

MJF122, MJF127

Complementary Power Darlington

For Isolated Package Applications

Designed for general-purpose amplifiers and switching applications, where the mounting surface of the device is required to be electrically isolated from the heatsink or chassis.

Features

- Electrically Similar to the Popular TIP122 and TIP127
- 100 $V_{CEO(sus)}$
- 5.0 A Rated Collector Current
- No Isolating Washers Required
- Reduced System Cost
- High DC Current Gain - 2000 (Min) @ $I_C = 3 \text{ A dc}$
- UL Recognized, File #E69369, to 3500 V_{RMS} Isolation
- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	100	Vdc
Collector-Base Voltage	V_{CB}	100	Vdc
Emitter-Base Voltage	V_{EB}	5	Vdc
RMS Isolation Voltage (Note 1) ($t = 0.3 \text{ sec}$, R.H. $\leq 30\%$, $T_A = 25^\circ\text{C}$) Per Figure 14	V_{ISOL}	4500	V_{RMS}
Collector Current - Continuous Peak	I_C	5 8	A dc
Base Current	I_B	0.12	A dc
Total Power Dissipation (Note 2) @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	30 0.24	W W/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	2 0.016	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

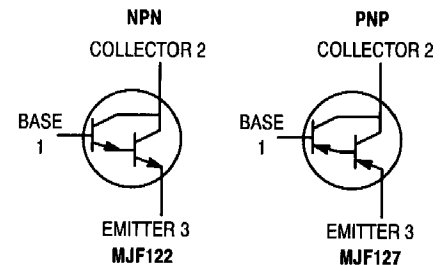
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case (Note 2)	$R_{\theta JC}$	4.1	$^\circ\text{C/W}$
Lead Temperature for Soldering Purpose	T_L	260	$^\circ\text{C}$

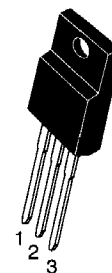
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Proper strike and creepage distance must be provided.
2. Measurement made with thermocouple contacting the bottom insulated mounting surface (in a location beneath the die), the device mounted on a heatsink with thermal grease and a mounting torque of $\geq 6 \text{ in. lbs.}$

COMPLEMENTARY SILICON POWER DARLINGTONS 5.0 A, 100 V, 30 W



MARKING DIAGRAM



TO-220

- A = Assembly Location
Y = Year
WW = Work Week



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ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (Note 3) ($I_C = 100\text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	100	-	Vdc
Collector Cutoff Current ($V_{CE} = 50\text{ Vdc}$, $I_B = 0$)	I_{CEO}	-	10	μA
Collector Cutoff Current ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	10	μA
Emitter Cutoff Current ($V_{BE} = 5\text{ Vdc}$, $I_C = 0$)	I_{EBO}	-	2	mA
ON CHARACTERISTICS (Note 3)				
DC Current Gain ($I_C = 0.5\text{ A}$, $V_{CE} = 3\text{ Vdc}$) ($I_C = 3\text{ A}$, $V_{CE} = 3\text{ Vdc}$)	h_{FE}	1000 2000	-	-
Collector-Emitter Saturation Voltage ($I_C = 3\text{ A}$, $I_B = 12\text{ mA}$) ($I_C = 5\text{ A}$, $I_B = 20\text{ mA}$)	$V_{CE(sat)}$	-	2 3.5	Vdc
Base-Emitter On Voltage ($I_C = 3\text{ A}$, $V_{CE} = 3\text{ Vdc}$)	$V_{BE(on)}$	-	2.5	Vdc
DYNAMIC CHARACTERISTICS				
Small-Signal Current Gain ($I_C = 3\text{ A}$, $V_{CE} = 4\text{ Vdc}$, $f = 1\text{ MHz}$)	h_{fe}	4	-	-
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 0.1\text{ MHz}$)	MJF127 MJF122 C_{ob}	- -	300 200	pF

3. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.

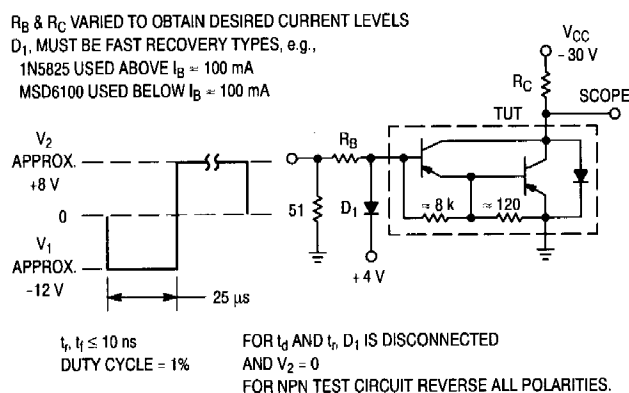


Figure 1. Switching Times Test Circuit

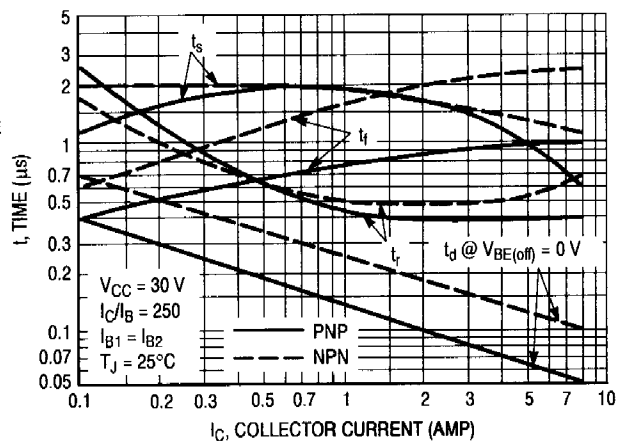


Figure 2. Typical Switching Times