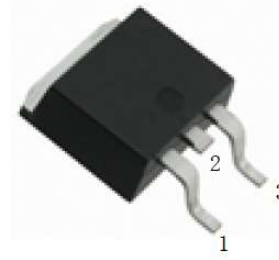


# MJD122R-HAF

## NPN Silicon Power Darlington Transistor

### Features

- Halogen and Antimony Free(HAF), RoHS compliant



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

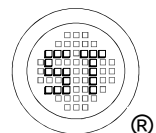
### Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector Base Voltage	$V_{CBO}$	100	V
Collector Emitter Voltage	$V_{CEO}$	100	V
Emitter Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	8	A
Peak Collector Current	$I_{CM}$	16	A
Base Current	$I_B$	120	mA
Total Dissipation $T_C = 25\text{ }^\circ\text{C}$	$P_{tot}$	20	W
Total Dissipation <sup>1)</sup> $T_a = 25\text{ }^\circ\text{C}$	$P_{tot}$	1.75	W
Operating Junction and 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 <sup>1)</sup>	$R_{\theta JA}$	71.4	$^\circ\text{C/W}$

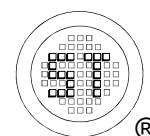
<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



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

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 4\text{ V}$ , $I_C = 4\text{ A}$ at $V_{CE} = 4\text{ V}$ , $I_C = 8\text{ A}$	$h_{FE}$ $h_{FE}$	1000 100	12000 -	- -
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	100	-	V
Collector Emitter Breakdown Voltage at $I_C = 30\text{ mA}$	$V_{(BR)CEO}$	100	-	V
Emitter Base Breakdown Voltage at $I_E = 1\text{ mA}$	$V_{(BR)EBO}$	5	-	V
Collector Emitter Cutoff Current at $V_{CE} = 50\text{ V}$	$I_{CEO}$	-	10	$\mu\text{A}$
Collector Base Cutoff Current at $V_{CB} = 100\text{ V}$	$I_{CBO}$	-	10	$\mu\text{A}$
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	2	mA
Collector Emitter Saturation Voltage at $I_C = 4\text{ A}$ , $I_B = 16\text{ mA}$ at $I_C = 8\text{ A}$ , $I_B = 80\text{ mA}$	$V_{CE(sat)}$	- -	2 4	V
Base Emitter Saturation Voltage at $I_C = 8\text{ A}$ , $I_B = 80\text{ mA}$	$V_{BE(sat)}$	-	4.5	V
Base-Emitter On Voltage at $V_{CE} = 4\text{ V}$ , $I_C = 4\text{ A}$	$V_{BE(on)}$	-	2.8	V
Current Gain Bandwidth Product at $V_{CE} = 4\text{ V}$ , $I_C = 3\text{ A}$ , $f = 1\text{ MHz}$	$f_T$	4	-	MHz
Collector Output Capacitance at $V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 0.1\text{ MHz}$	$C_{ob}$	-	200	pF



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## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

