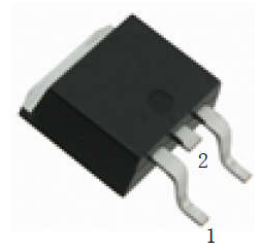


MJD112R

NPN Silicon Darlington Power Transistor



1.Base 2.Collector 3.Emitter
TO-252 Plastic Package

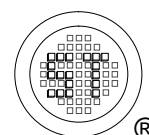
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	100	V
Collector Emitter Voltage	V_{CEO}	100	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	2	A
Peak Collector Current, Pulsed	I_{CM}	4	A
Base Current	I_B	50	mA
Power Dissipation $T_c = 25^\circ\text{C}$	P_D	20	W
Power Dissipation ¹⁾ $T_a = 25^\circ\text{C}$	P_D	1.75	W
Operating Junction Storage Temperature Range	T_j, T_{stg}	- 65 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	6.25	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	71.4	$^\circ\text{C/W}$

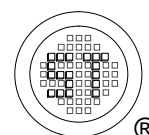
¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



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Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 3\text{ V}$, $I_C = 0.5\text{ A}$ at $V_{CE} = 3\text{ V}$, $I_C = 2\text{ A}$ at $V_{CE} = 3\text{ V}$, $I_C = 4\text{ A}$	h_{FE} h_{FE} h_{FE}	500 1000 200	- 12000 -	- - -
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	100	-	V
Collector Emitter Sustaining Voltage at $I_C = 30\text{ mA}$	$V_{CEO(sus)}$	100	-	V
Emitter Base Breakdown Voltage at $I_E = 1\text{ mA}$	$V_{(BR)EBO}$	5	-	V
Collector Emitter Cutoff Current at $V_{CE} = 50\text{ V}$	I_{CEO}	-	20	μA
Collector Base Cutoff Current at $V_{CB} = 100\text{ V}$ at $V_{CB} = 80\text{ V}$	I_{CBO}	- -	20 10	μA
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	I_{EBO}	-	2	mA
Collector Emitter Saturation Voltage at $I_C = 2\text{ A}$, $I_B = 8\text{ mA}$ at $I_C = 4\text{ A}$, $I_B = 40\text{ mA}$	$V_{CE(sat)}$	- -	2 3	V
Base Emitter Saturation Voltage at $I_C = 4\text{ A}$, $I_B = 40\text{ mA}$	$V_{BE(sat)}$	-	4	V
Base Emitter Voltage at $V_{CE} = 3\text{ V}$, $I_C = 2\text{ A}$	$V_{BE(on)}$	-	2.8	V
Current Gain Bandwidth Product at $V_{CE} = 10\text{ V}$, $I_C = 750\text{ mA}$, $f = 1\text{ MHz}$	f_T	25	-	MHz
Output Capacitance at $V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 0.1\text{ MHz}$	C_{ob}	-	100	pF



