ON Semiconductor®

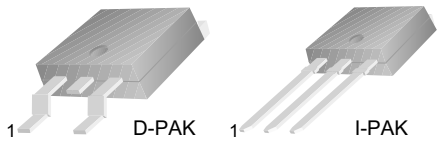
MJD31CE
NPN Epitaxial Silicon Transistor

Features

- General-Purpose Amplifier
- Low-Speed Switching Applications
- Lead Formed for Surface Mount Application (No Suffix)
- Electrically Similar to Popular TIP31 and TIP31C

Application

- Switching Regulators
- Converters
- Power Amplifiers



1.Base 2.Collector 3.Emitter

Ordering Information

Part Number	Top Mark	Package	Packing Method
MJD31CETF-SN00207	MJD31CE	TO-252 3L (DPAK)	Tape and Reel
MJD31CEITU	MJD31C-I	TO-251 3L (IPAK)	Rail

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	3	A
I_{CP}	Collector Current (Pulse)	5	A
I_B	Base Current	1	A
P_C	Collector Dissipation (T_C=25°C)	15	W
	Collector Dissipation (T_A=25°C)	1.56	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 to +150	°C

November-2017, Rev. 2

Publication Order Number:
MJD31CE/D

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage[1]	I_C = 30 mA, I_B = 0	100		V
I_{CEO}	Collector Cut-off Current	V_{CE} = 60 V, I_B = 0		50	μA
I_{CES}	Collector Cut-off Current	V_{CE} = 100 V, V_{BE} = 0		20	μA
I_{EBO}	Emitter Cut-off Current	V_{BE} = 5V, I_C = 0		1	mA
h_{FE}	DC Current Gain[1]	V_{CE} = 1 V, I_C = 100 mA V_{CE} = 4 V, I_C = 1 A V_{CE} = 4 V, I_C = 3 A	60 25 10	130 50	
V_{CE}(sat)	Collector-Emitter Saturation Voltage[1]	I_C = 3 A, I_B = 375 mA		1.2	V
V_{BE}(on)	Base-Emitter On Voltage[1]	V_{CE} = 4 A, I_C = 3 A		1.8	V
f_T	Current Gain Bandwidth Product	V_{CE} = 10 V, I_C = 500 mA	3		MHz

Note:

