

## Medium-Power Complementary Silicon Transistors

... for use as output devices in complementary general purpose amplifier applications.

- High DC Current Gain —  $h_{FE} = 4000$  (Typ) @  $I_C = 5.0$  Adc
- Monolithic Construction with Built-in Base-Emitter Shunt Resistors

### MAXIMUM RATINGS

Rating	Symbol	MJ2500 MJ3000	MJ2501 MJ3001	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector-Base Voltage	$V_{CB}$	60	80	Vdc
Emitter-Base Voltage	$V_{EB}$	5.0		Vdc
Collector Current	$I_C$	10		Adc
Base Current	$I_B$	0.2		Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	150 0.857		Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +200		$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	1.17	$^\circ\text{C/W}$

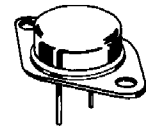
**PNP  
MJ2500**

**MJ2501\*  
NPN**

**MJ3000**

**MJ3001\***

**10 AMPERE  
DARLINGTON  
POWER TRANSISTORS  
COMPLEMENTARY  
SILICON  
60-80 VOLTS  
150 WATTS**



(TO-3)

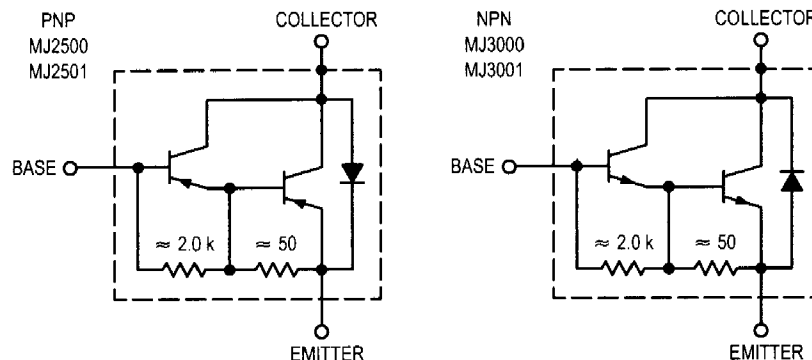
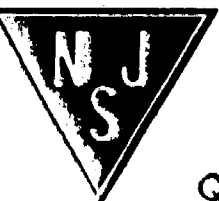


Figure 1. Darlington Circuit Schematic

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

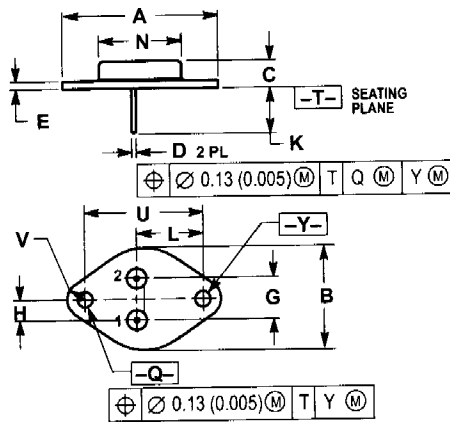


# MJ2500 MJ2501 MJ3000 MJ3001

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

Characteristic		Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector Emitter Breakdown Voltage <sup>(1)</sup> (I <sub>C</sub> = 100 mAdc, I <sub>B</sub> = 0)	MJ2500, MJ3000 MJ2501, MJ3001	V <sub>(BR)CEO</sub>	60 80	— —	Vdc
Collector-Emitter Leakage Current (V <sub>EB</sub> = 60 Vdc, R <sub>BE</sub> = 1.0 k ohm) (V <sub>EB</sub> = 80 Vdc, R <sub>BE</sub> = 1.0 k ohm) (V <sub>EB</sub> = 60 Vdc, R <sub>BE</sub> = 1.0 k ohm, T <sub>C</sub> = 150°C) (V <sub>EB</sub> = 80 Vdc, R <sub>BE</sub> = 1.0 k ohm, T <sub>C</sub> = 150°C)	MJ2500, MJ3000 MJ2501, MJ3001 MJ2500, MJ3000 MJ2501, MJ3001	I <sub>CER</sub>	— — — —	1.0 1.0 5.0 5.0	mAdc
Emitter Cutoff Current (V <sub>BE</sub> = 5.0 Vdc, I <sub>C</sub> = 0)		I <sub>EBO</sub>	—	2.0	mAdc
Collector Emitter Leakage Current (V <sub>CE</sub> = 30 Vdc, I <sub>B</sub> = 0) (V <sub>CE</sub> = 40 Vdc, I <sub>B</sub> = 0)	MJ2500, MJ3000 MJ2501, MJ3001	I <sub>CEO</sub>	— —	1.0 1.0	mAdc
<b>ON CHARACTERISTICS<sup>(1)</sup></b>					
DC Current Gain (I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 3.0 Vdc)		h <sub>FE</sub>	1000	—	—
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 20 mAdc) (I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 50 mAdc)		V <sub>CE(sat)</sub>	— —	2.0 4.0	Vdc
Base Emitter Voltage (I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 3.0 Vdc)		V <sub>BE(on)</sub>	—	3.0	Vdc

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.550 REF	—	39.37 REF	—
B	—	1.050	—	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	—	0.430 BSC	—	10.92 BSC
H	—	0.215 BSC	—	5.46 BSC
K	0.440	0.480	11.18	12.19
L	—	0.665 BSC	—	16.89 BSC
N	—	0.830	—	21.08
Q	0.151	0.165	3.84	4.19
U	—	1.187 BSC	—	30.15 BSC
V	0.131	0.188	3.33	4.77

STYLE 1:  
PIN 1: BASE  
2: EMITTER  
CASE: COLLECTOR