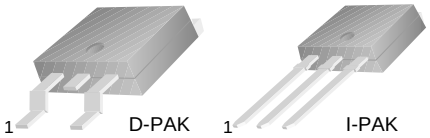
FAIRCHILD SEMICONDUCTOR®

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	

Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V_{CEO}(sus)	* Collector-Emitter Sustaining Voltage : MJD31 : MJD31C	 I_C = 30mA, I_B = 0 I_C = 30mA, I_B = 0	 40 100		 V V
I_{CEO}	Collector Cut-off Current : MJD31 : MJD31C	 V_{CE} = 40V, I_B = 0 V_{CE} = 60V, I_B = 0		 50 50	 μA μA
I_{CES}	Collector Cut-off Current : MJD31 : MJD31C	 V_{CE} = 40V, V_{BE} = 0 V_{CE} = 100V, V_{BE} = 0		 20 20	 μA 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 V_{CE} = 4V, I_C = 3A	25 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%

Typical Performance Characteristics

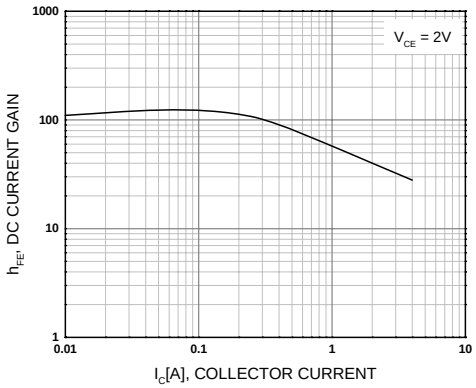


Figure 1. DC current Gain

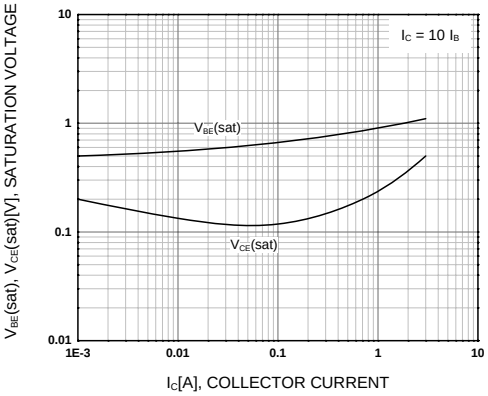


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

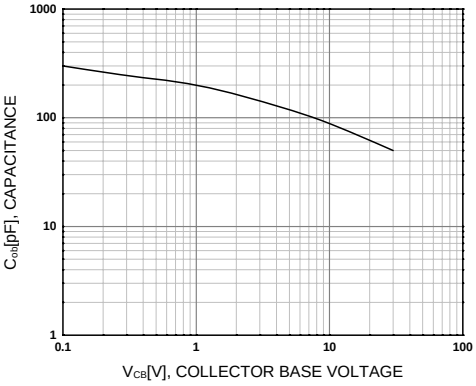


Figure 3. Collector Capacitance

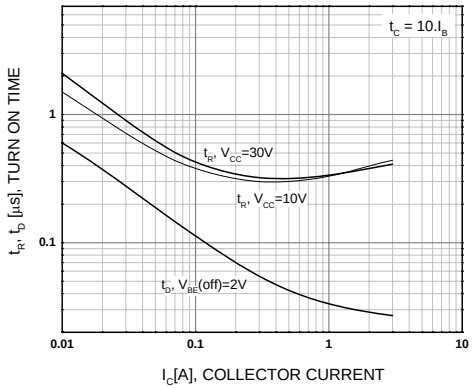


Figure 4. Turn On Time

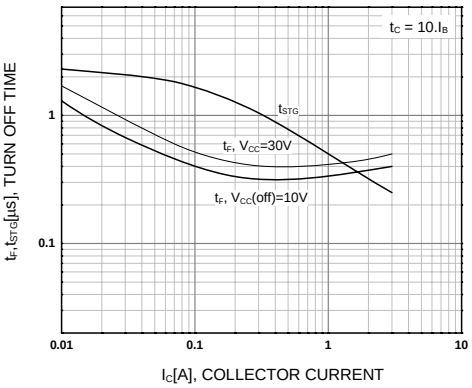


Figure 5. Turn Off Time

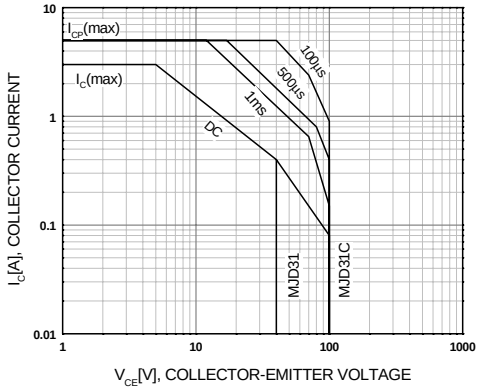


Figure 6. Safe Operating

Typical Performance Characteristics (Continued)

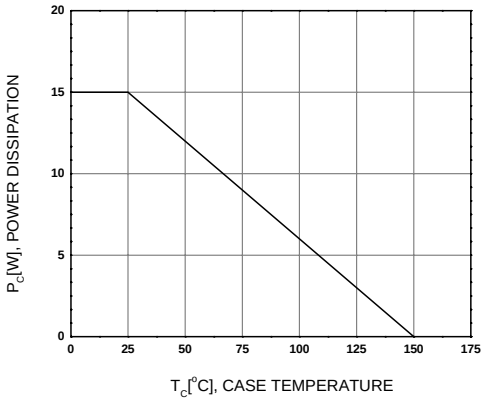
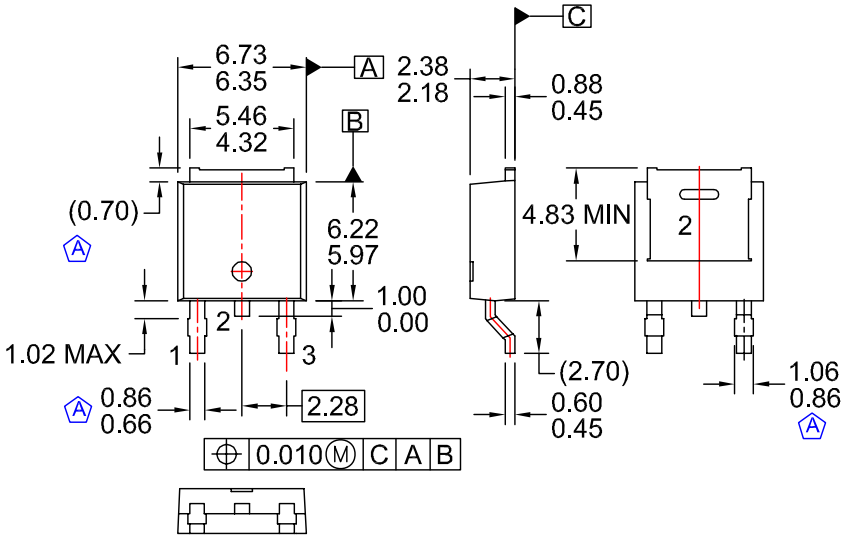


Figure 7. Power Derating

Physical Dimensions

D-PAK



NOTES: UNLESS OTHERWISE SPECIFIED

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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