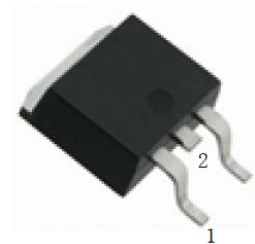


# MJD112R-HAF

## NPN Silicon Darlington Power Transistor

### Features

- Halogen and Antimony Free(HAF),  
RoHS compliant



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 <sup>1)</sup> $T_a = 25^\circ\text{C}$	$P_D$	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 <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.

# MJD112R-HAF

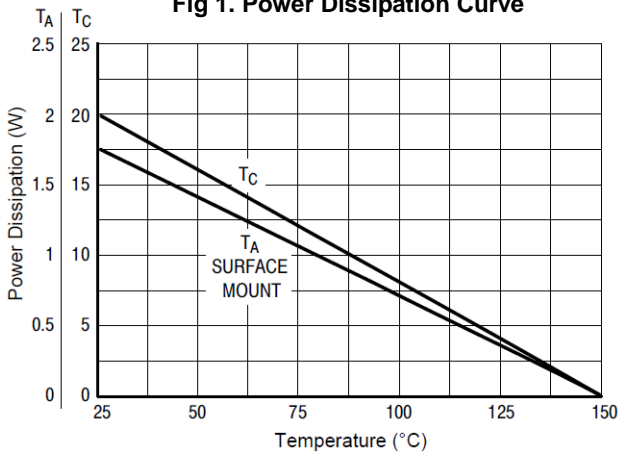
## Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 3\text{ V}$ , $I_C = 0.5\text{ A}$	$h_{FE}$	500	-	-
at $V_{CE} = 3\text{ V}$ , $I_C = 2\text{ A}$	$h_{FE}$	1000	12000	-
at $V_{CE} = 3\text{ V}$ , $I_C = 4\text{ A}$	$h_{FE}$	200	-	-
Collector Base Sustaining Voltage at $I_C = 30\text{ mA}$ , $I_B = 0$	$V_{CEO(sus)}$	100	-	V
Collector Emitter Cutoff Current at $V_{CE} = 50\text{ V}$ , $I_B = 0$	$I_{CEO}$	-	20	$\mu\text{A}$
Collector Base Cutoff Current at $V_{CB} = 100\text{ V}$ , $I_E = 0$	$I_{CBO}$	-	20	$\mu\text{A}$
at $V_{CB} = 80\text{ V}$ , $I_E = 0$		-	10	
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$ , $I_C = 0$	$I_{EBO}$	-	2	mA
Collector Emitter Saturation Voltage at $I_C = 2\text{ A}$ , $I_B = 8\text{ mA}$	$V_{CEsat}$	-	2	V
at $I_C = 4\text{ A}$ , $I_B = 40\text{ mA}$		-	3	
Base Emitter Saturation Voltage at $I_C = 4\text{ A}$ , $I_B = 40\text{ mA}$	$V_{BEsat}$	-	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