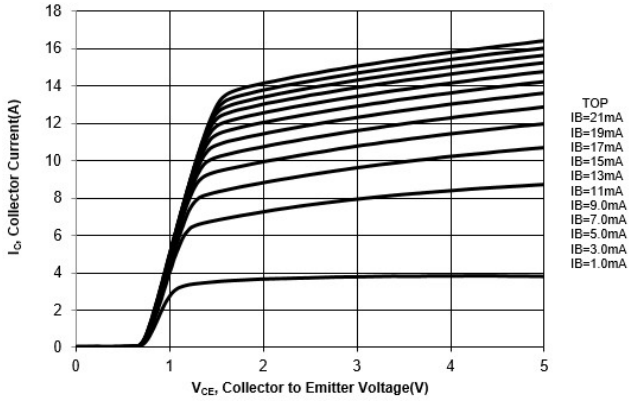


Fig. 2 Collector Current vs. Base to Emitter Voltage

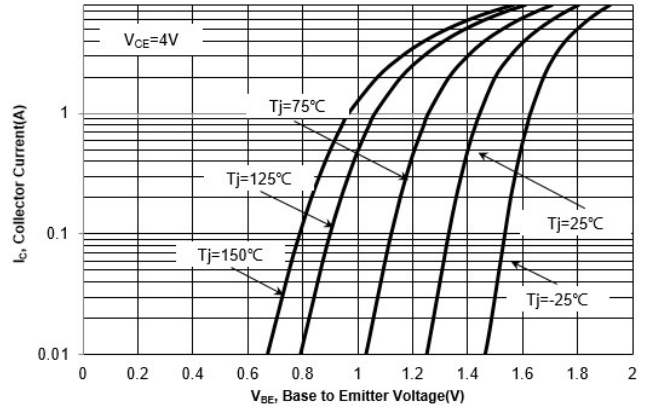


Fig. 3 DC Current Gain vs. Collector Current

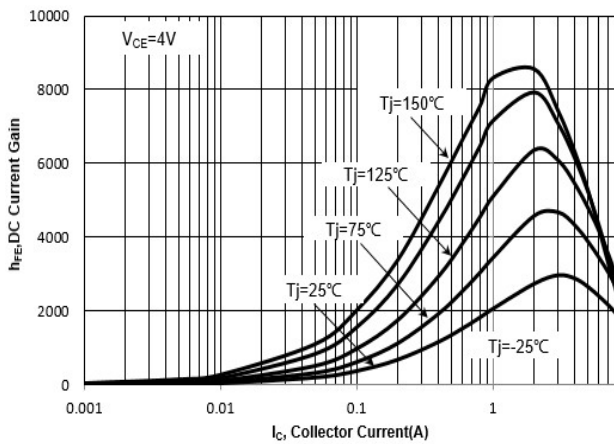
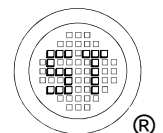
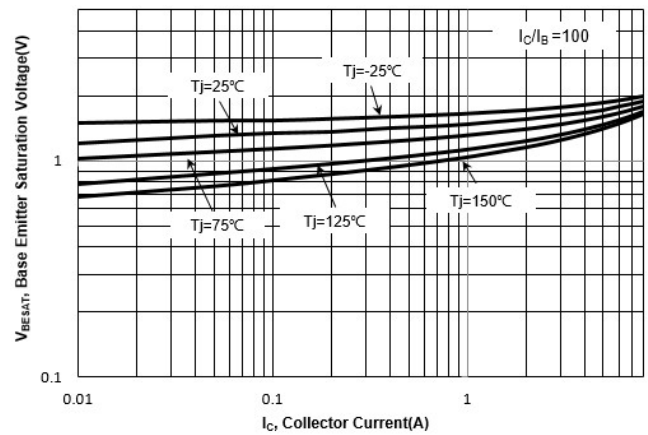


Fig. 4 V\_BESAT vs. Collector Current



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## Electrical Characteristics Curves

