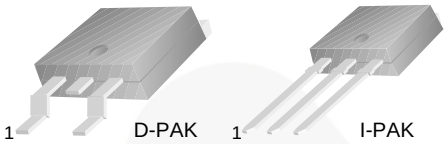
March 2014

MJD47 / MJD50
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



1.Base 2.Collector 3.Emitter

Ordering Information

Part Number	Top Mark	Package	Packing Method
MJD47TF	MJD47	TO-252 3L (DPAK)	Tape and Reel
MJD50TF	MJD50	TO-252 3L (DPAK)	Tape and Reel

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_C = 25°C unless otherwise noted.

Symbol	Parameter		Value	Unit
V_{CBO}	Collector-Base Voltage	MJD47	350	V
		MJD50	500	
V_{CEO}	Collector-Emitter Voltage	MJD47	250	V
		MJD50	400	
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
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		- 65 to 150	°C

Thermal Characteristics

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

Symbol	Parameter	Value	Unit
P_C	Collector Dissipation (T_C = 25°C)	15.0	W
	Collector Dissipation (T_A = 25°C)	1.56	

Electrical Characteristics

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

Symbol	Parameter		Conditions	Min.	Typ.	Max.	Unit
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage(1)	MJD47	I_C = 30 mA, I_B = 0	250			V
		MJD50		400			
I_{CEO}	Collector Cut-Off Current	MJD47	V_{CE} = 150 V, I_B = 0			0.2	mA
		MJD50	V_{CE} = 300 V, I_B = 0			0.2	
I_{CES}	Collector Cut-Off Current	MJD47	V_{CE} = 350 V, V_{EB} = 0			0.1	mA
		MJD50	V_{CE} = 500 V, V_{EB} = 0			0.1	
I_{EBO}	Emitter Cut-Off Current		V_{BE} = 5 V, I_C = 0			1	mA
h_{FE}	DC Current Gain(1)		V_{CE} = 10 V, I_C = 0.3 A	30		150	
			V_{CE} = 10 V, I_C = 1 A	10			
V_{CE}(sat)	Collector-Emitter Saturation Voltage(1)		I_C = 1 A, I_B = 0.2 A			1	V
V_{BE}(on)	Base-Emitter On Voltage(1)		V_{CE} = 10 V, I_C = 1 A			1.5	V
f_T	Current Gain Bandwidth Product		V_{CE} = 10 V, I_C = 0.2 A	10			MHz

Note:

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

Typical Performance Characteristics

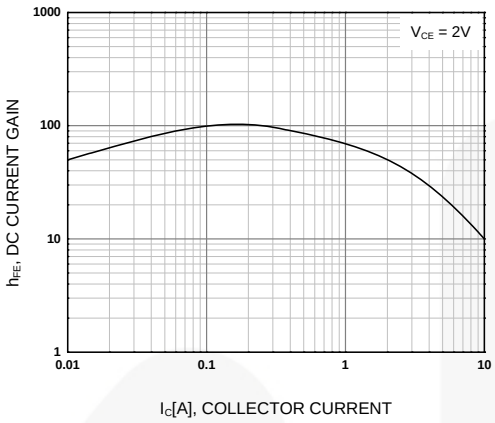


Figure 1. DC Current Gain

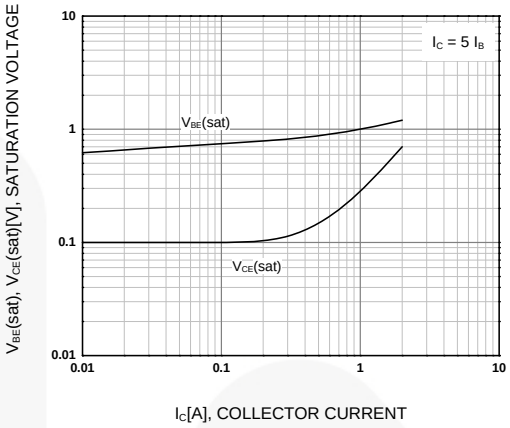


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

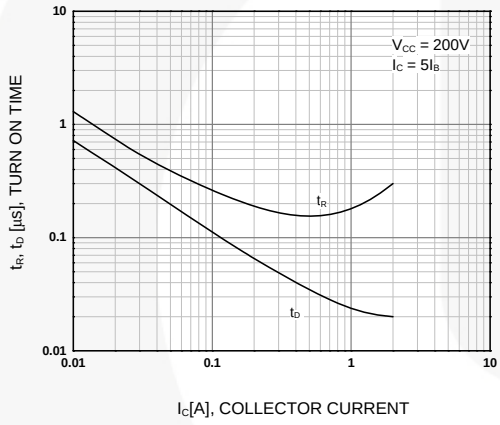


Figure 3. Turn-On Time

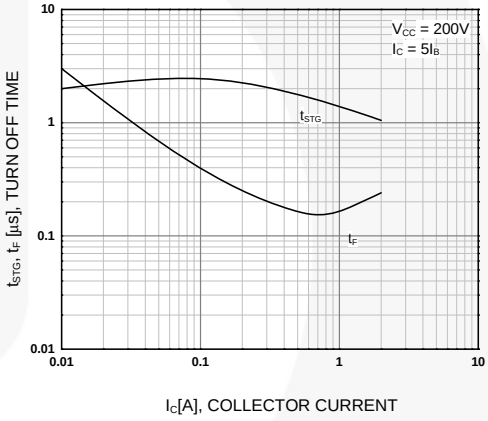


Figure 4. Turn-Off Time

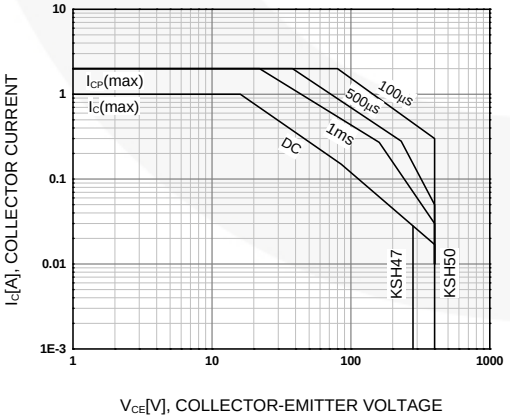


Figure 5. Safe Operating Area

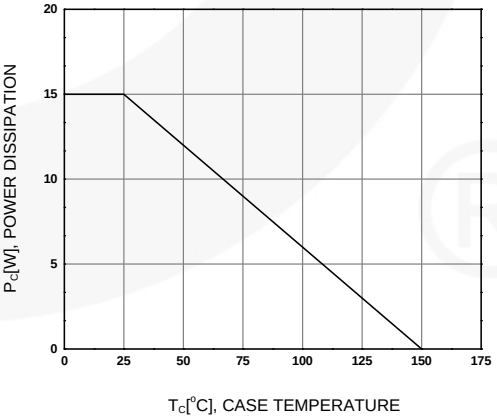


Figure 6. Power Derating

Physical Dimensions

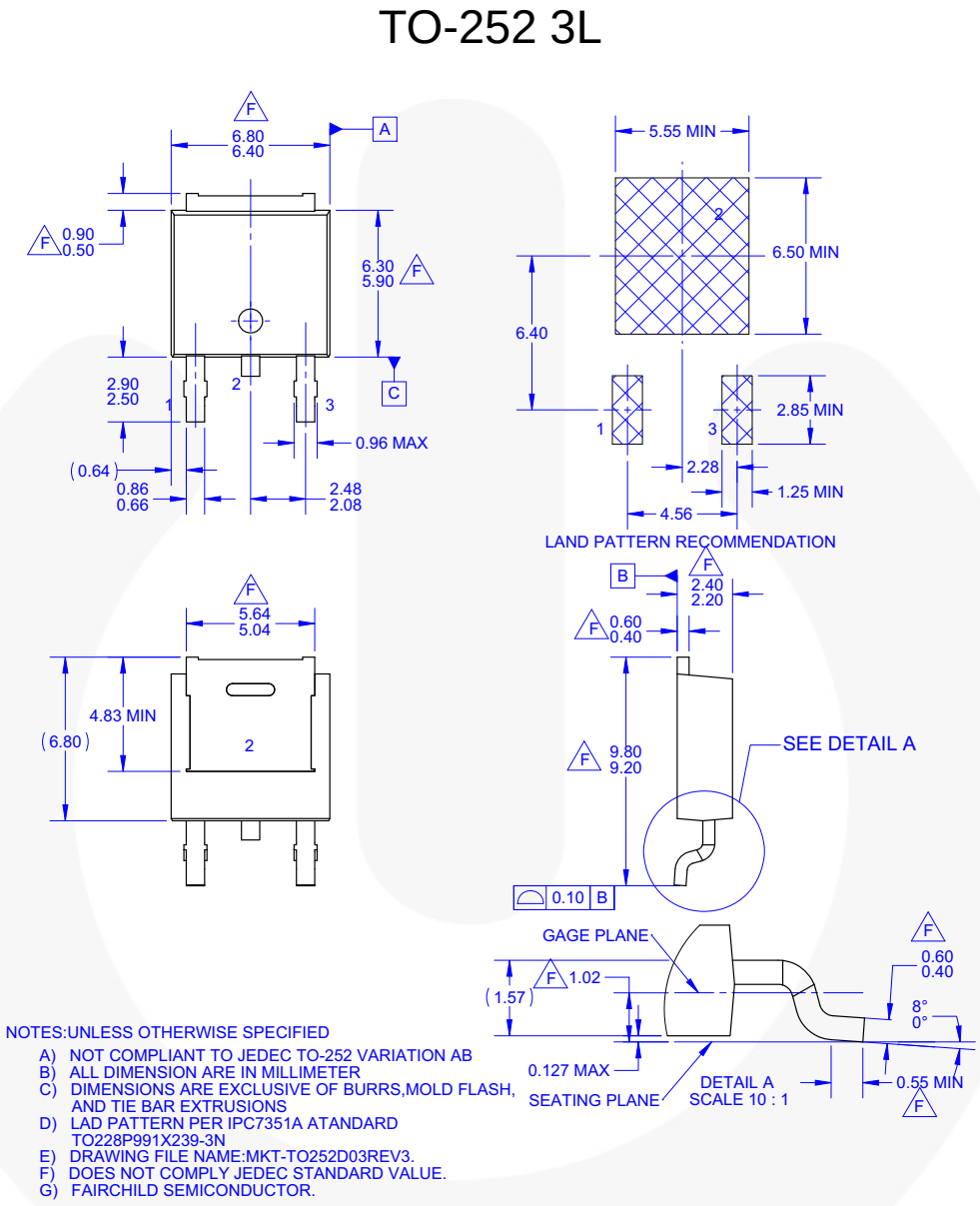


Figure 7. 3-LEAD, TO-252, JEDEC TO-252 VAR. AB, SURFACE MOUNT (DPAK) (ACTIVE)

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