



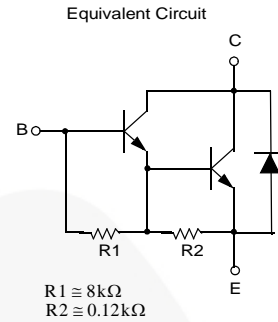
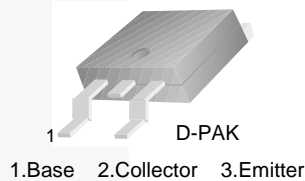
March 2016

MJD122

NPN Silicon Darlington Transistor

Features

- D-PAK for Surface Mount Applications
- High DC Current Gain
- Built-in a Damper Diode at E-C
- Lead Formed for Surface Mount Applications
- Electrically Similar to Popular TIP122
- Complement to MJD127



Ordering Information

Part Number	Top Mark	Package	Packing Method
MJD122TF	MJD122	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 $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	8	A
I_{CP}	Collector Current (Pulse)	16	A
I_B	Base Current	120	mA
P_C	Collector Dissipation ($T_C = 25^\circ\text{C}$)	20	W
	Collector Dissipation ($T_A = 25^\circ\text{C}$)	1.75	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 to 150	$^\circ\text{C}$

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage ⁽¹⁾	$I_C = 30\text{ mA}, I_B = 0$	100		V
I_{CEO}	Collector Cut-off Current	$V_{CE} = 50\text{ V}, I_B = 0$		10	μA
I_{CBO}	Collector Cut-off Current	$V_{CB} = 100\text{ V}, I_E = 0$		10	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{ V}, I_C = 0$		2	mA
h_{FE}	DC Current Gain ⁽¹⁾	$V_{CE} = 4\text{ V}, I_C = 4\text{ A}$ $V_{CE} = 4\text{ V}, I_C = 8\text{ A}$	1000 100	12K	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁽¹⁾	$I_C = 4\text{ A}, I_B = 16\text{ mA}$ $I_C = 8\text{ A}, I_B = 80\text{ mA}$		2 4	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ⁽¹⁾	$I_C = 8\text{ A}, I_B = 80\text{ mA}$		4.5	V
$V_{BE(on)}$	Base-Emitter On Voltage ⁽¹⁾	$V_{CE} = 4\text{ V}, I_C = 4\text{ A}$		2.8	V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0$ $f = 0.1\text{ MHz}$		200	pF

Note:

1. Pulse test: $p_w \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

Typical Performance Characteristics

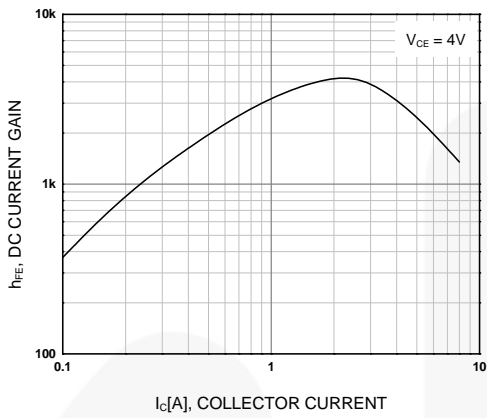


Figure 1. DC current Gain

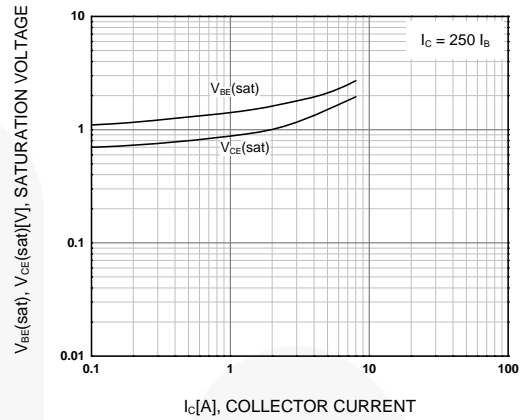


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

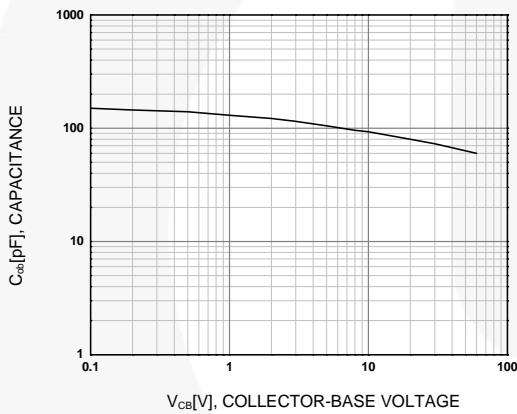


Figure 3. Collector Output Capacitance

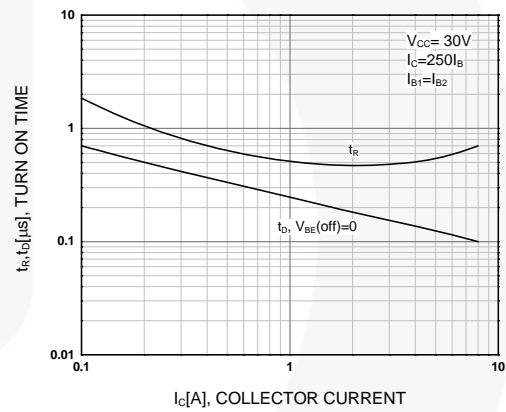


Figure 4. Turn On Time

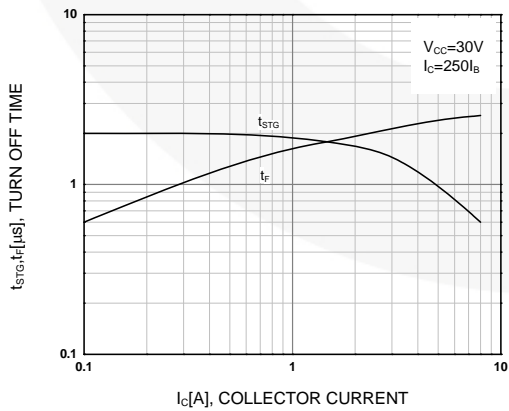


Figure 5. Turn Off Time

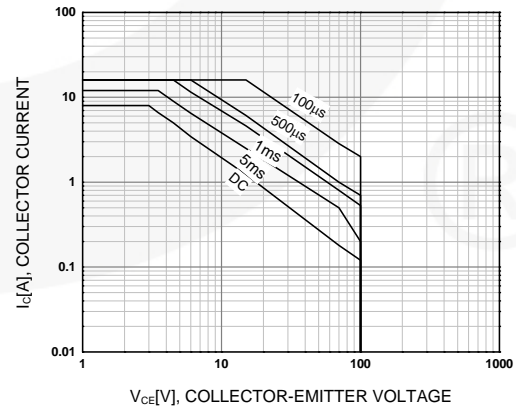


Figure 6. Safe Operating Area

Typical Performance Characteristics (Continued)