Fig. 5  $V_{CESAT}$  vs. Collector Current

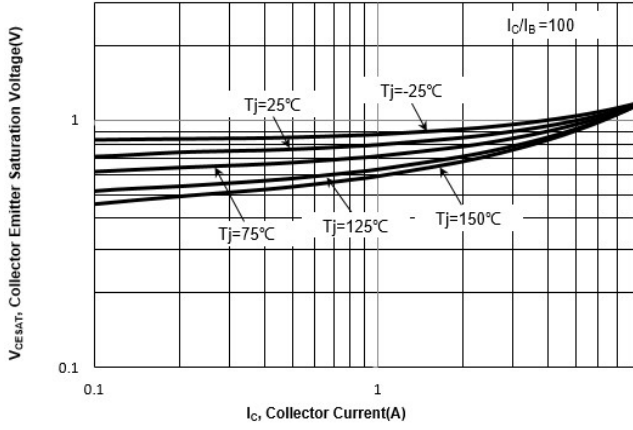


Fig. 6 Output Capacitance

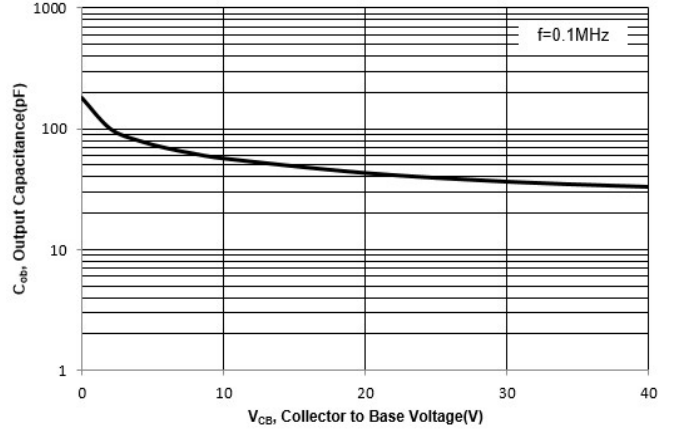
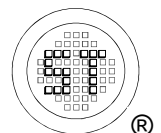
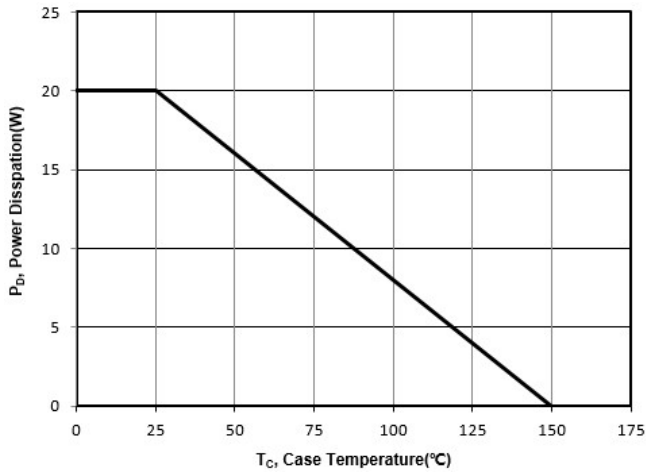


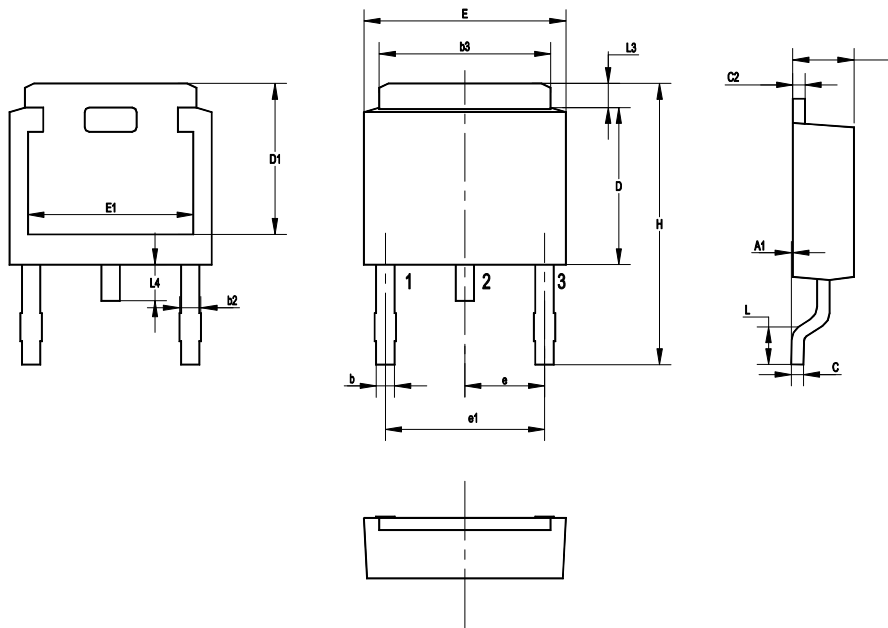
Fig. 7 Power Derating Curve



# MJD122R-HAF

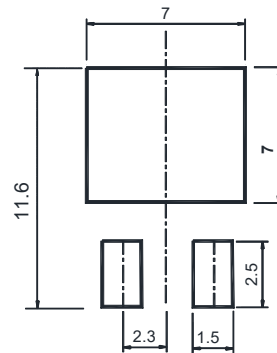
## Package Outline (Dimensions in mm)

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

" MJD122R " = Part No.

" \*\*\*\*\* " = Date Code Marking

Font type: Arial

