# **MJD112 MJD117**

# COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics 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

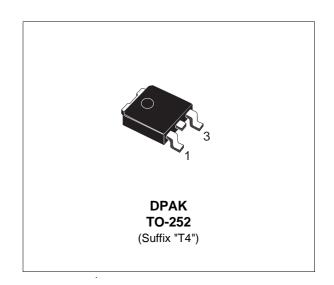
#### **APPLICATIONS**

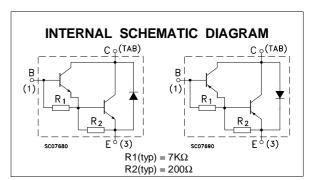
 GENERAL PURPOSE SWITCHING AND AMPLIFIER

#### **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 <sub>CBO</sub>	Collector-Emitter Voltage (I <sub>E</sub> = 0)	100	٧
$V_{CEO}$	Collector-Emitter Voltage (I <sub>B</sub> = 0)	100	V
V <sub>ЕВО</sub>	Emitter-Base Voltage (Ic = 0)	5	٧
Ic	Collector Current	2	Α
I <sub>CM</sub>	Collector Peak Current (tp < 5 ms)	4	Α
I <sub>B</sub>	Base Current	0.05	Α
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> = 25 °C	20	W
T <sub>stg</sub>	Storage Temperature	-65 to 150	°C
Tj	Max. Operating Junction Temperature	150	O°

For PNP type voltage and current values are negative.

January 2003 1/6

#### THERMAL DATA

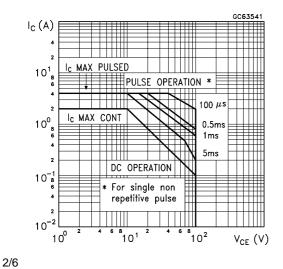
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	6.25	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

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

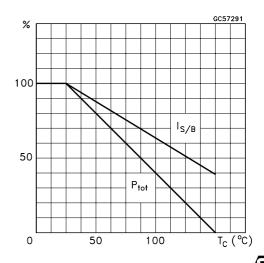
Symbol Parameter		Test Conditions	Min.	Тур.	Max.	Unit
Ісво	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 100 V V <sub>CB</sub> = 80 V			0.02 0.01	mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 50 V			0.02	mA
I <sub>CEX</sub>	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	V <sub>CE</sub> = 80 V V <sub>CE</sub> = 80 V T <sub>c</sub> = 125 °	С		0.01 0.5	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			2	mA
$V_{\text{CEO(sus)}^{*}}$	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA	100			V
$V_{CE(sat)^*}$	Collector-Emitter Saturation Voltage	$I_C = 2 A$ $I_B = 8 mA$ $I_C = 4 A$ $I_B = 40 mA$			2	V V
$V_{BE(sat)^*}$	Base-Emitter Saturation Voltage	$I_C = 4 A$ $I_B = 40 \text{ mA}$			4	V
$V_{BE(on)^*}$	Base-Emitter On Voltage	I <sub>C</sub> = 2 A V <sub>CE</sub> = 3 V			2.8	V
h <sub>FE</sub> *	DC Current Gain	$\begin{array}{llllllllllllllllllllllllllllllllllll$	500 1000 200		12000	

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 % For PNP types voltage and current values are negative.

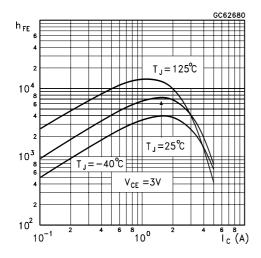
# Safe Operating Areas



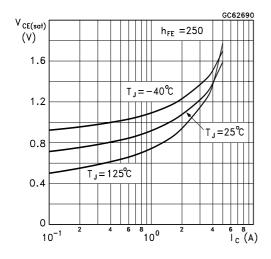
# **Derating Curve**



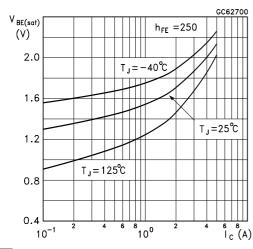
#### DC Current Gain (NPN type)



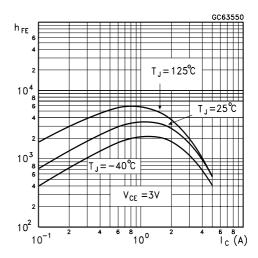
# Collector-Emitter Saturation Voltage (NPN type)



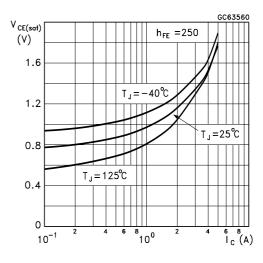
# Base-Emitter Saturation Voltage (NPN type)



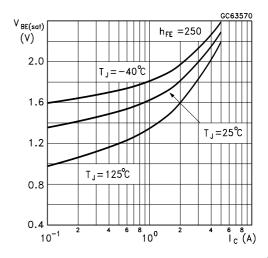
## DC Current Gain (NPN type)



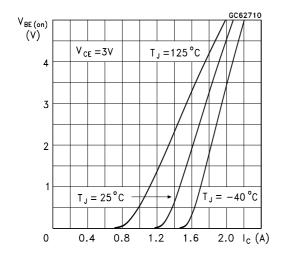
Collector-Emitter Saturation Voltage (PNP type)



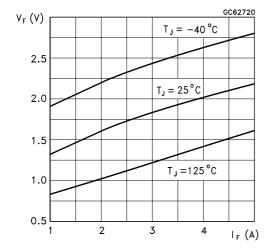
Base-Emitter Saturation Voltage (PNP type)



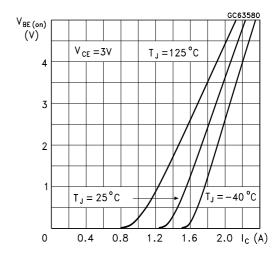
## Base-Emitter On Voltage (NPN type)



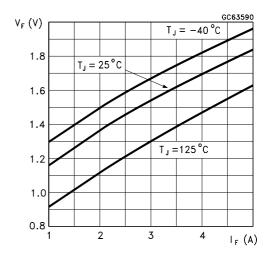
# Freewheel Diode Forward Voltage (NPN types)



# Base-Emitter On Voltage (PNP type)

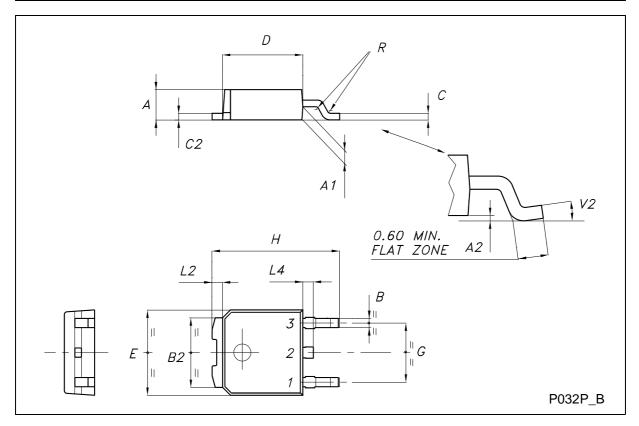


## Freewheel Diode Forward Voltage (PNP types)



# TO-252 (DPAK) MECHANICAL DATA

DIM.	mm		inch			
Dilwi.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
В	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
С	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
Е	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
Н	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0°		8°	0°		0°



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