

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- LOW BASE-DRIVE REQUIREMENTS
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- SURFACE-MOUNTING TO-252 (DPAK) POWER PACKAGE IN TAPE & REEL (SUFFIX "T4")
- ELECTRICAL SIMILAR TO TIP112 AND TIP117

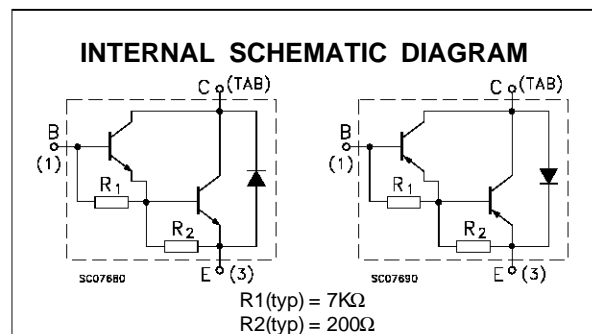
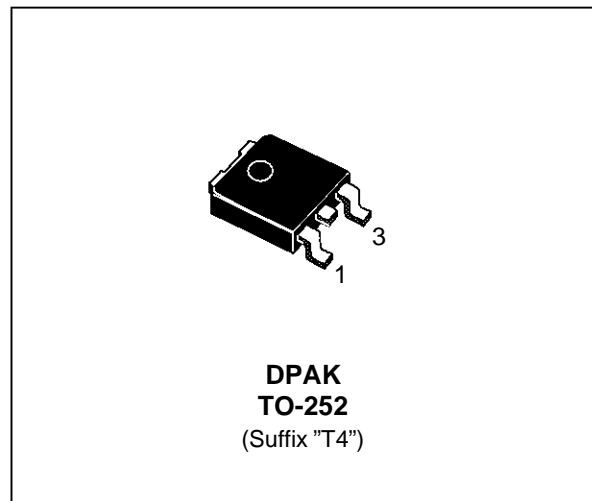
### APPLICATIONS

- GENERAL PURPOSE SWITCHING AND AMPLIFIER

### DESCRIPTION

The MJD112 and MJD117 form complementary PNP - NPN pairs.

They are manufactured using Epitaxial Base technology for cost-effective performance.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Emitter Voltage ( $I_E = 0$ )	100	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	100	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5	V
$I_C$	Collector Current	2	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	4	A
$I_B$	Base Current	0.05	A
$P_{tot}$	Total Dissipation at $T_c = 25$ °C	20	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

For PNP type voltage and current values are negative.

# MJD112/MJD117

## THERMAL DATA

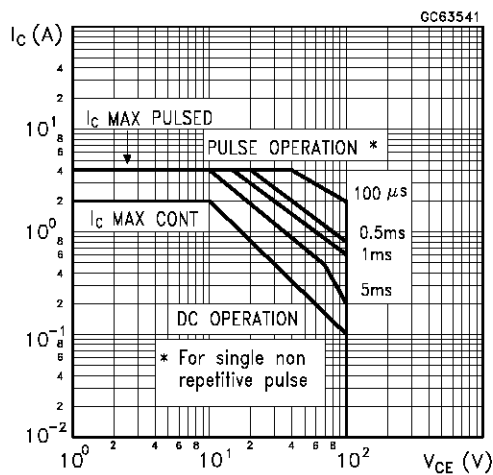
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	6.25	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

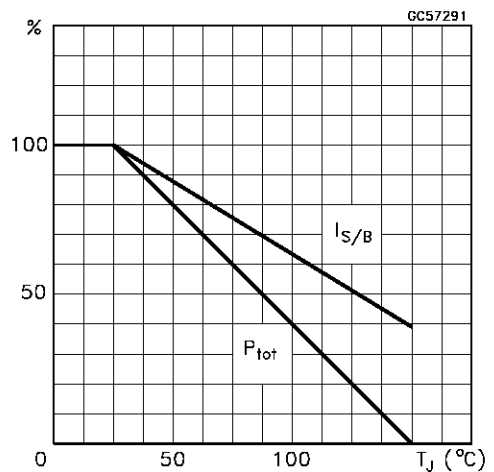
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 100 V			0.02	mA
		V <sub>CB</sub> = 80 V			0.01	mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 50 V			0.02	mA
I <sub>CEX</sub>	Collector Cut-off Current	V <sub>CB</sub> = 80 V V <sub>BE</sub> = -1.5V			0.01	mA
		V <sub>CB</sub> = 80 V V <sub>BE</sub> = -1.5V T <sub>C</sub> = 125 °C			0.5	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			2	mA
V <sub>CEO(sus)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 30 mA	100			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2 A I <sub>B</sub> = 8 mA			2	V
		I <sub>C</sub> = 4 A I <sub>B</sub> = 40 mA			3	V
V <sub>BE(sat)*</sub>	Collector-Base Saturation Voltage	I <sub>C</sub> = 4 A I <sub>B</sub> = 40 mA			4	V
V <sub>BE(on)*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 2 A V <sub>CE</sub> = 3 V			2.8	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 0.5 A V <sub>CE</sub> = 3 V	500		12000	
		I <sub>C</sub> = 2 A V <sub>CE</sub> = 3 V	1000			
		I <sub>C</sub> = 4 A V <sub>CE</sub> = 3 V	200			

