

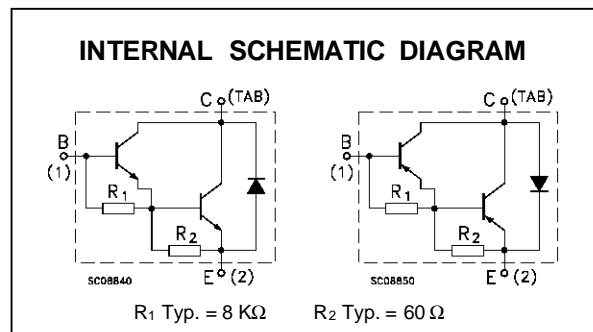
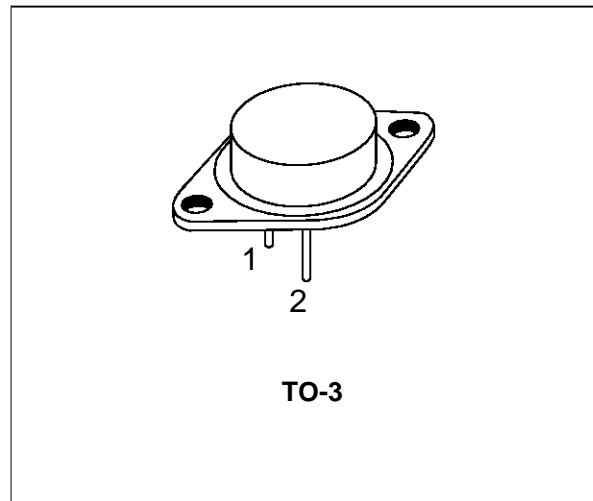
**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

- MJ11013, MJ11014, MJ11015 AND MJ11016 ARE SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The MJ11012, MJ11014 and MJ11016 are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in Jedec TO-3 metal case. They are intended for general purpose and amplifier applications.

The complementary PNP types are the MJ11011, MJ11013 and MJ11015 respectively.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value			Unit	
		NPN	MJ11012	MJ11014		MJ11016
		PNP	MJ11011	MJ11013	MJ11015	
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )		60	90	120	V
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )		60	90	120	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )			5		V
$I_C$	Collector Current			30		A
$I_B$	Base Current			1		A
$P_{tot}$	Total Dissipation at $T_c \leq 25^\circ C$			200		W
$T_{stg}$	Storage Temperature			-65 to 200		$^\circ C$
$T_j$	Max. Operating Junction Temperature			200		$^\circ C$

For PNP types voltage and current values are negative.

# MJ11011/MJ11012/MJ11013/MJ11014/MJ11015/MJ11016

## THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	0.87	$^{\circ}C/W$
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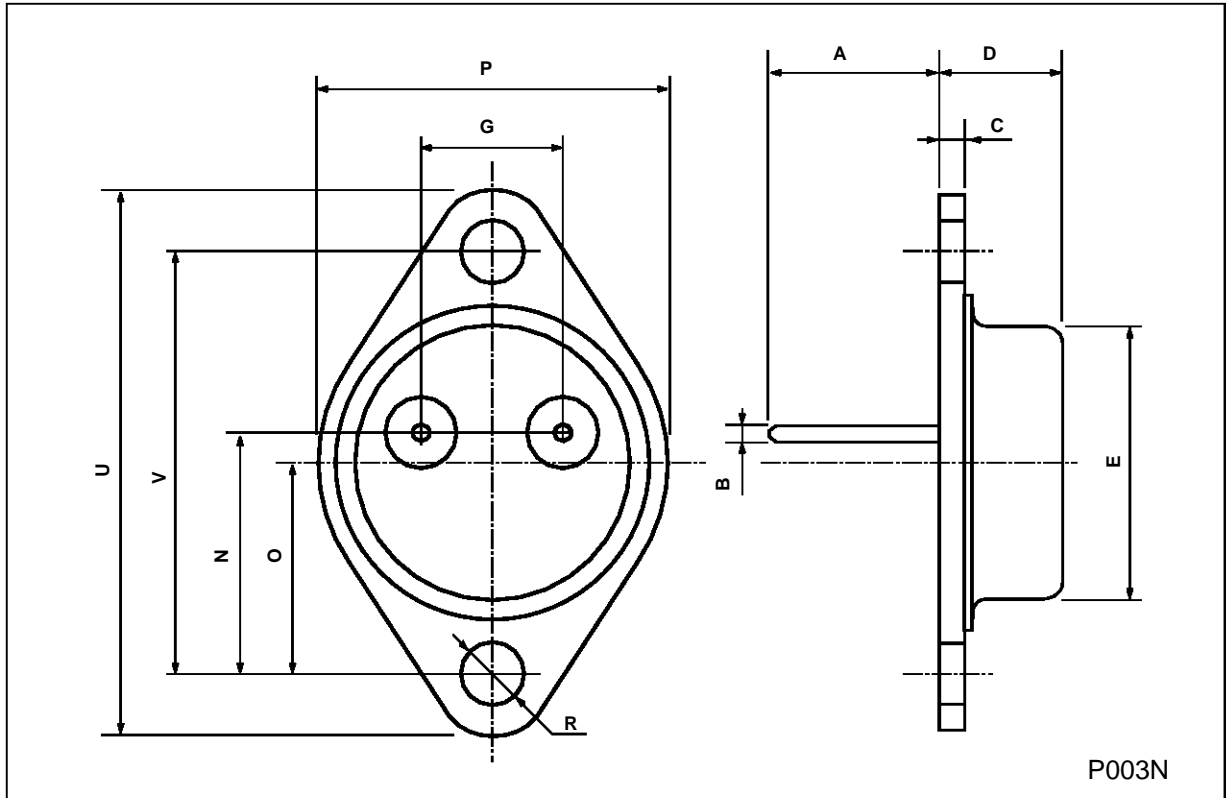
## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 50 V$			1	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5 V$			5	mA
$I_{CER}$	Collector Cut-off Current ( $R_{BE} = 1K\Omega$ )	$V_{CE} = \text{Rated } V_{CEO}$ $T_{case} = 150^{\circ}C$ $V_{CE} = \text{Rated } V_{CEO}$			1 5	mA mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100 mA$ for <b>MJ11011, MJ11012</b> for <b>MJ11013, MJ11014</b> for <b>MJ11015, MJ11016</b>	60 90 120			V V V
$h_{FE*}$	DC Current Gain	$I_C = 20 A$ $V_{BE} = 5 V$ $I_C = 30 A$ $V_{BE} = 5 V$	1000 200			
$V_{CE(sat)*}$	Collector-emitter Saturation Voltage	$I_C = 20 A$ $I_B = 200 mA$ $I_C = 30 A$ $I_B = 300 mA$			3 4	V V
$V_{BE(sat)*}$	Base-emitter Saturation Voltage	$I_C = 20 A$ $I_B = 200 mA$ $I_C = 30 A$ $I_B = 300 mA$			3.5 5	V V
$h_{fe}$	Small Signal Current Gain	$I_C = 10 A$ $V_{CE} = 3 V$ $f = 1 MHz$	4			

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %  
For PNP types voltage and current values are negative.

**TO-3 (H) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		11.7			0.460	
B	0.96		1.10	0.037		0.043
C			1.70			0.066
D			8.7			0.342
E			20.0			0.787
G		10.9			0.429	
N		16.9			0.665	
P			26.2			1.031
R	3.88		4.09	0.152		0.161
U			39.50			1.555
V		30.10			1.185	



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