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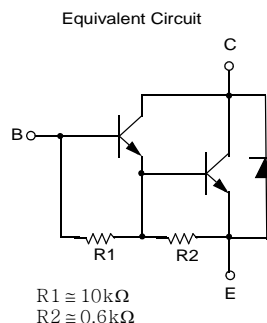
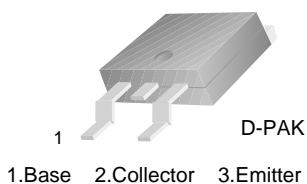
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MJD112

NPN Silicon Darlington Transistor

Features

- High DC Current Gain
- Built-in a Damper Diode at E-C
- Lead Formed for Surface Mount Applications (No Suffix)



Absolute Maximum Ratings* $T_a = 25^\circ\text{C}$ 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)	2	A
I_{CP}	Collector Current (Pulse)	4	A
I_B	Base Current	50	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 ~ 150	$^\circ\text{C}$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

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	$I_C = 30\text{mA}$, $I_B = 0$	100		V
I_{CEO}	Collector Cut-off Current	$V_{CE} = 50\text{V}$, $I_B = 0$		20	μA
I_{CBO}	Collector Cut-off Current	$V_{CB} = 100\text{V}$, $I_B = 0$		20	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}$, $I_C = 0$		2	mA
h_{FE}	* DC Current Gain	$V_{CE} = 3\text{V}$, $I_C = 0.5\text{A}$ $V_{CE} = 3\text{V}$, $I_C = 2\text{A}$ $V_{CE} = 3\text{V}$, $I_C = 4\text{A}$	500 1000 200	12K	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 2\text{A}$, $I_B = 8\text{mA}$		2	V
		$I_C = 4\text{A}$, $I_B = 40\text{mA}$		3	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 4\text{A}$, $I_B = 40\text{mA}$		4	V
$V_{BE(on)}$	* Base-Emitter On Voltage	$V_{CE} = 3\text{A}$, $I_C = 2\text{A}$		2.8	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}$, $I_C = 0.75\text{A}$	25		MHz
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}$, $I_E = 0$ $f = 0.1\text{MHz}$		100	pF