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %

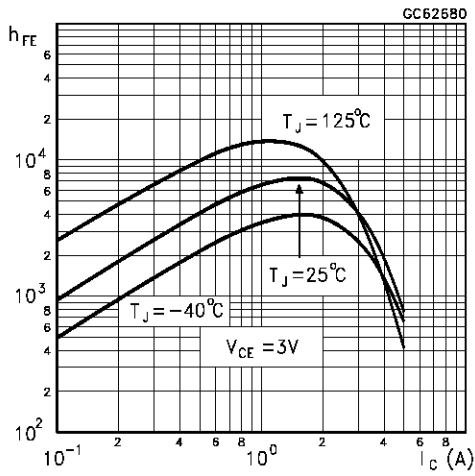
### Safe Operating Areas



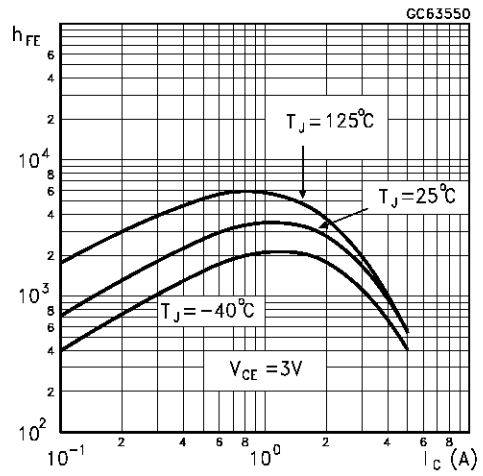
### Derating Curve



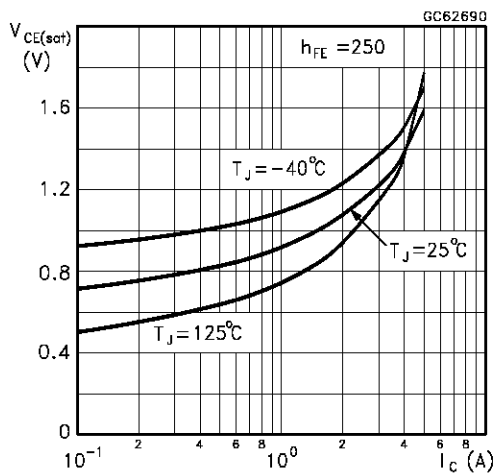
DC Current Gain (NPN type)



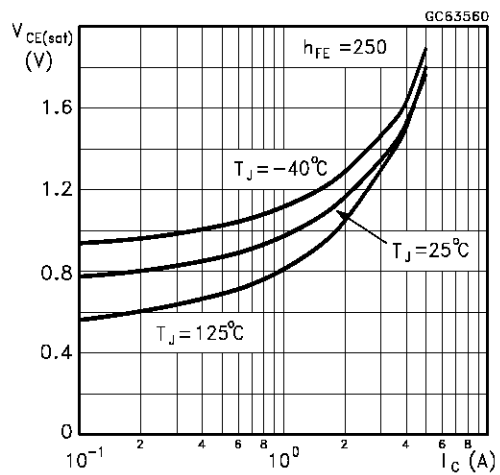
DC Current Gain (NPN type)