1. Pulse test : pw ≤ 300 μs, duty cycle ≤ 2%.

Typical Performance Characteristics

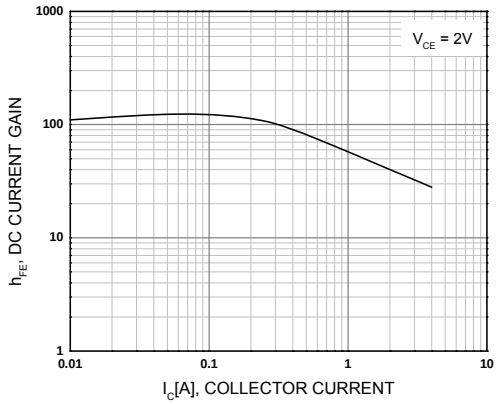


Figure 1. DC current Gain

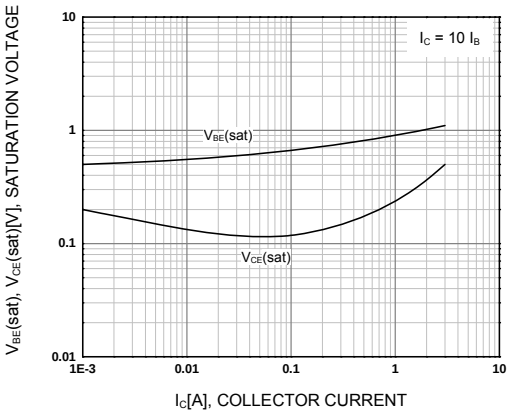


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

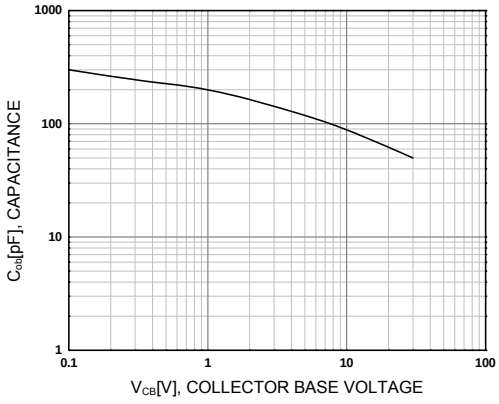


Figure 3. Collector Capacitance

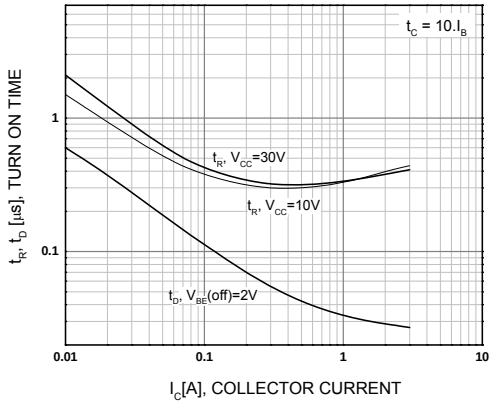


Figure 4. Turn On Time

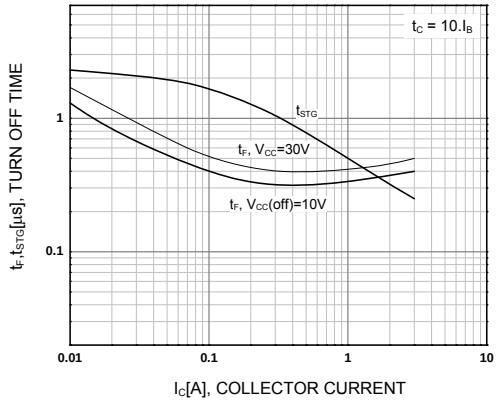


Figure 5. Turn Off Time

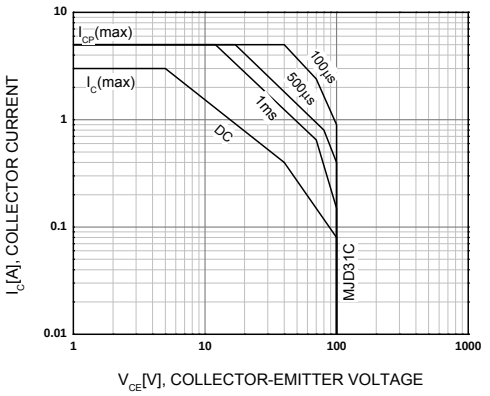


Figure 6. Safe Operating

Typical Performance Characteristics (Continued)

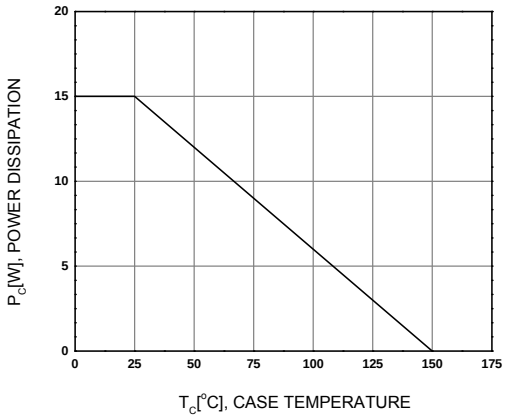
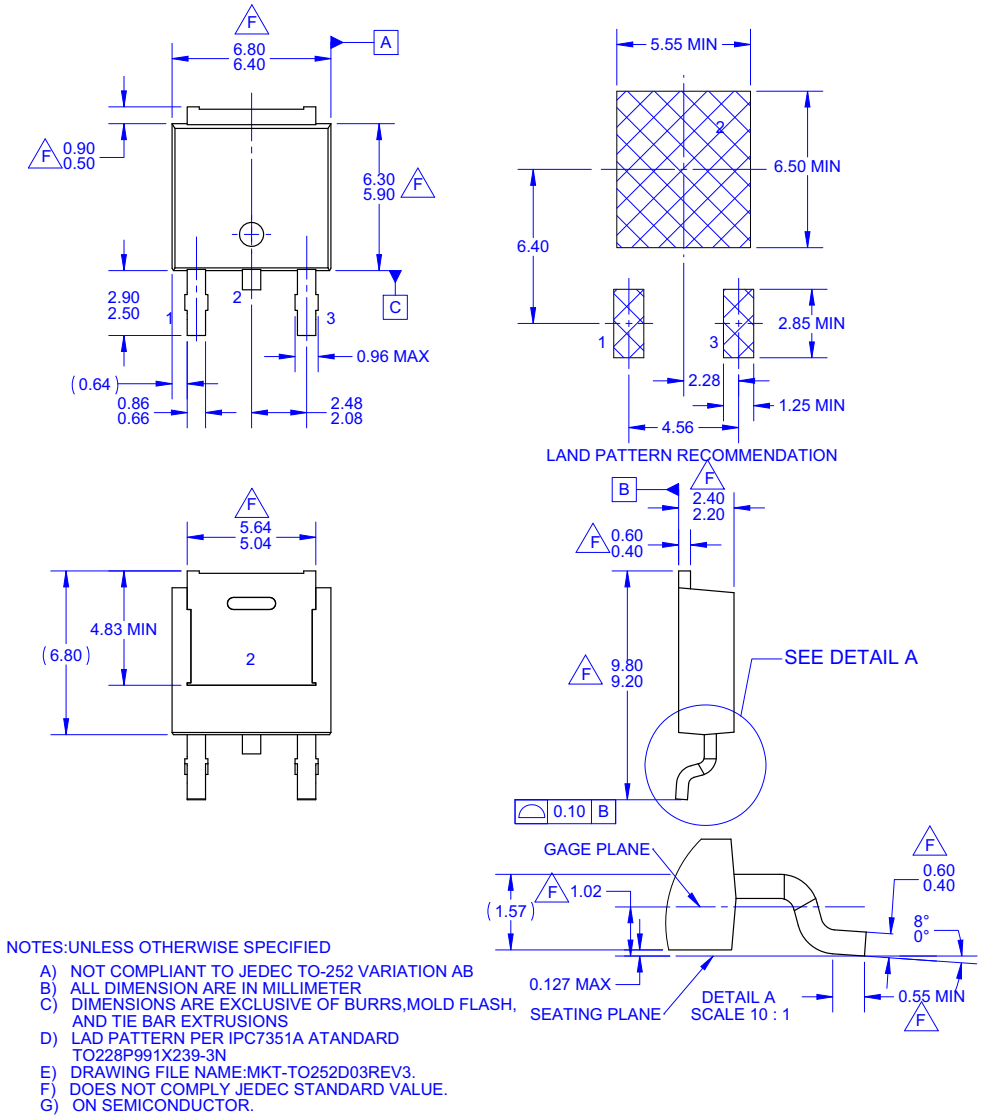


