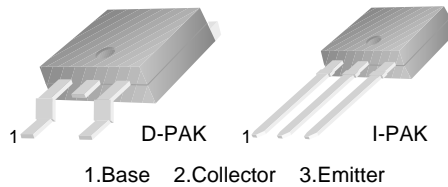


MJD31/31C

NPN Epitaxial Silicon Transistor

Features

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



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage		
	: MJD31	40	V
	: MJD31C	100	V
V_{CEO}	Collector-Emitter Voltage		
	: MJD31	40	V
	: MJD31C	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	3	A
I_{CP}	Collector Current (Pulse)	1	A
I_B	Base Current	1	A
P_C	Collector Dissipation ($T_C = 25^\circ\text{C}$)	15	W
	Collector Dissipation ($T_a = 25^\circ\text{C}$)	1.56	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 to 150	$^\circ\text{C}$

Ordering Information

Part Number	Marking	Package	Packing Method	Remarks
MJD31CTF	MJD31C	D-PAK	Tape & Reel	
MJD31CITU	MJD31C-I	I-PAK	Tube	

Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	* Collector-Emitter Sustaining Voltage : MJD31 : MJD31C	$I_C = 30\text{mA}, I_B = 0$	40		V
		$I_C = 30\text{mA}, I_B = 0$	100		V
I_{CEO}	Collector Cut-off Current : MJD31 : MJD31C	$V_{CE} = 40\text{V}, I_B = 0$		50	μA
		$V_{CE} = 60\text{V}, I_B = 0$		50	μA
I_{CES}	Collector Cut-off Current : MJD31 : MJD31C	$V_{CE} = 40\text{V}, V_{BE} = 0$		20	μA
		$V_{CE} = 100\text{V}, V_{BE} = 0$		20	μA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = 5\text{V}, I_C = 0$		1	mA
h_{FE}	* DC Current Gain	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	25		
		$V_{CE} = 4\text{V}, I_C = 3\text{A}$	10	50	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 3\text{A}, I_B = 375\text{mA}$		1.2	V
$V_{BE(on)}$	* Base-Emitter On Voltage	$V_{CE} = 4\text{A}, I_C = 3\text{A}$		1.8	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	3		MHz

* Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

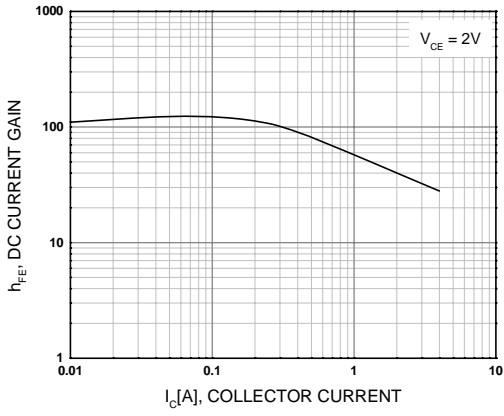


Figure 1. DC current Gain

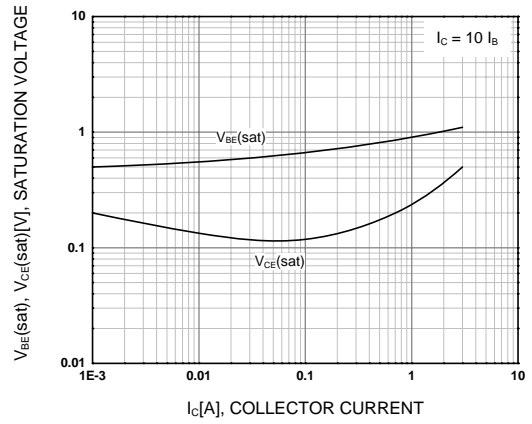


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

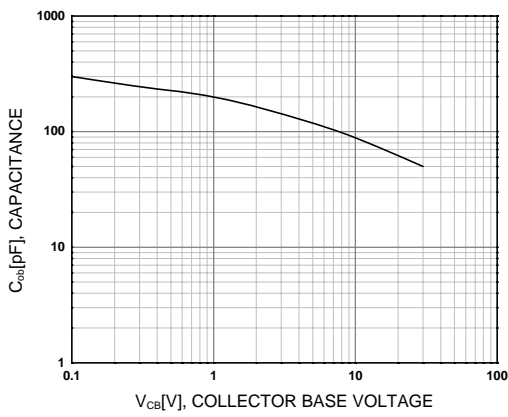


Figure 3. Collector Capacitance

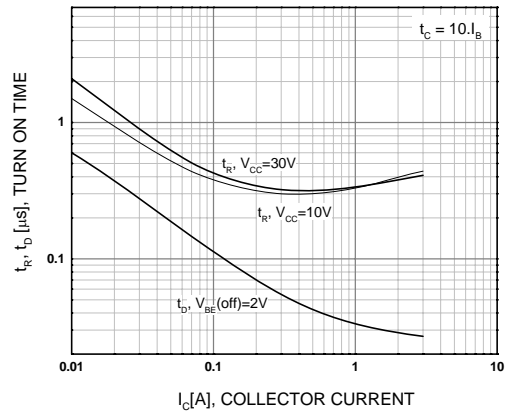


Figure 4. Turn On Time

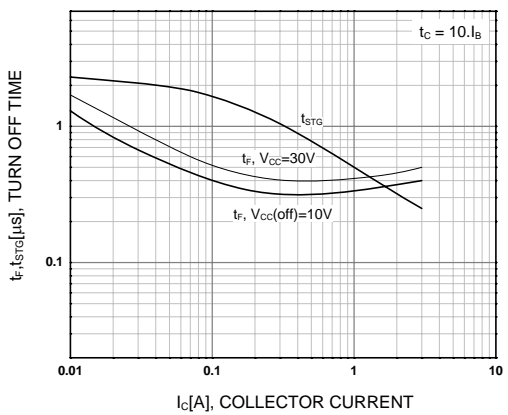


Figure 5. Turn Off Time

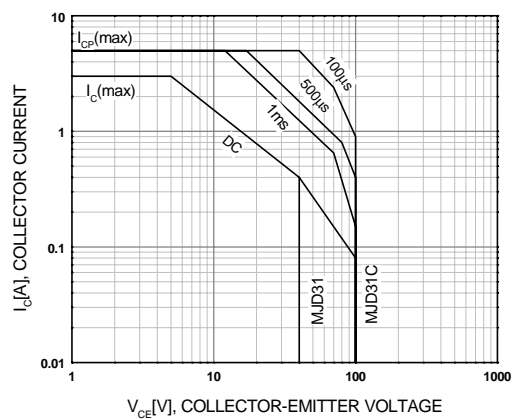


Figure 6. Safe Operating

Typical Performance Characteristics (Continued)

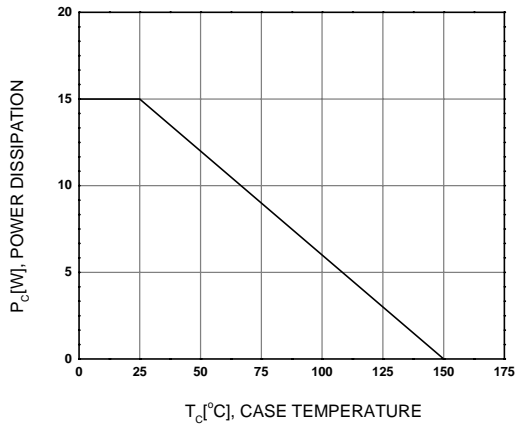
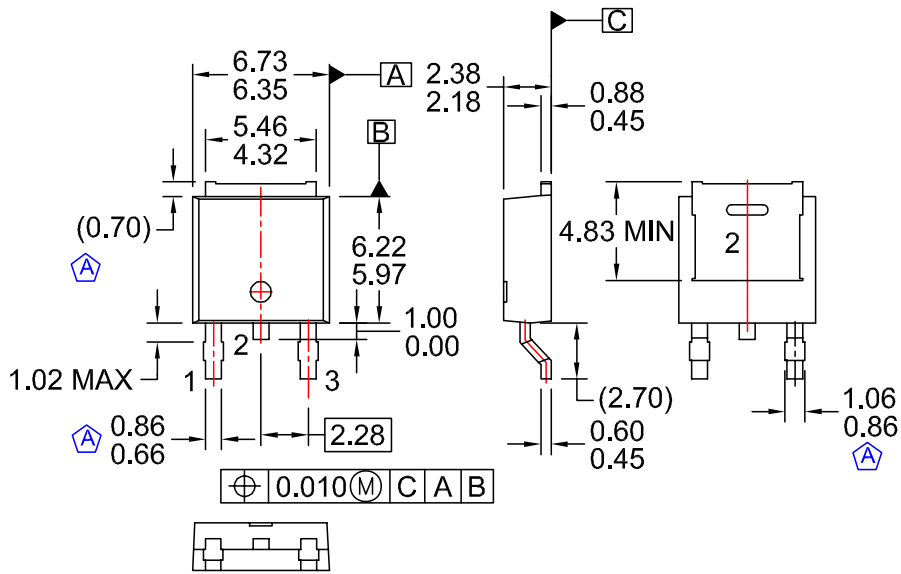


Figure 7. Power Derating

Physical Dimensions

D-PAK







- NOTES: UNLESS OTHERWISE SPECIFIED
- Ⓐ) CONFORMS TO JEDEC TO-252 VARIATION AB EXCEPT WHERE NOTED
 - B) ALL DIMENSIONS ARE IN MILLIMETERS.
 - C) DRAWING CONFORMS TO ASME Y14.5M-1994
 - D) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
 - E) FORMERLY NAMED BD1733
 - F) DRAWING FILE NAME: MKT-TO252D03REV1

Dimensions in Millimeters



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