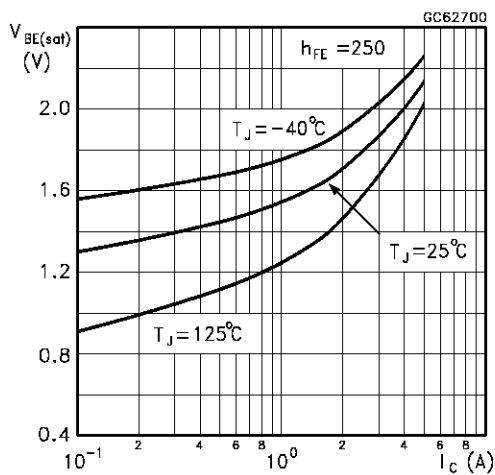
Collector-Emitter Saturation Voltage (NPN type)



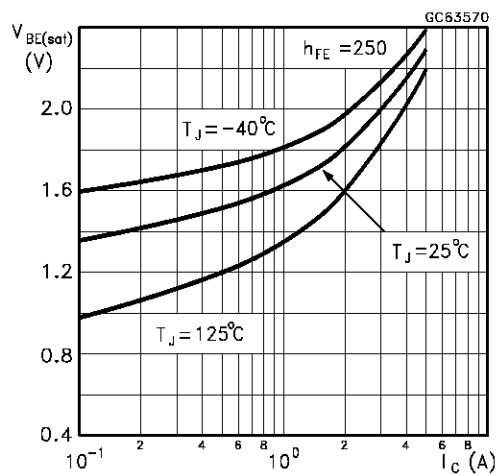
Collector-Emitter Saturation Voltage (PNP type)



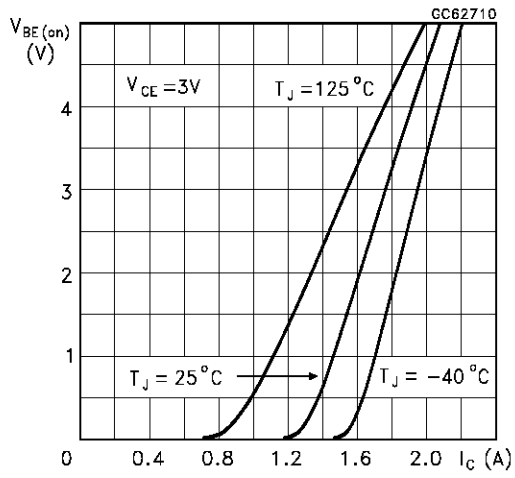
Base-Emitter Saturation Voltage (NPN type)



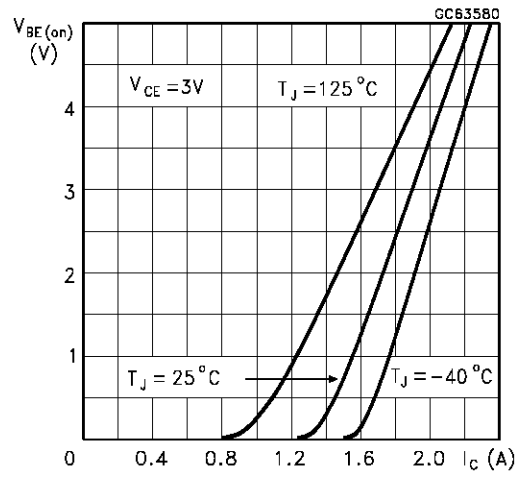
Base-Emitter Saturation Voltage (PNP type)



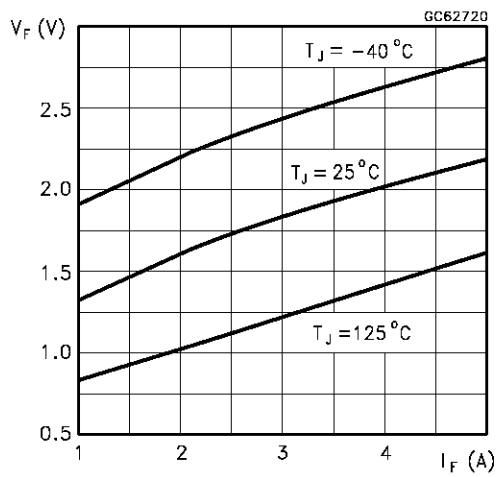
Base-Emitter On Voltage (NPN type)



