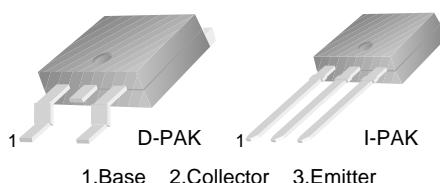


# MJD47/50

## NPN Epitaxial Silicon Transistor

### Features

- High Voltage and High Reliability D-PAK for Surface Mount Applications
- Lead Formed for Surface Mount Application (No Suffix)
- Straight Lead (I-PAK, "- I" Suffix)
- Electrically Similar to Popular TIP47 and TIP50



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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Emitter Voltage		
	: MJD47	350	V
	: MJD50	500	V
$V_{CEO}$	Collector-Emitter Voltage		
	: MJD47	250	V
	: MJD50	400	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	1	A
$I_{CP}$	Collector Current (Pulse)	2	A
$I_B$	Base Current	0.6	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
MJD47TF	MJD47	D-PAK	Tape & Reel	
MJD50TF	MJD50	D-PAK	Tape & Reel	

**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 : MJD47 : MJD50	$I_C = 30\text{mA}, I_B = 0$ $I_C = 30\text{mA}, I_B = 0$	250 400		V V
$I_{CEO}$	Collector Cut-off Current : MJD47 : MJD50	$V_{CE} = 150\text{V}, I_B = 0$ $V_{CE} = 300\text{V}, I_B = 0$		0.2 0.2	mA mA
$I_{CES}$	Collector Cut-off Current : MJD47 : MJD50	$V_{CE} = 350, V_{EB} = 0$ $V_{CE} = 500, V_{EB} = 0$		0.1 0.1	mA mA
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = 5\text{V}, I_C = 0$		1	mA
$h_{FE}$	* DC Current Gain	$V_{CE} = 10\text{V}, I_C = 0.3\text{A}$ $V_{CE} = 10\text{V}, I_C = 1\text{A}$	30 10	150	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.2\text{A}$		1	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$V_{CE} = 10\text{A}, I_C = 1\text{A}$		1.5	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.2\text{A}$	10		MHz

