

Advance Information

Complementary Silicon Power Transistors

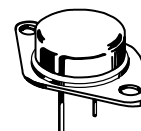
The MJ15011 and MJ15012 are PowerBase power transistors designed for high-power audio, disk head positioners, and other linear applications. These devices can also be used in power switching circuits such as relay or solenoid drivers, dc-to-dc converters or inverters.

- High Safe Operating Area (100% Tested)
1.2 A @ 100 V
- Completely Characterized for Linear Operation
- High DC Current Gain and Low Saturation Voltage
 $h_{FE} = 20$ (Min) @ 2 A, 2 V
 $V_{CE(sat)} = 2.5$ V (Max) @ $I_C = 4$ A, $I_B = 0.4$ A
- For Low Distortion Complementary Designs

NPN
MJ15011*
PNP
MJ15012*

*Motorola Preferred Device

10 AMPERE
COMPLEMENTARY
POWER TRANSISTORS
250 VOLTS
200 WATTS



CASE 1-07
TO-204AA
(TO-3)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	250	Vdc
Collector-Emitter Voltage	V_{CEX}	250	Vdc
Emitter-Base Voltage	V_{EB}	5	Vdc
Collector Current — Continuous	I_C	10	Adc
— Peak (1)	I_{CM}	15	
Base Current — Continuous	I_B	2	Adc
— Peak (1)	I_{BM}	5	
Emitter Current — Continuous	I_E	12	Adc
— Peak (1)	I_{EM}	20	
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	200	Watts
Derate above 25°C		1.14	W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.875	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes	T_L	265	$^\circ\text{C}$

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle \leq 10%.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

Preferred devices are Motorola recommended choices for future use and best overall value.

MJ15011 MJ15012

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (1) (I _C = 100 mA)	V _{(BR)CEO}	250	—	Vdc
Collector Cutoff Current (V _{CE} = 200 Vdc)	I _{CEO}	—	1	mAdc
Collector Cutoff Current (V _{CE} = 250 Vdc, V _{BE(off)} = 15 Vdc)	I _{CEX}	—	500	μAdc
Emitter Cutoff Current (V _{BE} = 5 Vdc)	I _{EBO}	—	500	μAdc

ON CHARACTERISTICS (1)

DC Current Gain (I _C = 2 Adc, V _{CE} = 2 Vdc) (I _C = 4 Adc, V _{CE} = 2 Vdc)	h _{FE}	20 5	100 —	—
Collector–Emitter Saturation Voltage (I _C = 2 Adc, I _B = 0.2 Adc) (I _C = 4 Adc, I _B = 0.4 Adc)	V _{CE(sat)}	— —	0.8 2.5	Vdc
Base–Emitter On Voltage (I _C = 4 Adc, V _{CE} = 2 Vdc)	V _{BE(on)}	—	2	Vdc

DYNAMIC CHARACTERISTICS

Output Capacitance (V _{CB} = 10 Vdc, f = 1 MHz)	C _{ob}	—	750	pF
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SECOND BREAKDOWN

Second Breakdown Collector Current with Base Forward Biased (V _{CE} = 40 Vdc, t = 0.5 s) (V _{CE} = 100 Vdc, t = 0.5 s)	I _{S/b}	5 1.4	— —	Adc
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(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

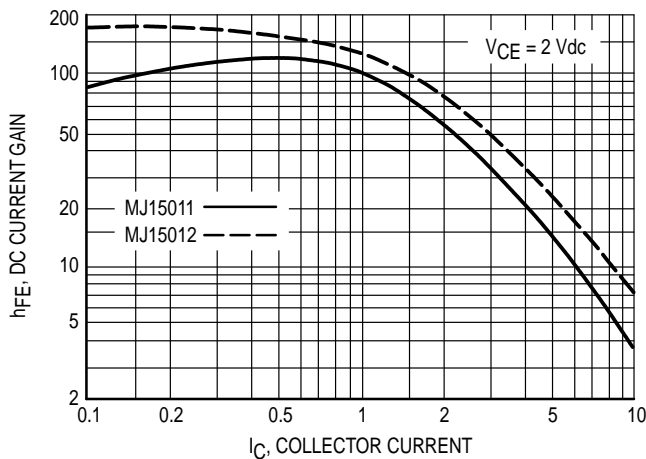


Figure 1. DC Current Gain

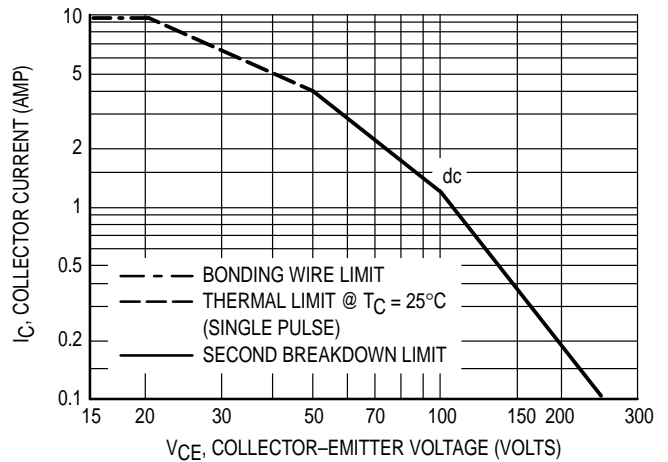
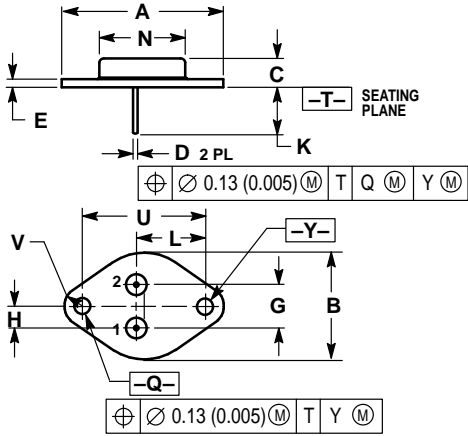


Figure 2. Active Region Safe Operating Area

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	—	1.050	—	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	—	0.830	—	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

STYLE 1:
 PIN 1. BASE
 2. EMITTER
 CASE: COLLECTOR

CASE 1-07
 TO-204AA (TO-3)
 ISSUE Z

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