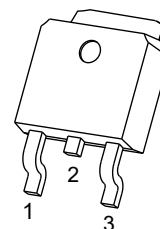


MJD122

NPN Silicon Power Darlington Transistor

for power switching and amplifier applications

1. BASE
2. COLLECTOR
3. EMITTER



TO-252

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

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
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	6.25	$^\circ\text{C/W}$

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

Electrical Characteristics Curves

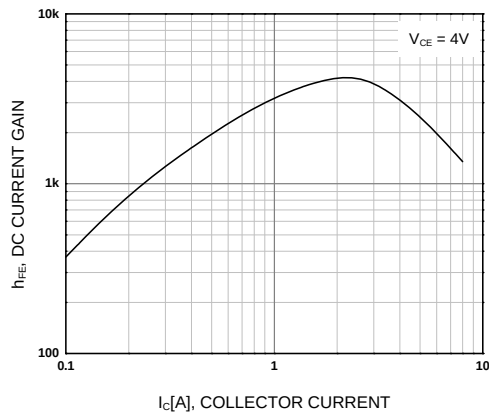


Figure 1. DC current Gain

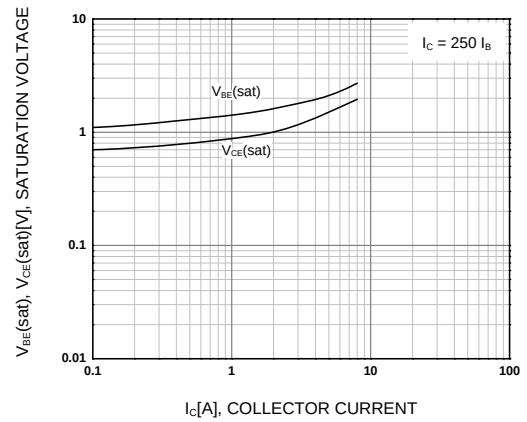


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

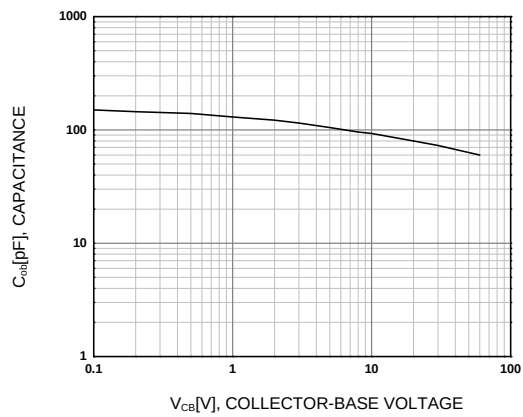