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

Typical Performance Characteristics

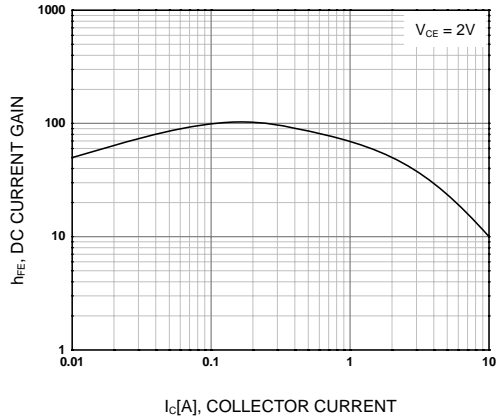


Figure 1. DC current Gain

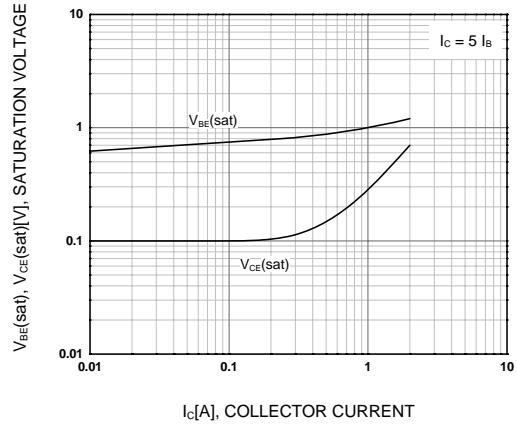


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

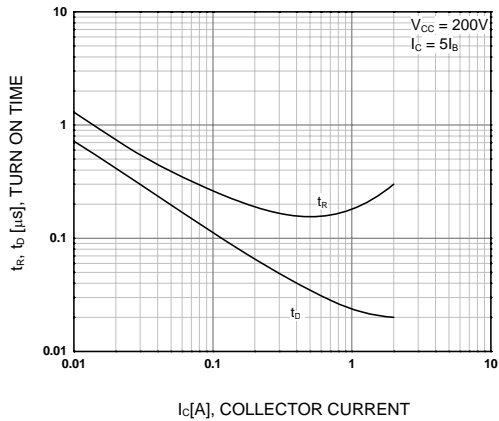


Figure 3. Turn On Time

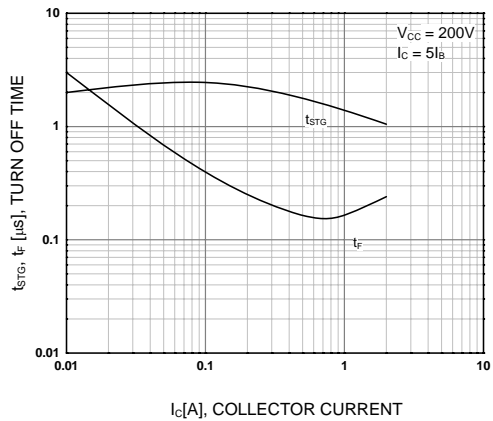


Figure 4. Turn Off Time

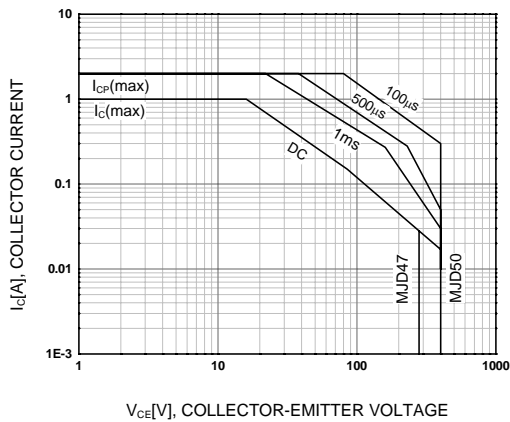


Figure 5. Safe Operating Area

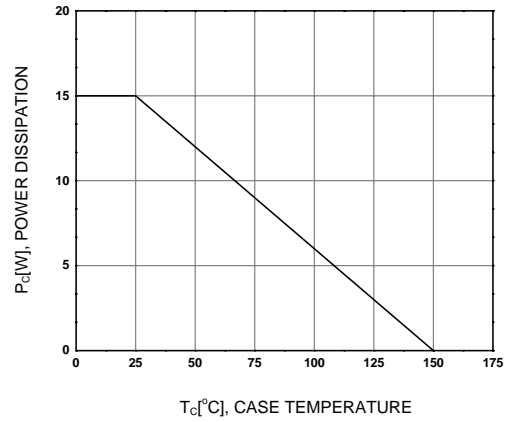
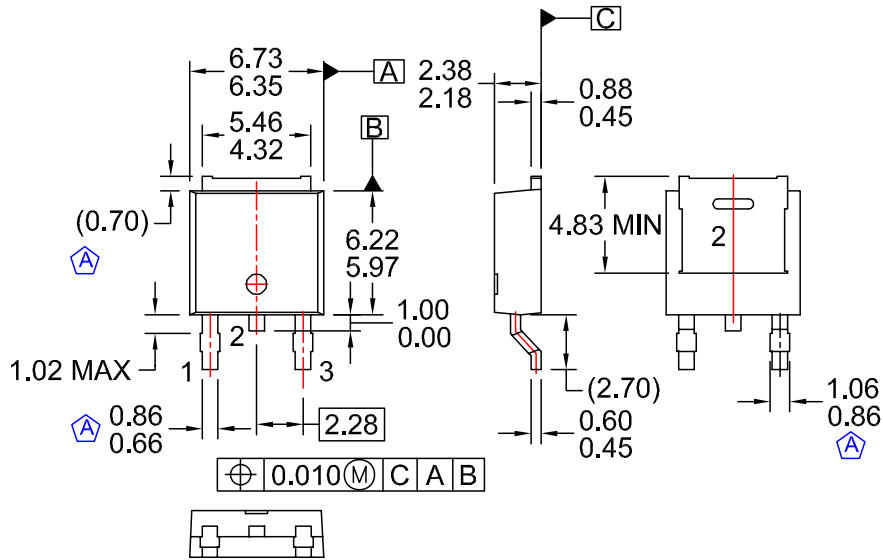


Figure 6. Power Derating

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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| AccuPower™  | FRFET®   | PowerXS™  | the power franchise   |
| AX-CAP™*  | Global Power Resource <sup>SM</sup>            | Programmable Active Droop™  | TinyBoost™  |
| BitSiC™   | GreenBridge™                                   | QFET®   | TinyBuck™   |
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| CTL™  | IntelliMAX™                                    | Saving our world, 1mW/W/kW at a time™   | TinyPWM™  |
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| FAST®   | OptoHIT™                                       | SyncFET™  | VoltagePlus™  |
| FastvCore™  | OPTOLOGIC®                                     | Sync-Lock™  | XST™  |
| FETBench™   | OPTOPLANAR®                                    |  ™ |   |
| FlashWriter®*   |  |   |   |
| FPS™  |  |   |   |

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