MJD112R

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

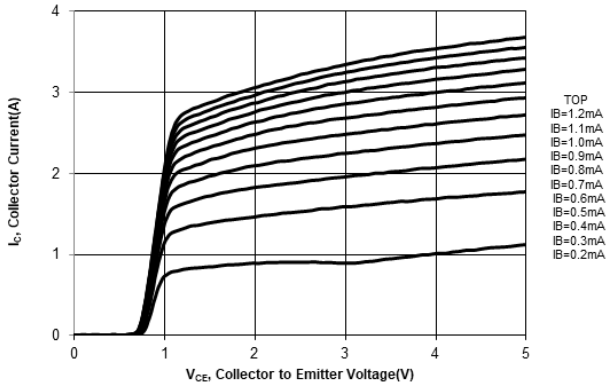


Fig. 2 Collector Current vs. Base to Emitter Voltage

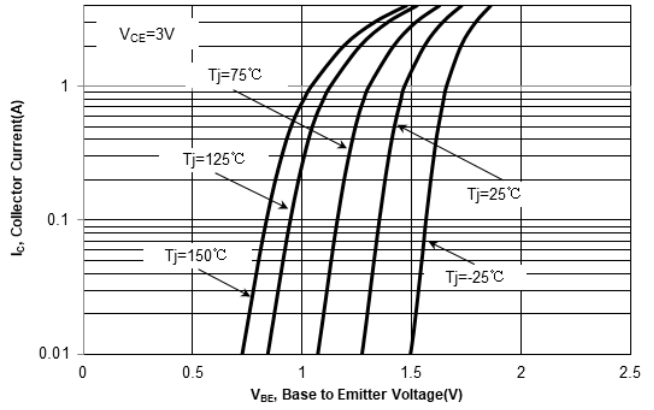


Fig. 3 DC Current Gain vs. Collector Current

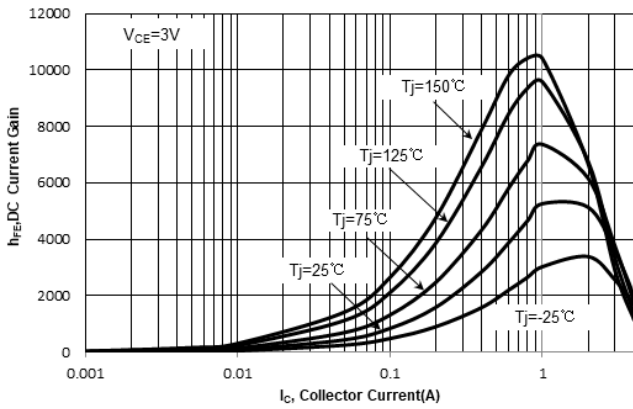
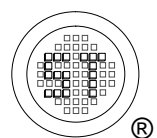
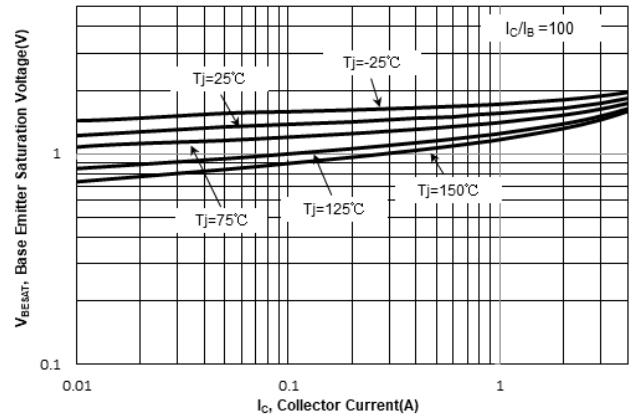