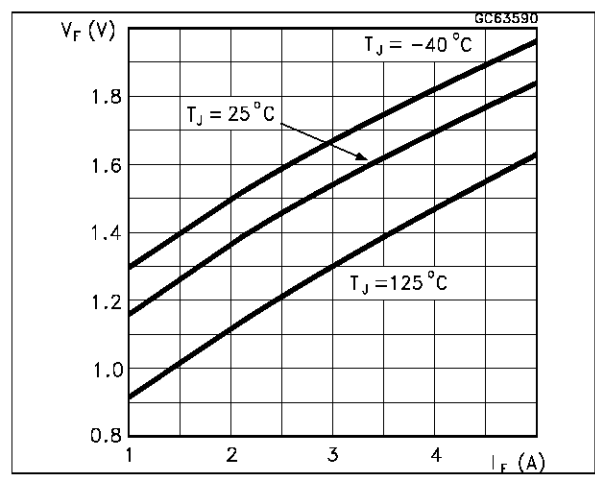
Base-Emitter On Voltage (PNP type)



Freewheel Diode Forward Voltage (NPN types)

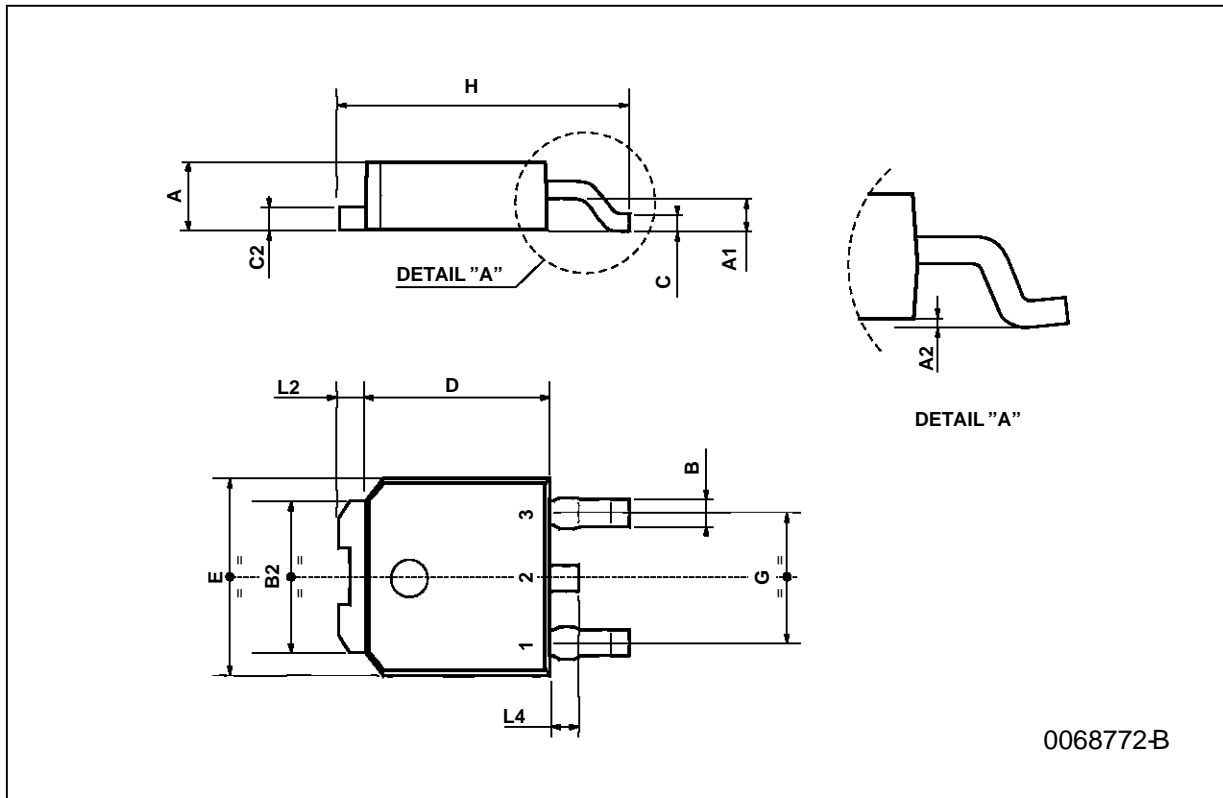


Freewheel Diode Forward Voltage (PNP types)



**TO-252 (DPAK) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L2		0.8			0.031	
L4	0.6		1	0.023		0.039



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