Order this document by MJ15011/D

NPN
MJ15011*
PNP
MJ15012*

*Motorola Preferred Device

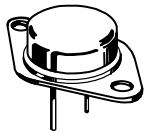
Advance Information

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

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 — Peak (1)	I_C I_{CM}	10 15	Adc
Base Current — Continuous — Peak (1)	I_B I_{BM}	2 5	Adc
Emitter Current — Continuous — Peak (1)	I_E I_{EM}	12 20	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	200 1.14	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +200	°C

THERMAL CHARACTERISTICS

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

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle ≤ 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.

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
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

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

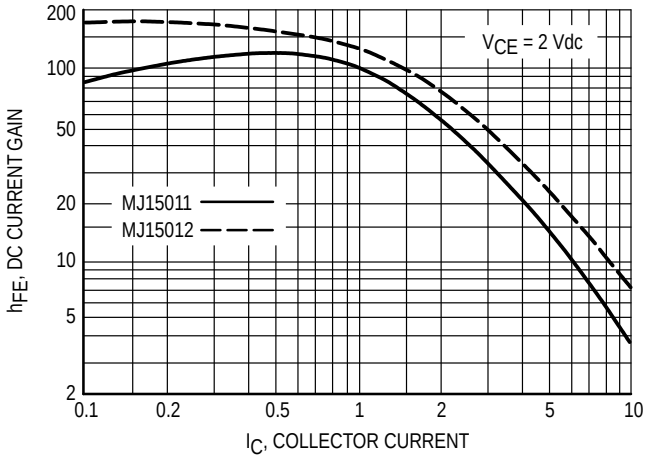


Figure 1. DC Current Gain

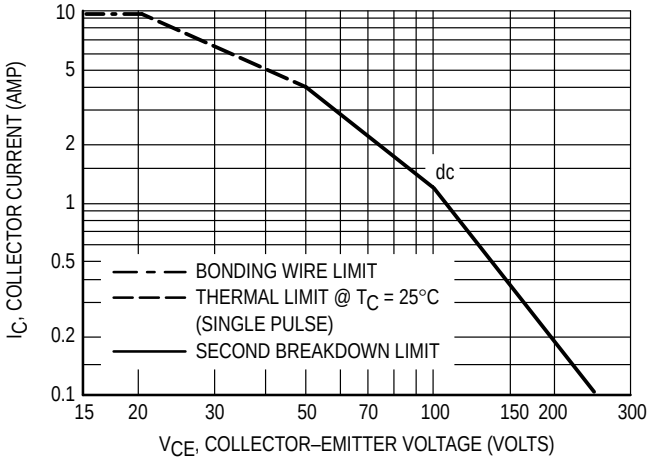
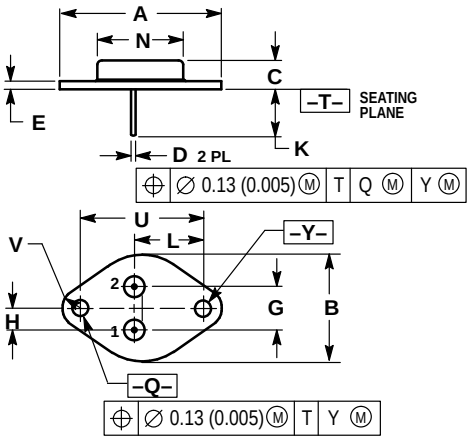


Figure 2. Active Region Safe Operating Area

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.

	INCHES		MILLIMETERS	
DIM	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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