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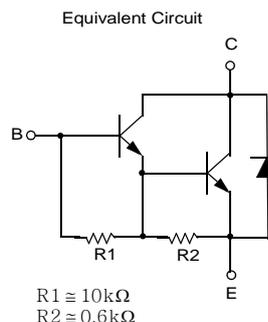
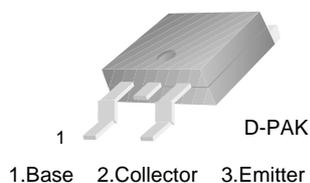
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MJD112

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

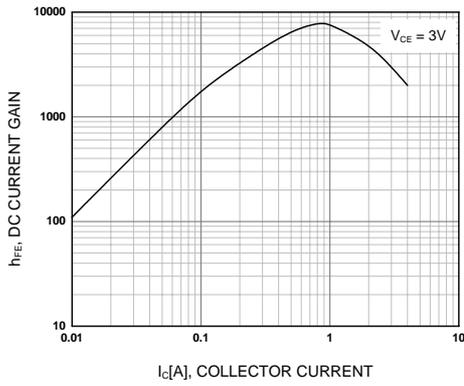


Figure 1. DC current Gain

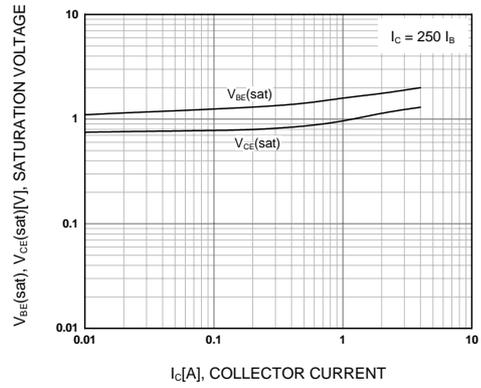


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

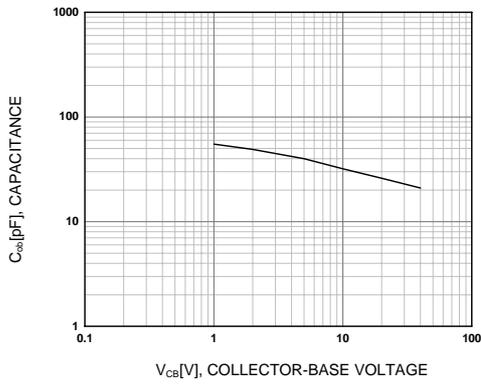


Figure 3. Collector Output Capacitance

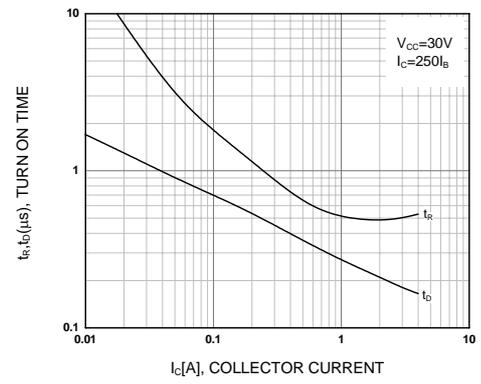


Figure 4. Turn On Time

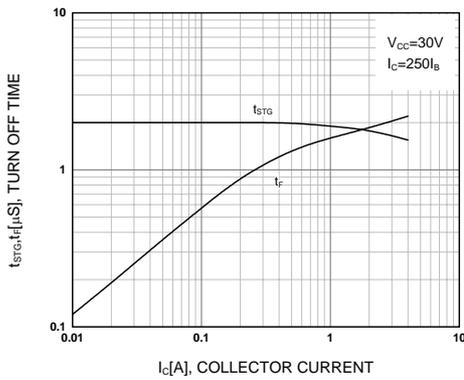


Figure 5. Turn Off Time

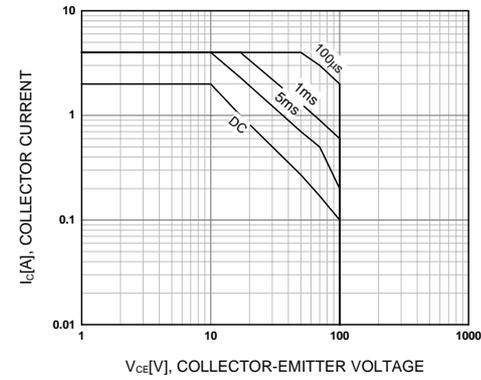


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

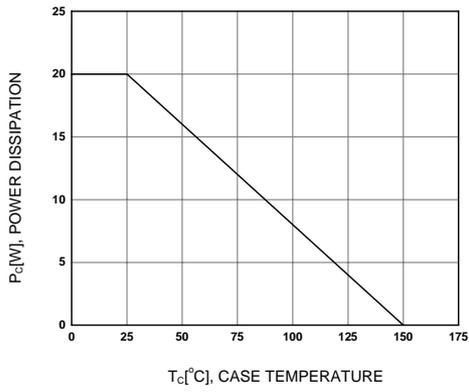


Figure 1. Power Derating

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