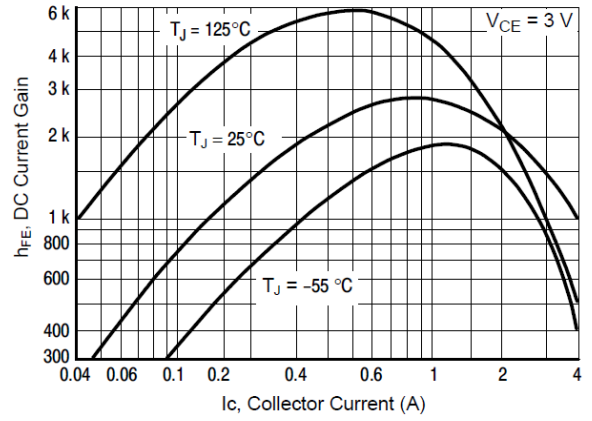
# MJD112R-HAF

## Electrical Characteristics Curves

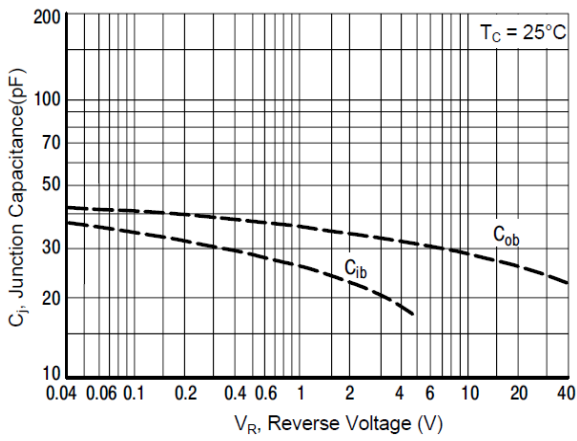
**Fig 1. Power Dissipation Curve**



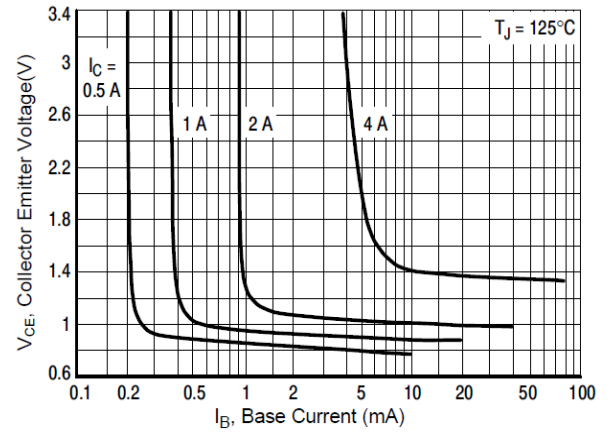
**Fig 2. DC Gain Current Curve**



**Fig 3. Capacitance**



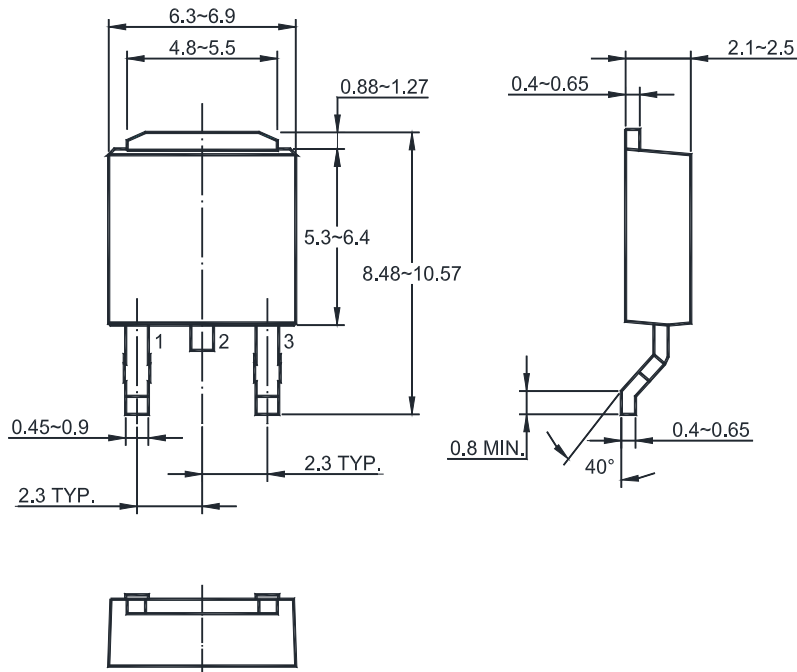
**Fig 4. Collector Saturation Region**



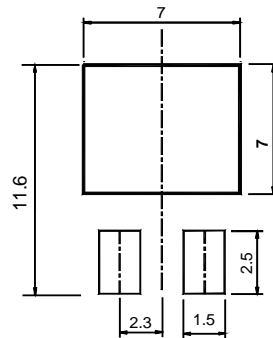
# MJD112R-HAF

## Package Outline Dimensions (Units: mm)

TO-252



## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
TO-252	12	8 ± 0.1	0.315 ± 0.004	330	13	2,500

## Marking information

" MJD112R " = Part No.  
 " \*\*\*\*\* " = Date Code Marking  
 Font type: Arial

