

# 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

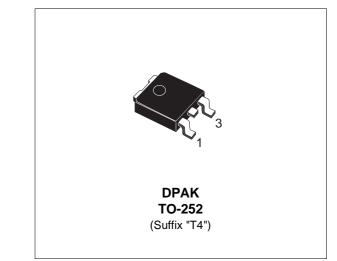
### **APPLICATIONS**

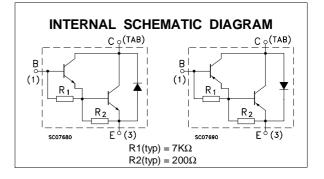
 GENERAL PURPOSE SWITCHING AND AMPLIFIER

#### 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 $(I_E = 0)$	100	V	
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)	100	V	
Vebo	Emitter-Base Voltage (Ic = 0)	5	V	
lc	Collector Current	2	A	
Ісм	Collector Peak Current (t <sub>p</sub> < 5 ms)	4	A	
IB	Base Current	0.05	A	
Ptot	Total Dissipation at $T_c = 25$ °C	20	W	
T <sub>stg</sub>	Storage Temperature	-65 to 150	°C	
Tj	Max. Operating Junction Temperature	150	°C	

For PNP type voltage and current values are negative.

## THERMAL DATA

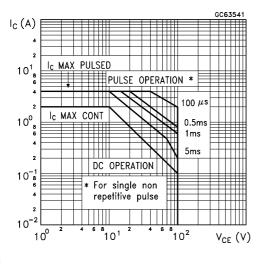
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	6.25	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

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

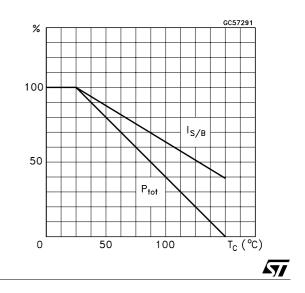
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I <sub>СВО</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 100 V V <sub>CB</sub> = 80 V			0.02 0.01	mA mA
ICEO	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 50 V			0.02	mA
ICEX	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	$V_{CE} = 80 V$ $V_{CE} = 80 V$ $T_{c} = 125 °C$			0.01 0.5	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current $(I_C = 0)$	V <sub>EB</sub> = 5 V			2	mA
$V_{CEO(sus)^*}$	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA	100			V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	$      I_C = 2 A \qquad I_B = 8 mA \\ I_C = 4 A \qquad I_B = 40 mA $			2 3	V V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = 4 A I <sub>B</sub> = 40 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		500 1000 200		12000	

\* Pulsed: Pulse duration = 300  $\mu$ s, duty cycle  $\leq$  2 % For PNP types voltage and current values are negative.

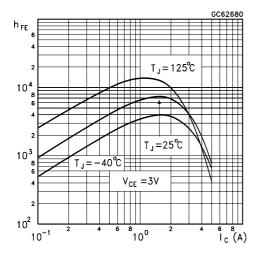
### Safe Operating Areas



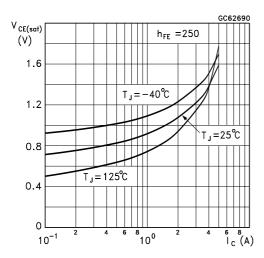
**Derating Curve** 



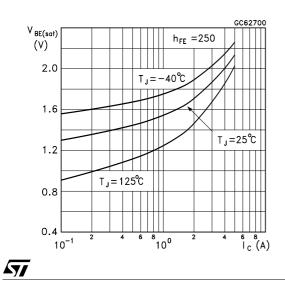
#### DC Current Gain (NPN type)



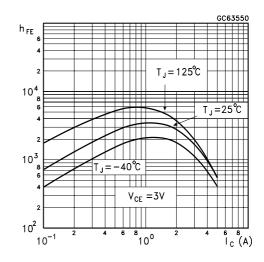
Collector-Emitter Saturation Voltage (NPN type)



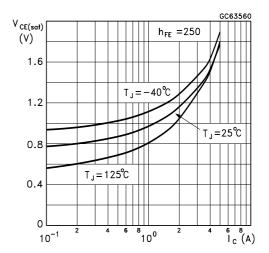
Base-Emitter Saturation Voltage (NPN type)



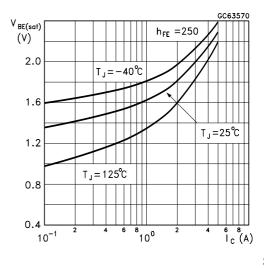
DC Current Gain (NPN type)

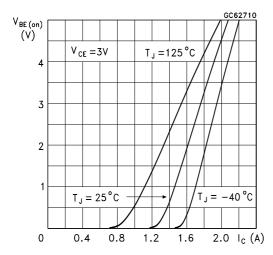


Collector-Emitter Saturation Voltage (PNP type)



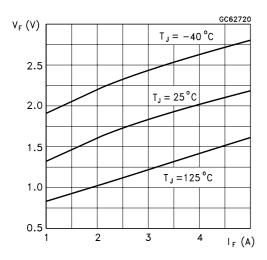
Base-Emitter Saturation Voltage (PNP type)



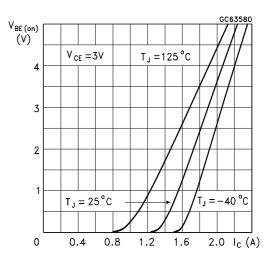


Base-Emitter On Voltage (NPN type)

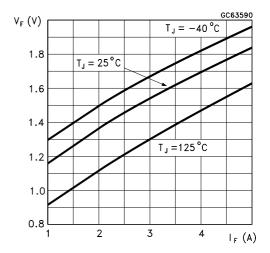
Freewheel Diode Forward Voltage (NPN types)



Base-Emitter On Voltage (PNP type)



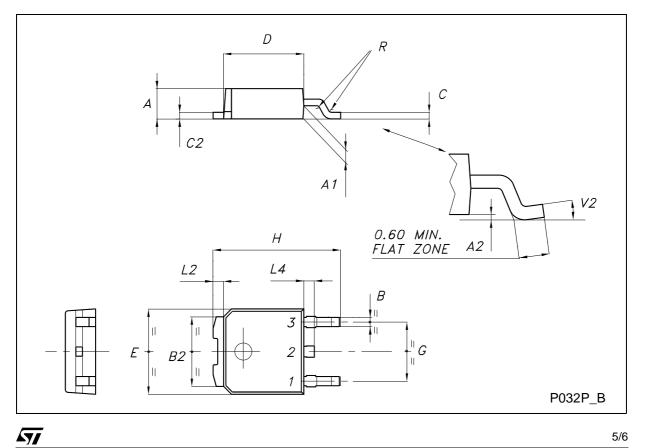
Freewheel Diode Forward Voltage (PNP types)



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DIM.	mm		inch			
	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
E	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 <sup>°</sup>		8 <sup>0</sup>	0°		0 <sup>0</sup>

# TO-252 (DPAK) MECHANICAL DATA



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