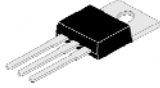


## NPN / PNP PLASTIC POWER TRANSISTORS

**NPN MJE15028, MJE15030**  
**PNP MJE15029, MJE15031**



TO-220

**TO-220 Leaded**  
**Plastic Package**  
**RoHS compliant**

**APPLICATION:** High frequency Drivers in Audio Amplifiers.

### ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C Unless otherwise specified)

PARAMETER	SYMBOL		MJE15028 MJE15029	MJE15030 MJE15031	UNIT
Collector-base voltage (open emitter)	$V_{CBO}$	Max	120	150	V
Collector-emitter voltage (open base)	$V_{CEO}$	Max	120	150	V
Collector current	$I_C$	Max	8.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	Max	50		W
Junction temperature	$T_j$	Max	150		$^\circ\text{C}$
Collector-Emitter Saturation Voltage $I_C = 1\text{A}; I_B = 0.1\text{A}$	$V_{CEsat}$	Max	0.5		V
D.C. current gain $I_C = 0.1\text{A}; V_{CE} = 2\text{V}$	$h_{FE}$	Min	40		
Emitter base voltage (open collector)	$V_{EBO}$	Max	5.0		V
Collector current	$I_C$	Max	8.0		A
Collector current (Peak value)	$I_C$	Max	16		A
Base current	$I_B$	Max	2.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	Max	50		W
Derate above $25^\circ\text{C}$		Max	0.4		W/ $^\circ\text{C}$
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	Max	2.0		W
Derate above $25^\circ\text{C}$		Max	0.016		W/ $^\circ\text{C}$
Junction temperature	$T_j$	Max	150		$^\circ\text{C}$
Storage temperature	$T_{stg}$		-65 to +150		$^\circ\text{C}$

### THERMAL CHARACTERISTICS

From junction to case	$R_{th\ j-c}$	2.5	$^\circ\text{C}/\text{W}$
From junction to ambient	$R_{th\ j-a}$	62.5	$^\circ\text{C}/\text{W}$

**ELECTRICAL CHARACTERISTICS at** (Ta = 25 °C Unless otherwise specified)

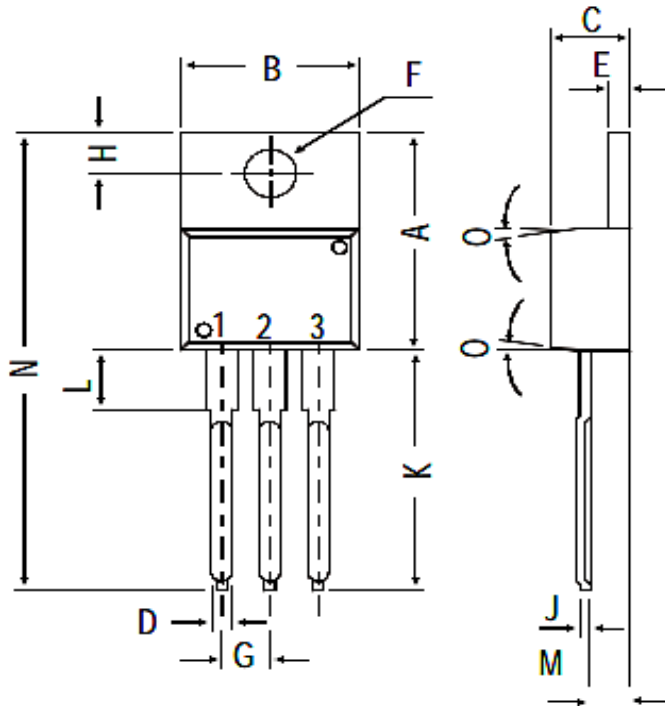
PARAMETER	SYMBOL	TEST CONDITION		MJE15028 MJE15029	MJE15030 MJE15031	UNIT
Collector cutoff current	I <sub>CEO</sub>	I <sub>B</sub> = 0; V <sub>CE</sub> = 120V	Max	0.1	--	mA
		I <sub>B</sub> = 0; V <sub>CE</sub> = 150V	Max	--	0.1	mA
	I <sub>CBO</sub>	I <sub>E</sub> = 0; V <sub>CB</sub> = 120V	Max	10	--	μA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 150V	Max	--	10	μA
Emitter cut-off current	I <sub>EBO</sub>	I <sub>C</sub> = 0; V <sub>EB</sub> = 5V	Max	10		μA
Breakdown voltages	V <sub>CEO(sus)</sub> <sup>1</sup>	I <sub>C</sub> = 10mA; I <sub>B</sub> = 0	Min	120	150	V
	V <sub>CBO</sub>	I <sub>C</sub> = 1mA; I <sub>E</sub> = 0	Min	120	150	V
	V <sub>EBO</sub>	I <sub>E</sub> = 1mA; I <sub>C</sub> = 0	Min	5.0		V
Saturation voltage	V <sub>CEsat</sub> <sup>1</sup>	I <sub>C</sub> = 1A; I <sub>B</sub> = 0.1A	Max	0.5		V
Base emitter on voltage	V <sub>BE(on)</sub> <sup>1</sup>	I <sub>C</sub> = 1A; V <sub>CE</sub> = 2V	Max	1.0		V
D.C. current gain	h <sub>FE</sub> <sup>1</sup>	I <sub>C</sub> = 0.1 A; V <sub>CE</sub> = 2V	Min	40		
		I <sub>C</sub> = 2 A; V <sub>CE</sub> = 2V	Min	40		
		I <sub>C</sub> = 3 A; V <sub>CE</sub> = 2V	Min	40		
		I <sub>C</sub> = 4 A; V <sub>CE</sub> = 2V	Min	20		
Transition frequency f = 10 MHz	f <sub>T</sub> <sup>2</sup>	I <sub>C</sub> = 500mA; V <sub>CE</sub> = 10V	Min	30		MHz

**Note:**

1. Pulse test: pulse width ≤ 300 μs; duty cycle ≤ 2%.
2. f<sub>T</sub> = |h<sub>fe</sub>| • f<sub>test</sub>

## PACKAGE DETAILS

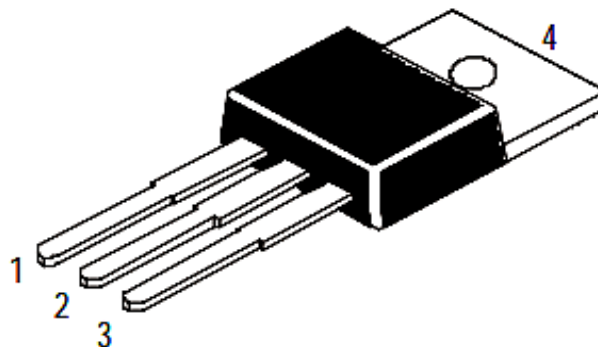
### TO-220 Leaded Plastic Package



DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O	7°	
All dimensions are in mm		

## PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR





### Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

#### **Shelf Life of CDIL Products**

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

#### **Floor Life of CDIL Products and MSL Level**

When the products are opened from the original packing, the floor life will start.

For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	Time	Condition
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001 Certified Company



## Customer Notes

### Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

### Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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