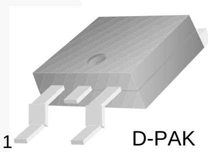
FAIRCHILD™

March 2016

MJD122
NPN Silicon Darlington Transistor

Features

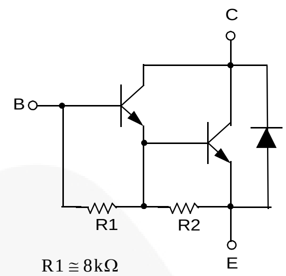
- D-PAK for Surface Mount Applications
- High DC Current Gain
- Built-in a Damper Diode at E-C
- Lead Formed for Surface Mount Applications
- Electrically Similar to Popular TIP122
- Complement to MJD127



1 D-PAK

1.Base 2.Collector 3.Emitter

Equivalent Circuit



R1 ≅ 8kΩ
R2 ≅ 0.12kΩ

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°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°C)	20	W
	Collector Dissipation (T_A = 25°C)	1.75	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 to 150	°C

Electrical Characteristics

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

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

Note:

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

Typical Performance Characteristics

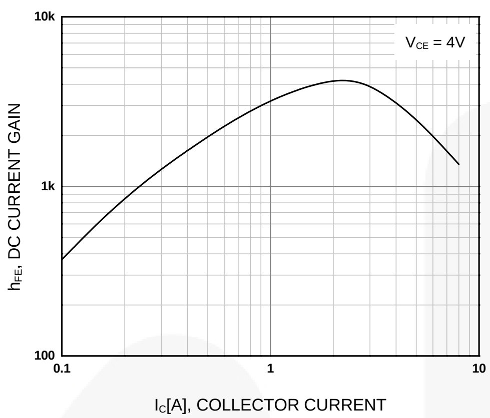


Figure 1. DC current Gain

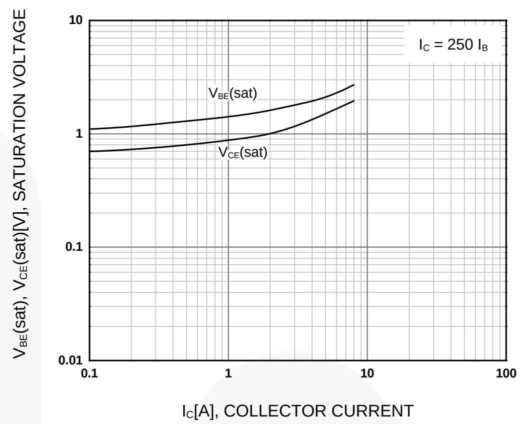


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

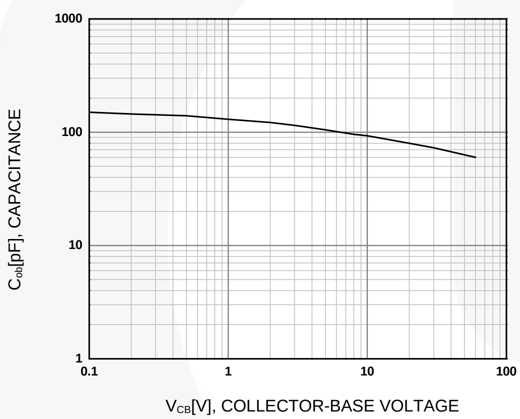


Figure 3. Collector Output Capacitance

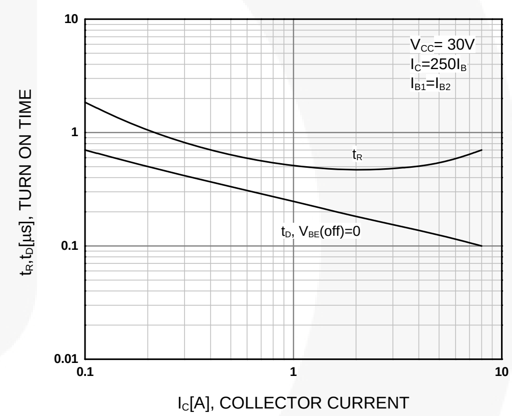


Figure 4. Turn On Time

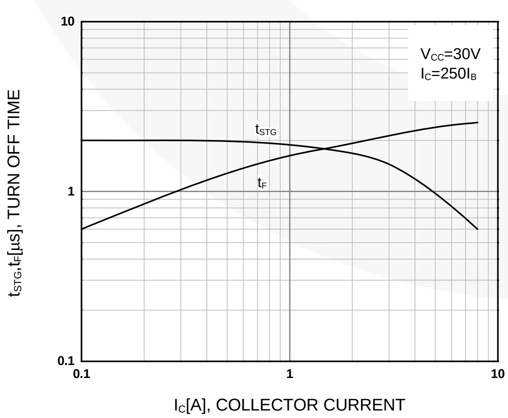


Figure 5. Turn Off Time

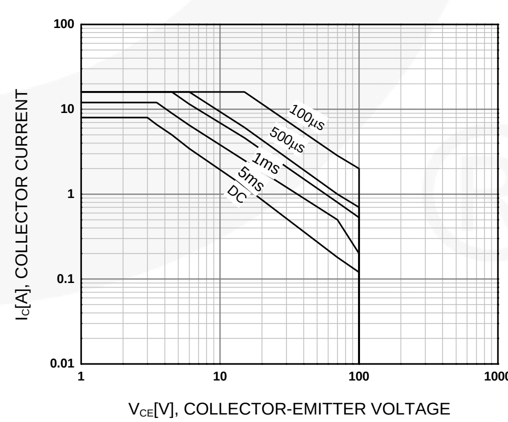


Figure 6. Safe Operating Area

Typical Performance Characteristics (Continued)