Fig. 4 V_{BESAT} vs. Collector Current



MJD112R

Electrical Characteristics Curves

Fig. 5 V_{CESAT} vs. Collector Current

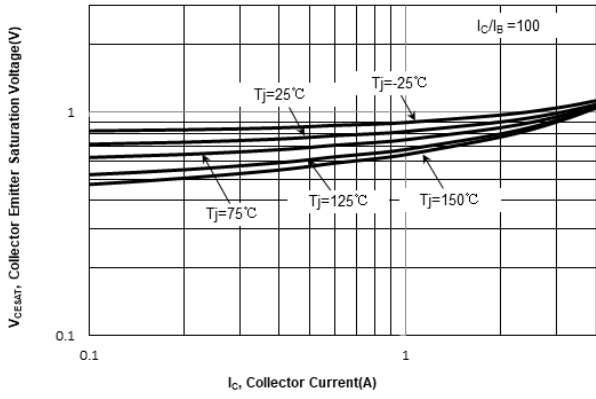


Fig. 6 Output Capacitance

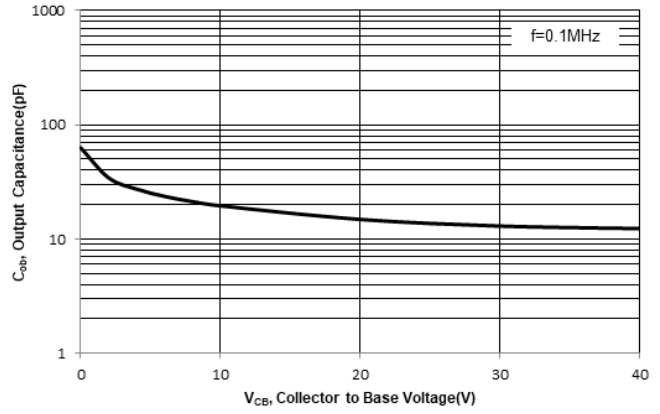
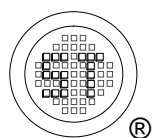
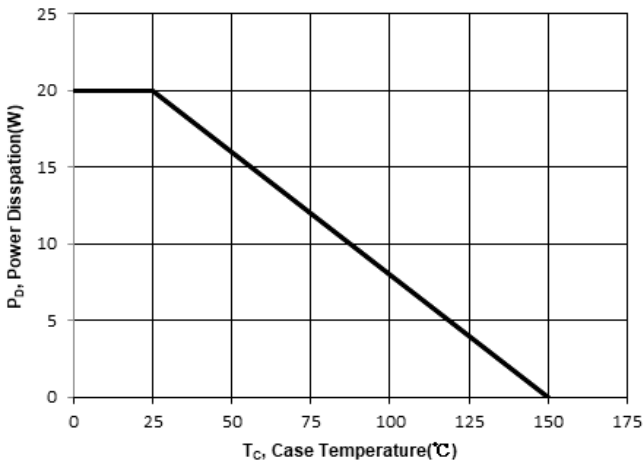


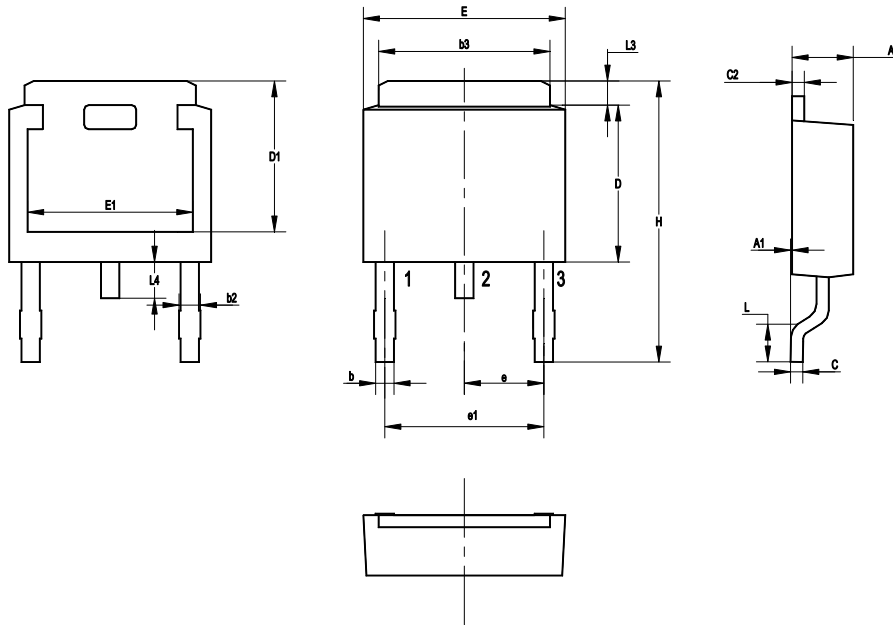
Fig 7. Power Derating Curve



MJD112R

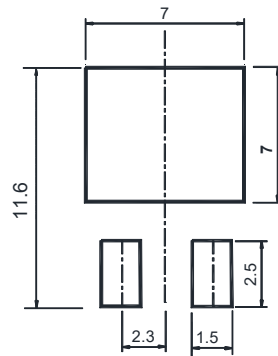
Package Outline (Dimensions in mm)

TO-252



UNIT	A	A1	b	b2	b3	C	C2	D	D1	E	E1	e	e1	H	L	L3	L4
mm	2.5	0.15	1.0	1.15	5.5	0.65	0.65	6.2	5.4	6.7	5.0	2.30	4.60	10.7	1.78	1.20	1.10
	2.1	0	0.5	0.65	4.9	0.4	0.4	5.6	5.0	6.1	4.6	TYP.	TYP.	9	1.40	0.85	0.51

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
TO-252	16	8 ± 0.1	0.315 ± 0.004	330	13	2,500

Marking information

" MJD112R " = Part No.

" ***** " = Date Code Marking

Font type: Arial