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

Typical Characteristics

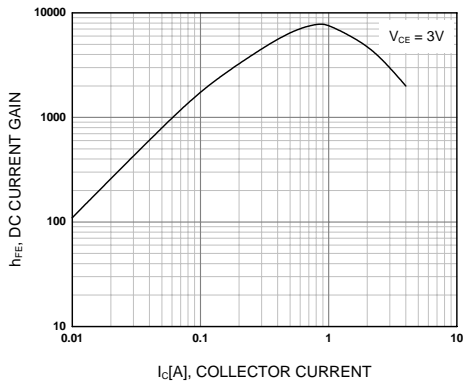


Figure 1. DC current Gain

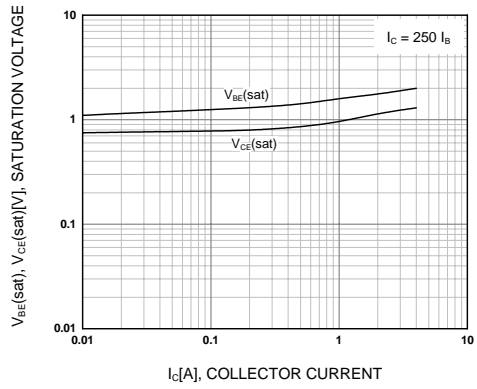


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

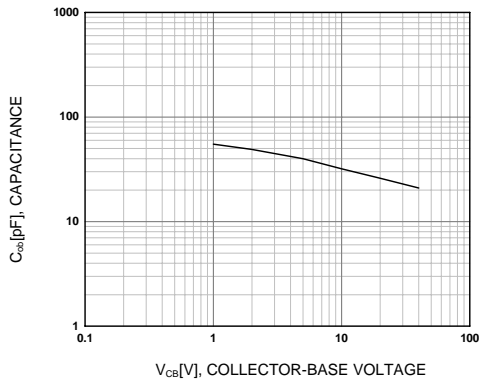


Figure 3. Collector Output Capacitance

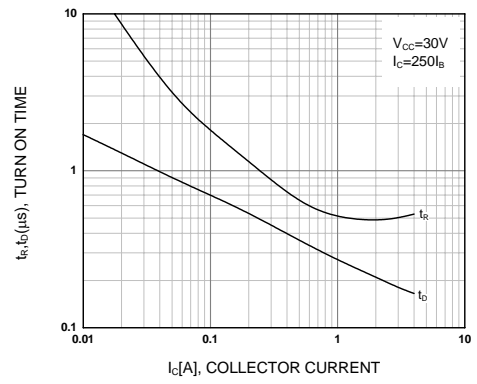


Figure 4. Turn On Time

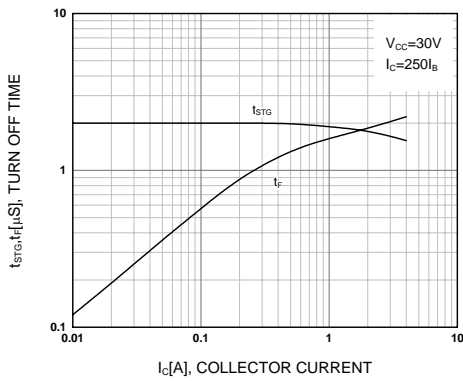


Figure 5. Turn Off Time

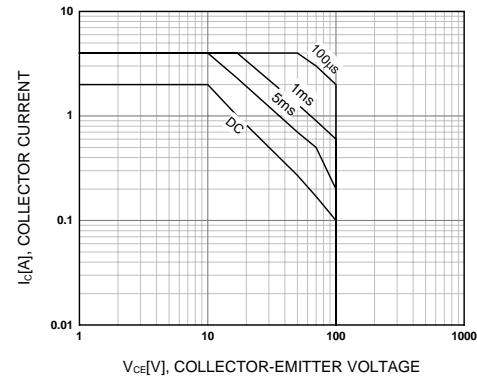


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

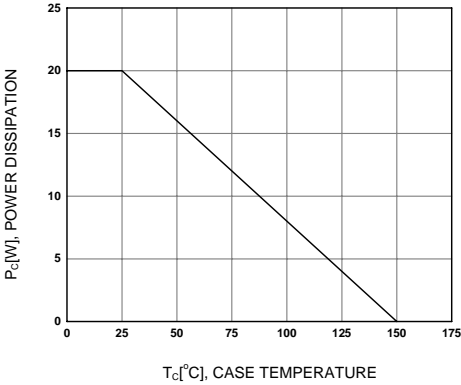
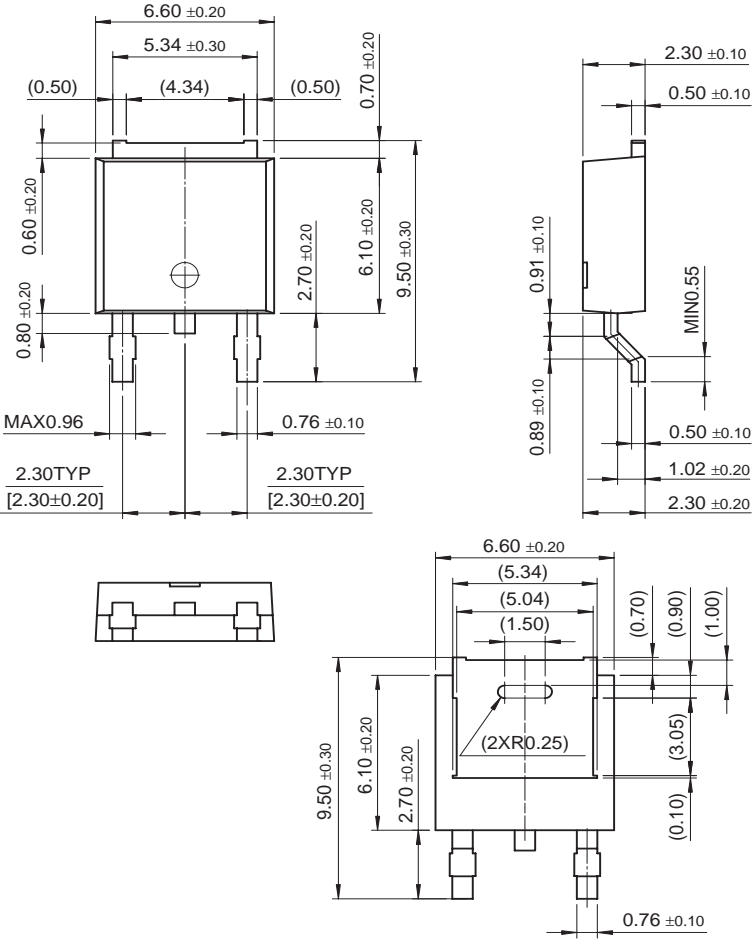


Figure 1. Power Derating

Mechanical Dimensions

D-PAK



Dimensions in Millimeters

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