



# THE DATASHEET OF MJ3001





**MJ2501**  
**MJ3001**

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

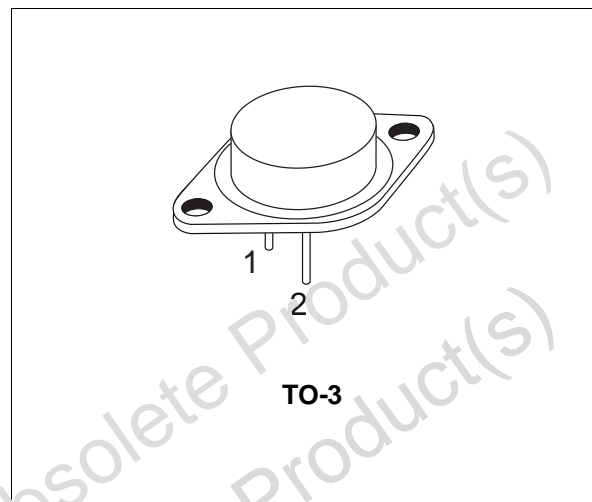
### APPLICATION

- AUDIO POWER AMPLIFIER
- DC-AC CONVERTER
- EASY DRIVER FOR LOW VOLTAGE DC MOTOR
- GENERAL POWER SWITCHING

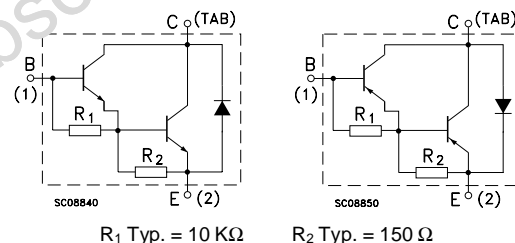
### DESCRIPTION

The MJ2501 is a Silicon Epitaxial-Base PNP power transistors in monolithic Darlington configuration, mounted in Jedec TO-3 metal case. It is intended for use in power linear and switching applications.

The complementary NPN type is the MJ3001.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		PNP	MJ2501	
		NPN	MJ3001	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		80	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		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 $T_c \leq 25^\circ C$		150	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.

**THERMAL DATA**

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.17	°C/W
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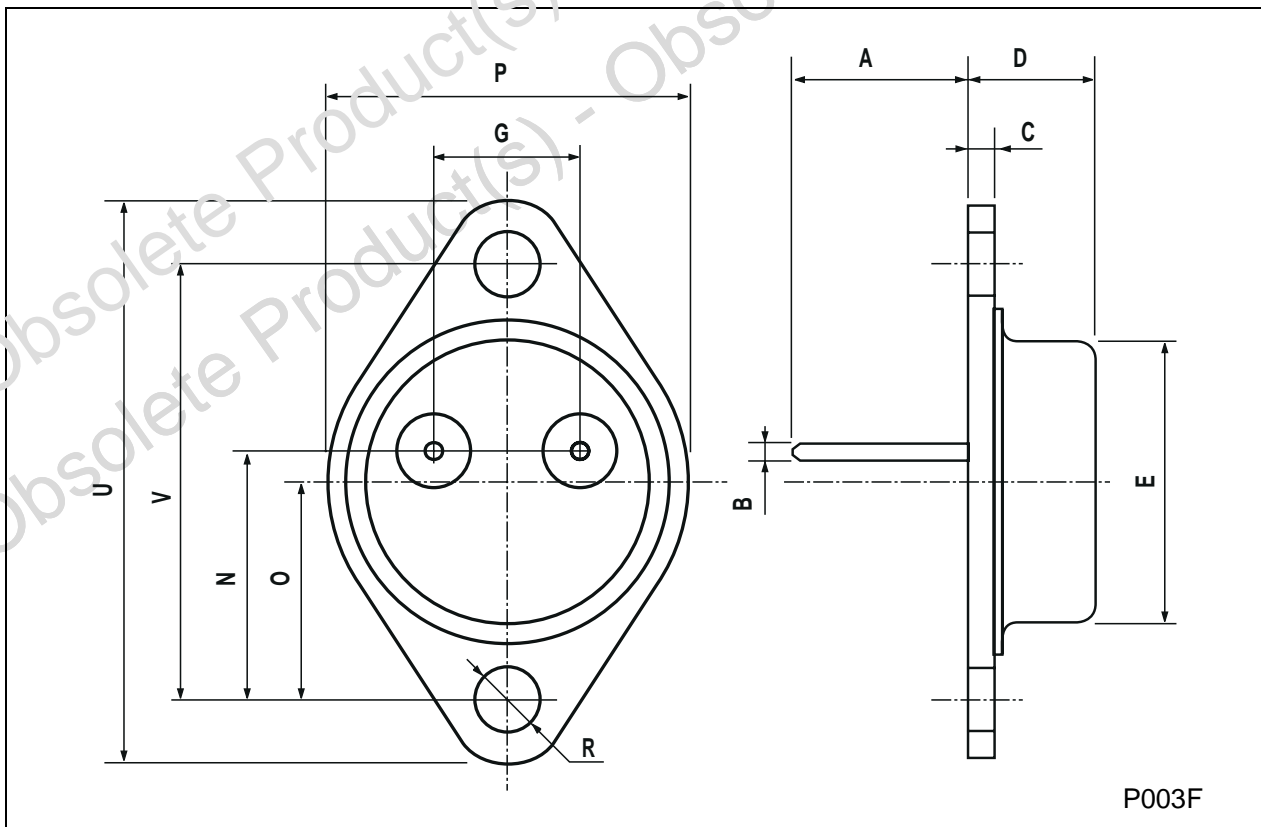
**ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CER</sub>	Collector Cut-off Current (R <sub>BE</sub> = 1 KΩ)	V <sub>CE</sub> = 80 V			1	mA
		T <sub>case</sub> = 150 °C V <sub>CE</sub> = 80 V			5	mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 30 V			1	mA
		V <sub>CE</sub> = 40 V			1	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>B</sub> = 0)	I <sub>C</sub> = 100 mA	80			V
V <sub>CE(sat)*</sub>	Collector-emitter Saturation Voltage	I <sub>C</sub> = 5 A			2	V
		I <sub>C</sub> = 10 A	I <sub>B</sub> = 20 mA I <sub>B</sub> = 50 mA		4	V
V <sub>BE*</sub>	Base-emitter Voltage	I <sub>C</sub> = 5 A			3	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 5 A		1000		

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

**TO-3 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



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