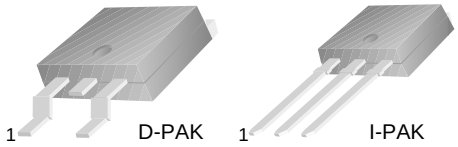
FAIRCHILD SEMICONDUCTOR®

February 2012

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



1.Base 2.Collector 3.Emitter

Absolute Maximum Ratings T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : MJD31 : MJD31C	 40 100	 V V
V_{CEO}	Collector-Emitter Voltage : MJD31 : MJD31C	 40 100	 V 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°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

Ordering Information

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

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Electrical Characteristics T_a = 25°C unless otherwise noted

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

* Pulse Test: PW≤300μs, Duty Cycle≤2%

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Typical Performance Characteristics

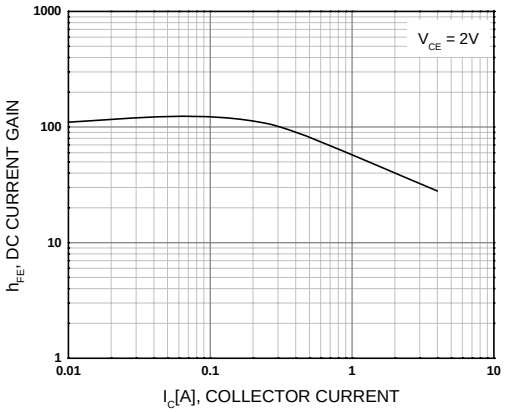


Figure 1. DC current Gain

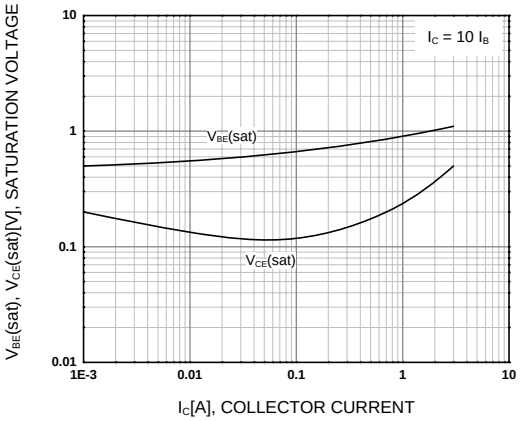


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

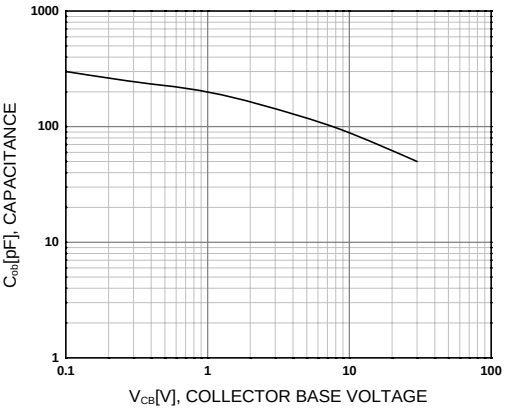


Figure 3. Collector Capacitance

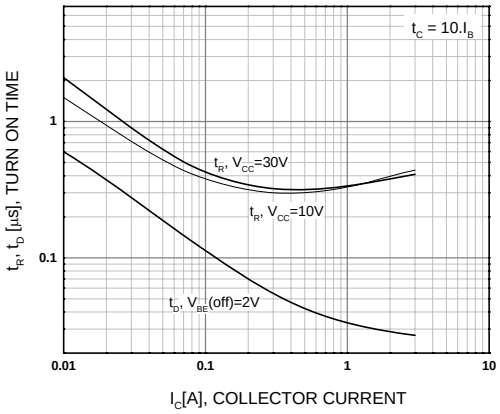


Figure 4. Turn On Time

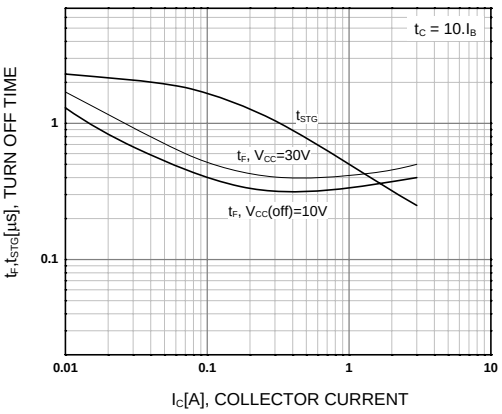


Figure 5. Turn Off Time

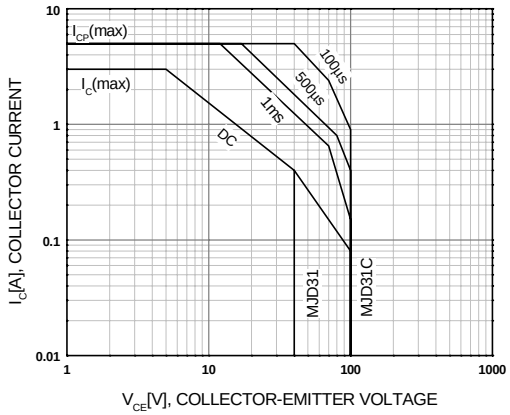


Figure 6. Safe Operating

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Typical Performance Characteristics (Continued)

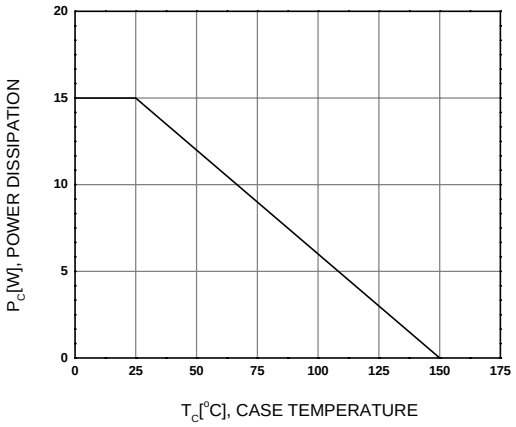
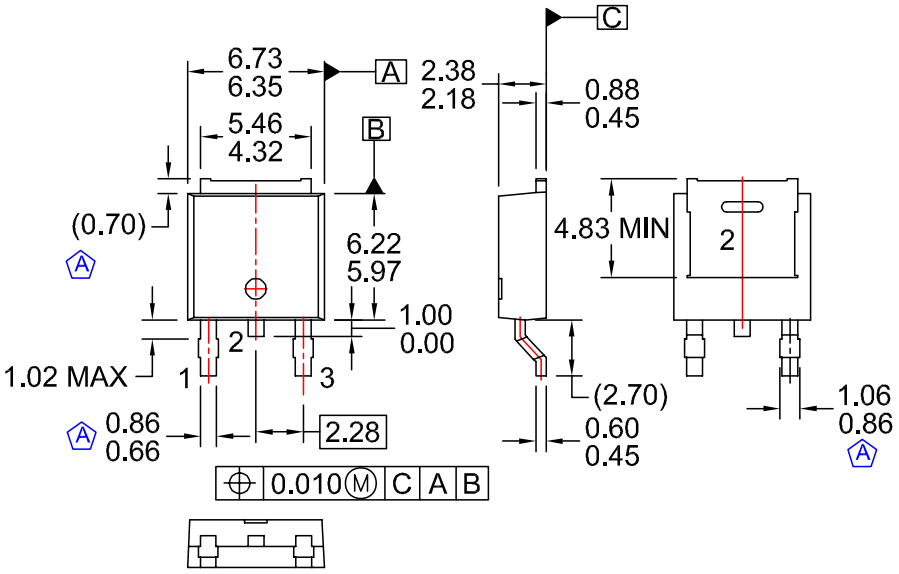


Figure 7. Power Derating

Physical Dimensions

D-PAK



NOTES: UNLESS OTHERWISE SPECIFIED

A) 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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