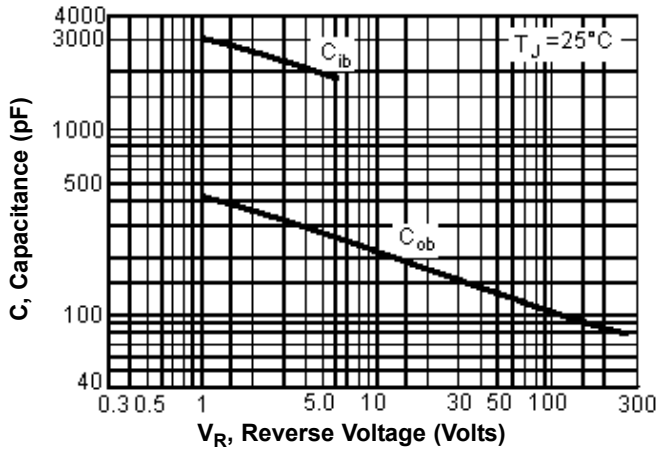
Active - Region Safe Operating Area



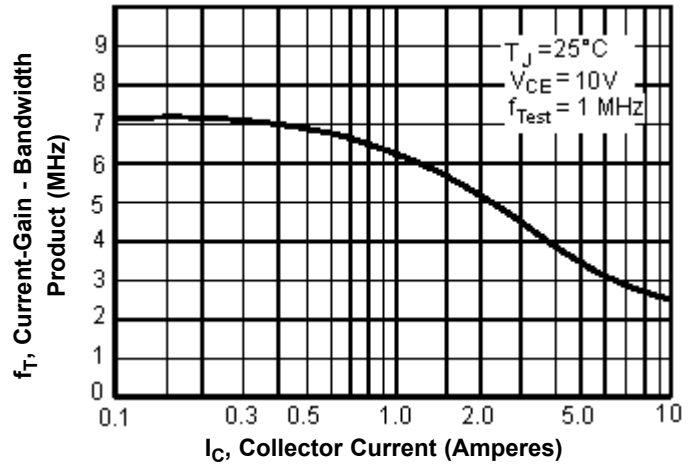
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation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

Typical Characteristics

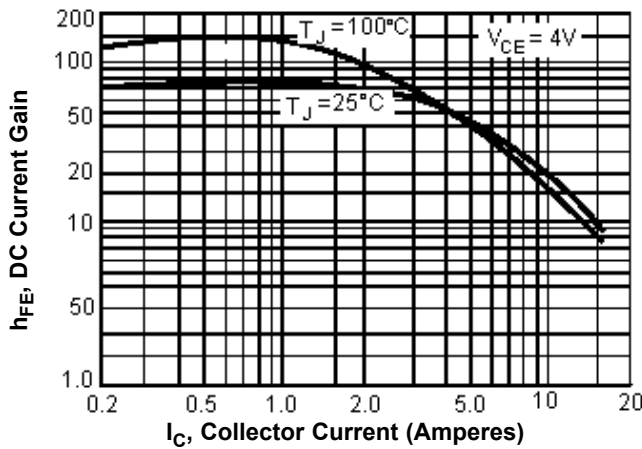
Capacitances



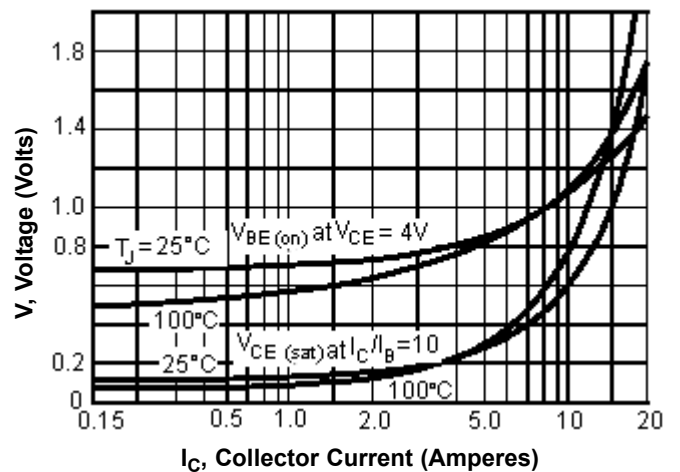
Current-Gain - Bandwidth Product



DC Current Gain



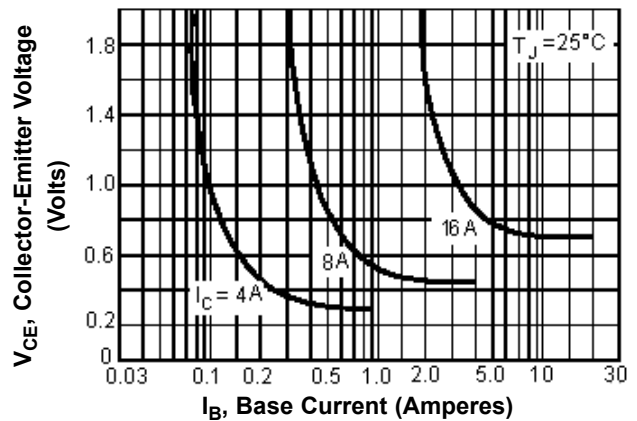
"On" Voltage



Part Number Table

Description	Part Number
Transistor, NPN, TO-3	MJ15024

Collector Saturation Region



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