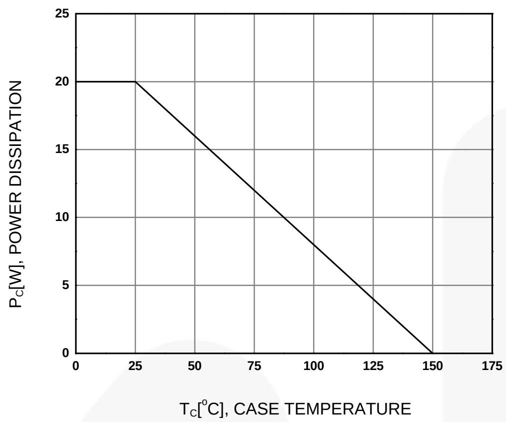
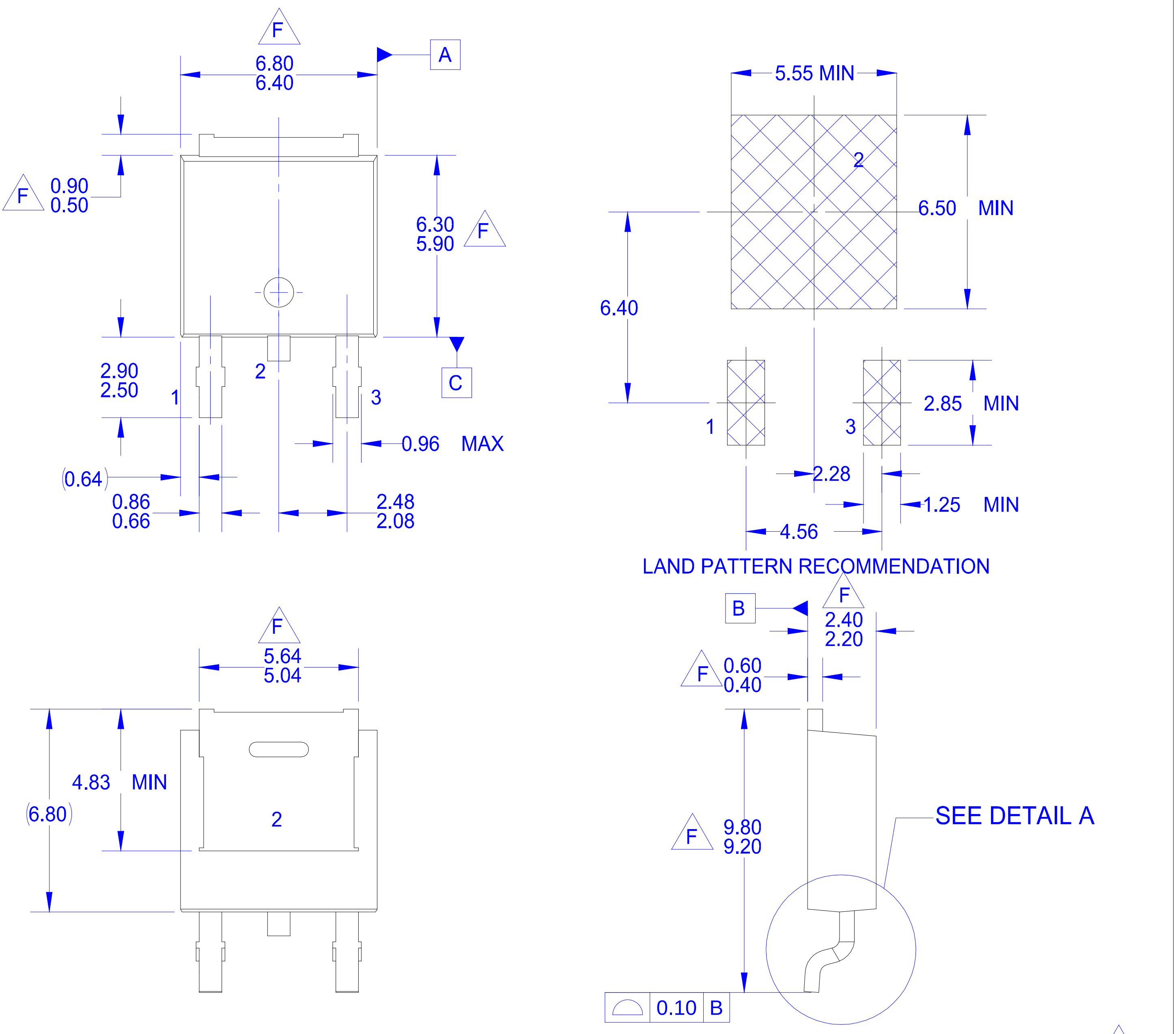
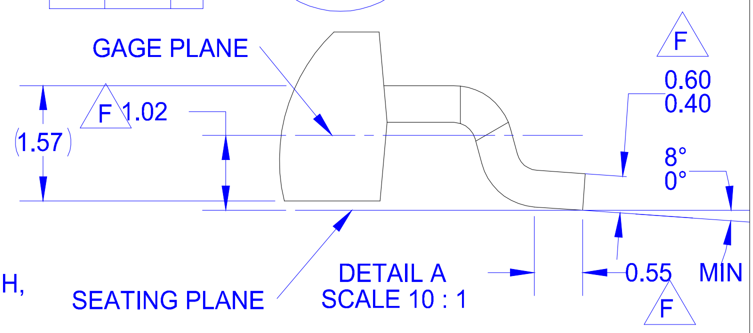


Figure 7. Power Derating Curve





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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-TO252D03REV4.
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