

Transistor, PNP TO-3



Description:

Complementary silicon power transistors.

The MJ15004 power transistors designed for high power audio, disk head positioners and other linear applications.

Features:

- High safe operating area (100% tested) - 5A at 50V
- For low distortion complementary designs
- High DC current gain = $h_{FE} = 25$ (min.) at $I_C = 5A$ DC
- Pb-free packages

Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	140	V DC
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	5	
Collector Current-Continuous	I_C	20	A DC
Base Current-Continuous	I_B	5	
Emitter Current-Continuous	I_E	25	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	250 1.43	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{Stg}	-65 to +200	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.7	$^\circ C/W$
Max. Lead Temperature for Soldering Purposes 1/16 inches from Case for ≤ 10 seconds	T_L	265	$^\circ C$

Max. 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.

Transistor, PNP TO-3



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

Characteristic	Symbol	Min.	Max.	Unit
----------------	--------	------	------	------

Off Characteristics

Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{mA DC}$, $I_B = 0$)	$V_{CEO(sus)}$	140	-	V DC
Collector Cut off Current ($V_{CE} = 140\text{V DC}$, $V_{BE(off)} = 1.5\text{V DC}$) ($V_{CE} = 140\text{V DC}$, $V_{BE(off)} = 1.5\text{V DC}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	-	100 2	$\mu\text{A DC}$ mA DC
Collector Cut off Current ($V_{CE} = 140\text{V DC}$, $I_B = 0$)	I_{CEO}	-	250	$\mu\text{A DC}$
Emitter Cut off Current ($V_{EB} = 5\text{V DC}$, $I_C = 0$)	I_{EBO}	-	100	

Second Breakdown

Second Breakdown Collector Current with Base Forward Biased ($V_{CE} = 50\text{V DC}$, $t = 1\text{s}$ (non repetitive)) ($V_{CE} = 100\text{V DC}$, $t = 1\text{s}$ (non repetitive))	$I_{S/b}$	5 1	- -	A DC
--	-----------	--------	--------	------

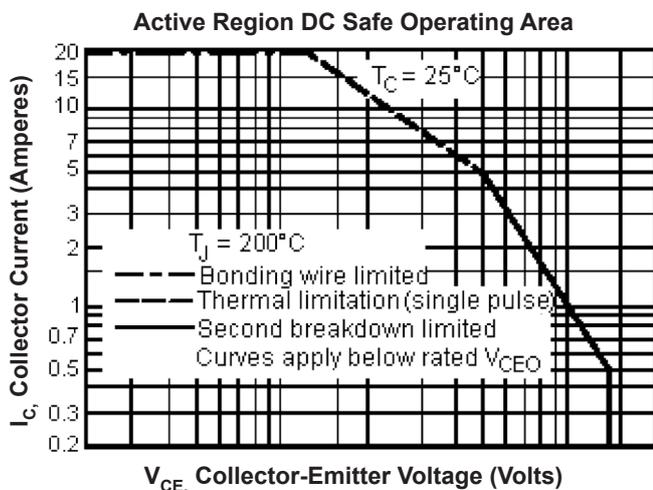
On Characteristics

DC Current Gain ($I_C = 5\text{A DC}$, $V_{CE} = 2\text{V DC}$)	h_{FE}	25	150	-
Collector-Emitter Saturation Voltage ($I_C = 5\text{A DC}$, $I_B = 0.5\text{A DC}$)	$V_{CE(sat)}$	-	1	V DC
Base-Emitter On Voltage ($I_C = 5\text{A DC}$, $V_{CE} = 2\text{V DC}$)	$V_{BE(on)}$	-	2	

Dynamic Characteristics

Current-Gain Bandwidth Product ($I_C = 0.5\text{A DC}$, $V_{CE} = 10\text{V DC}$, $f_{test} = 0.5\text{MHz}$)	f_T	2	-	MHz
Output Capacitance ($V_{CB} = 10\text{V DC}$, $I_E = 0$, $f_{test} = 1\text{MHz}$)	C_{OB}	-	1,000	pF

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



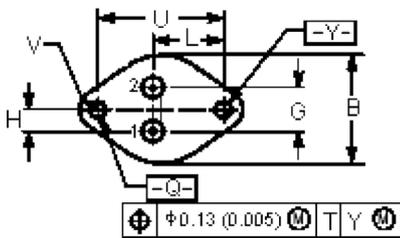
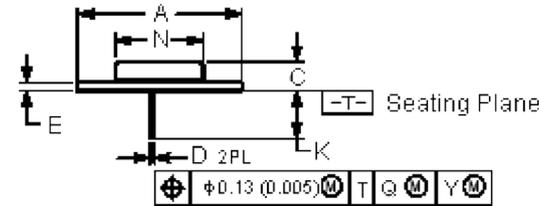
There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data 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 less than the limitations imposed by second breakdown.

Transistor, PNP TO-3



Dimensions



Dimensions	Min.	Max.
A	1.55 (39.37)	Reference
B	-	1.05 (26.67)
C	0.25 (6.35)	0.335 (8.51)
D	0.038 (0.97)	0.043 (1.09)
E	0.055 (1.4)	0.07 (1.77)
G	0.43 (10.92) BSC	
H	0.215 (5.46) BSC	
K	0.44 (11.18)	0.48 (12.19)
L	0.665 (16.89) BSC	
N	-	0.83 (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)

Pin Configuration:

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

Part Number Table

Description	Part Number
Transistor, PNP, TO-3	MJ15004

Important Notice : This data sheet and its contents (the "Information") belong to the members of the Premier Farnell group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of the Group. © Premier Farnell plc 2012.

