

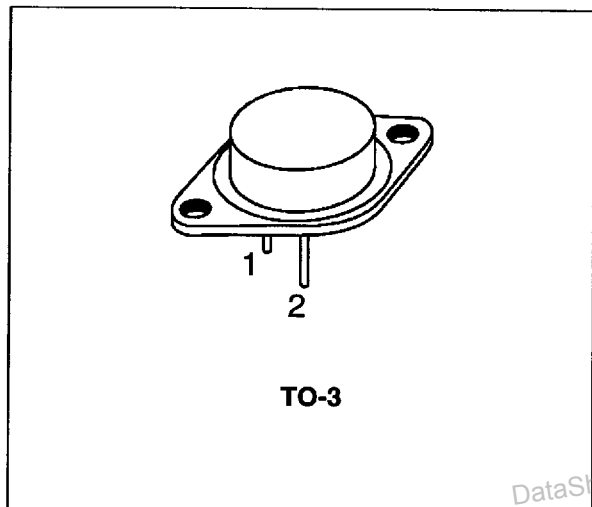
# COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- MJ2501 AND MJ3001 ARE SGS-THOMSON PREFERRED SALESTYPES

## DESCRIPTION

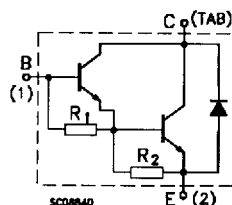
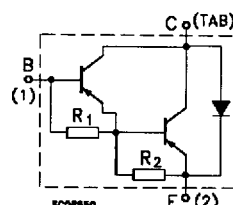
The MJ2500, and MJ2501 are silicon epitaxial-base PNP power transistors in monolithic Darlington configuration and are mounted in Jedec TO-3 metal case. They are intended for use in power linear and switching applications.

The complementary NPN types are the MJ3000 and MJ3001 respectively.



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## INTERNAL SCHEMATIC DIAGRAM


 $R_1$  Typ. = 10 K $\Omega$ 

 $R_2$  Typ. = 150  $\Omega$ 

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit	
		PNP	MJ2500		MJ2501
		NPN	MJ3000	MJ3001	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		60	80	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		60	80	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		5		V
$I_C$	Collector Current		10		A
$I_B$	Base Current		0.2		A
$P_{tot}$	Total Dissipation at $T_C \leq 25^\circ\text{C}$		150		W
$T_{stg}$	Storage Temperature		-65 to 200		$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature		200		$^\circ\text{C}$

For PNP types voltage and current values are negative.

**MJ2500/MJ2501/MJ3000/MJ3001****THERMAL DATA**

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1.17	$^{\circ}\text{C}/\text{W}$
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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CER}$	Collector Cut-off Current ( $R_{BE} = 1\text{ K}\Omega$ )	for <b>MJ2500 and MJ3000</b> $V_{CE} = 60\text{ V}$			1	mA
		for <b>MJ2501 and MJ3001</b> $V_{CE} = 80\text{ V}$			1	mA
		$T_{case} = 150^{\circ}\text{C}$ for <b>MJ2500 and MJ3000</b> $V_{CE} = 60\text{ V}$			5	mA
		for <b>MJ2501 and MJ3001</b> $V_{CE} = 80\text{ V}$			5	mA
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	for <b>MJ2500 and MJ3000</b> $V_{CE} = 30\text{ V}$			1	mA
		for <b>MJ2501 and MJ3001</b> $V_{CE} = 40\text{ V}$			1	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			2	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100\text{ mA}$ for <b>MJ2500 and MJ3000</b> for <b>MJ2501 and MJ3001</b>	60 80			V V
$V_{CE(sat)*}$	Collector-emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 20\text{ mA}$			2	V
		$I_C = 10\text{ A}$ $I_B = 50\text{ mA}$			4	V
$V_{BE*}$	Base-emitter Voltage	$I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$			3	V
$h_{FE*}$	DC Current Gain	$I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$	1000			

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , 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	