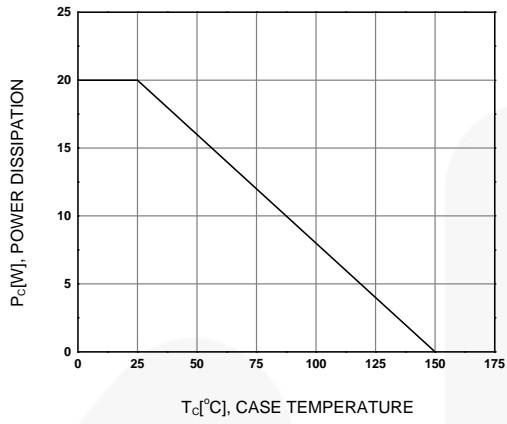
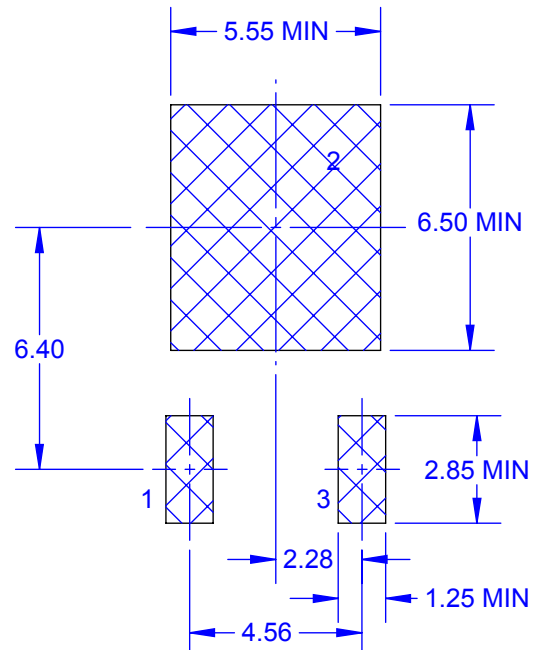
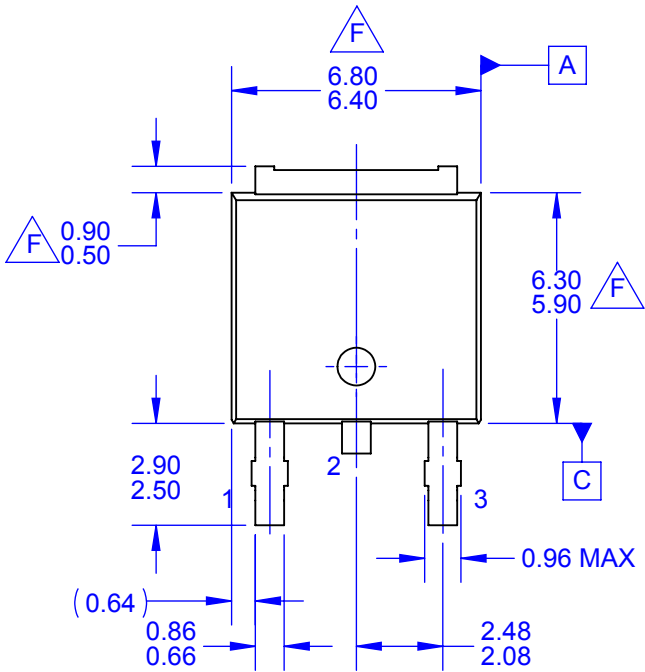
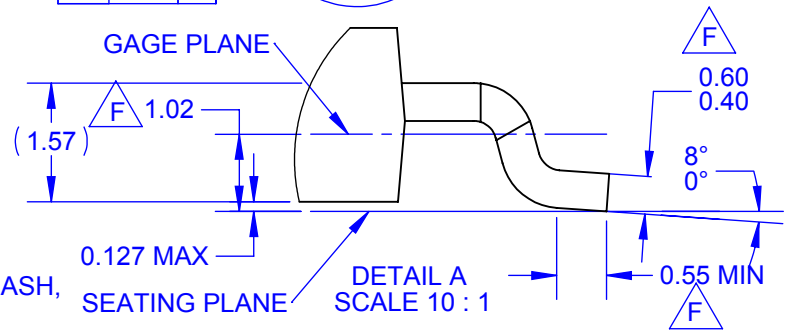
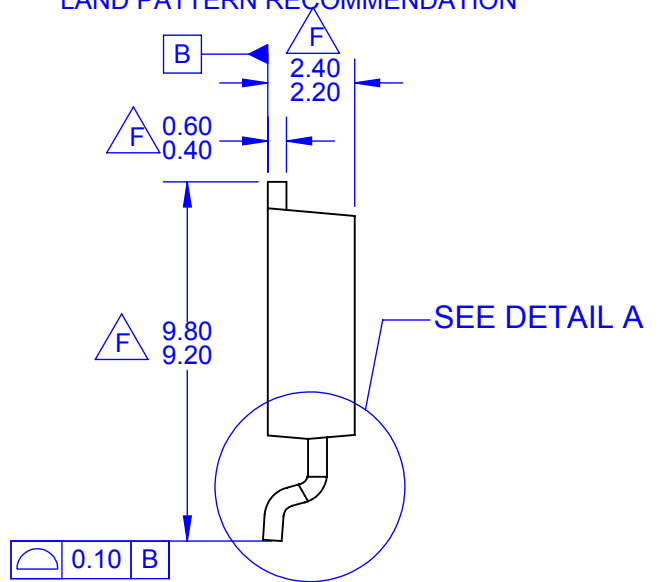
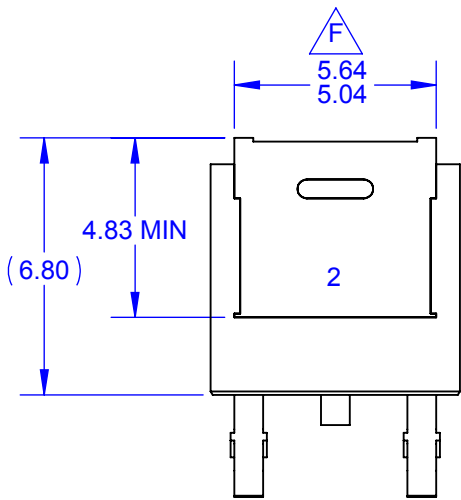


Figure 7. Power Derating Curve





LAND PATTERN RECOMMENDATION



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- B) ALL DIMENSION ARE IN MILLIMETER
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS
- D) LAD PATTERN PER IPC7351A ATANDARD TO228P991X239-3N
- E) DRAWING FILE NAME: MKT-TO252D03REV3.
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