Figure 3. Collector Output Capacitance

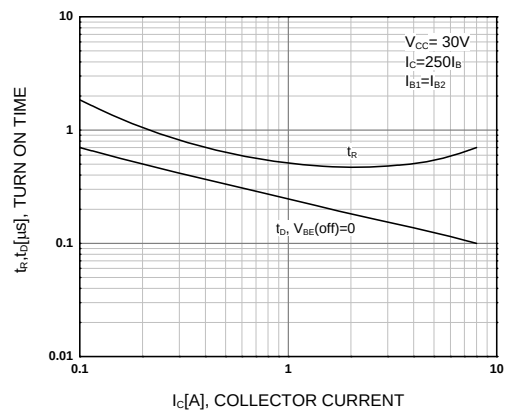


Figure 4. Turn On Time

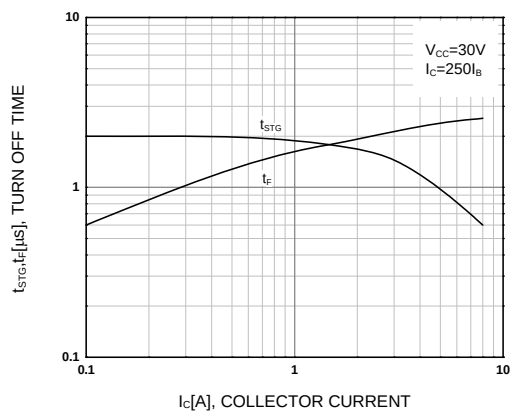


Figure 5. Turn Off Time

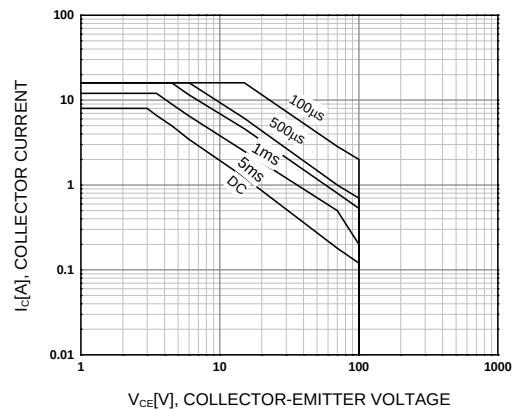


Figure 6. Safe Operating Area

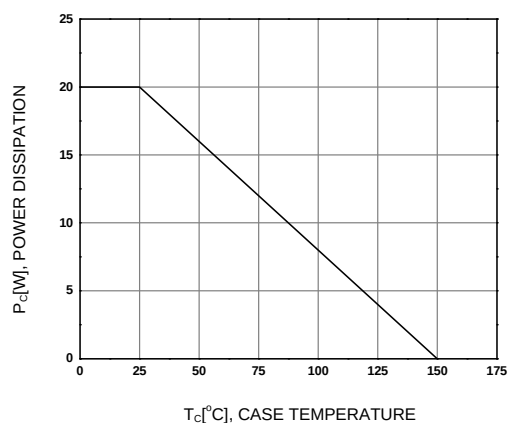
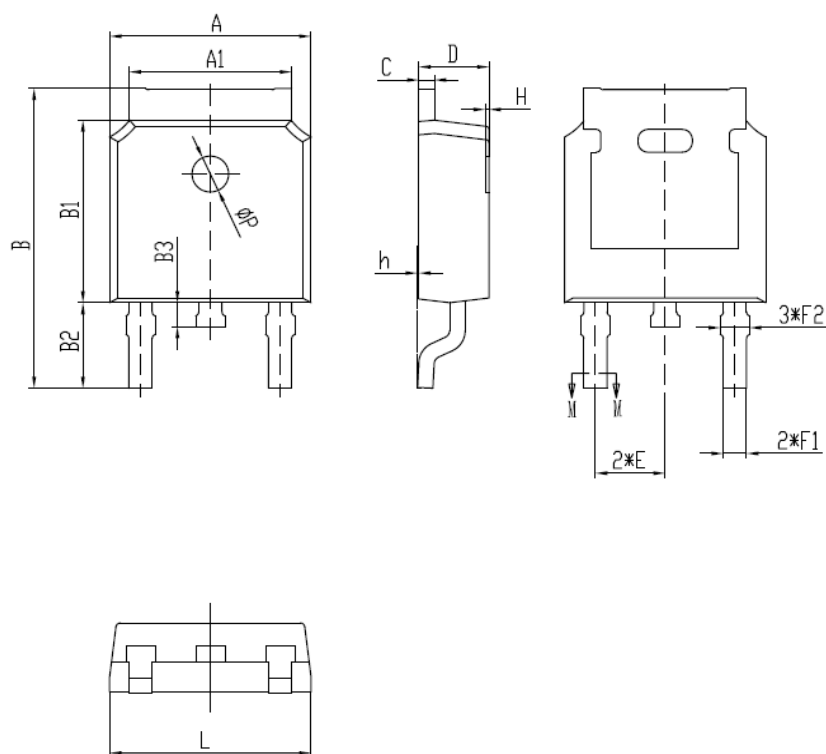


Figure 7. Power Derating Curve

TO-252 Package Outline Dimensions



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	6.50	6.70
A1	5.16	5.46
B	9.77	10.17
B1	6.00	6.20
B2	2.60	3.00
B3	0.70	0.90
C	0.45	0.61
D	2.20	2.40
E	2.186	2.386
F1	0.67	0.87
F2	0.76	0.96
H	0.00	0.30
h	0.00	0.127
L	6.50	6.70
ϕP	1.10	1.30