Figure 7. Power Derating



NOTES:UNLESS OTHERWISE SPECIFIED

A) NOT COMPLIANT TO JEDEC TO-252 VARIATION AB
B) ALL DIMENSION ARE IN MILLIMETER
C) DIMENSIONS ARE EXCLUSIVE OF BURRS,MOLD FLASH, AND TIE BAR EXTRUSIONS
D) LAD PATTERN PER IPC7351A ATANDARD TO228P991X239-3N
E) DRAWING FILE NAME:MKT-TO252D03REV3.
F) DOES NOT COMPLY JEDEC STANDARD VALUE.
G) ON SEMICONDUCTOR.

Figure 8. TO-252 3L (DPAK)

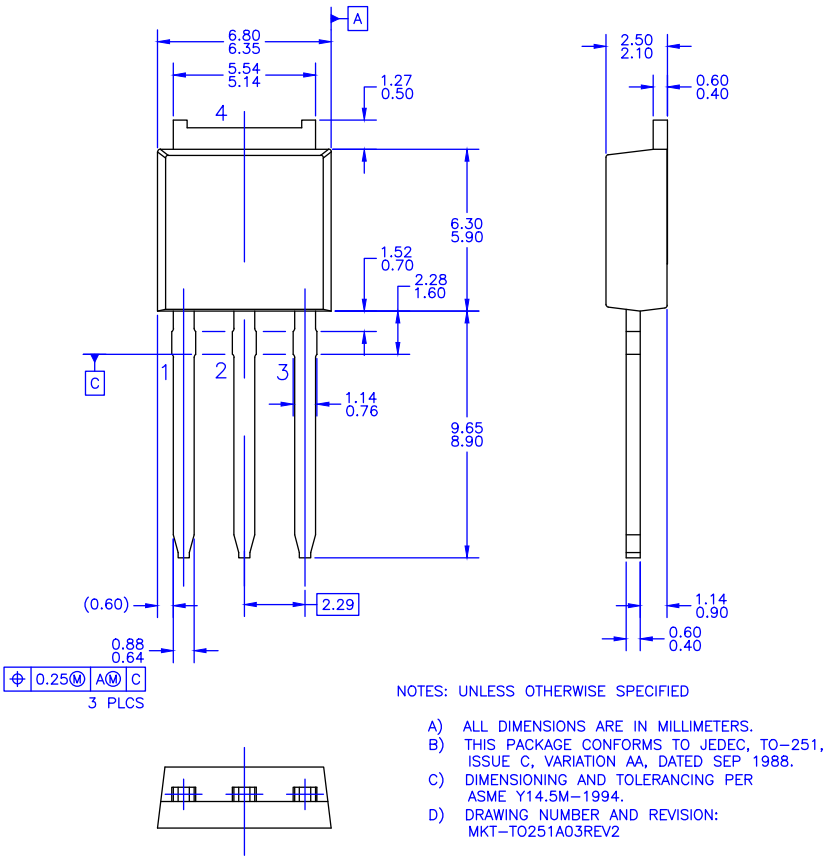


Figure 9. TO-251 3L (IPAK)

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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