New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

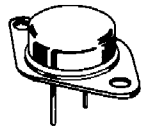
Medium-Power Complementary Silicon Transistors

. . . 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

PNP
MJ2500
MJ2501*
NPN
MJ3000
MJ3001*

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



(TO–3)

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°C Derate above 25°C	P_D	150 0.857		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.17	°C/W

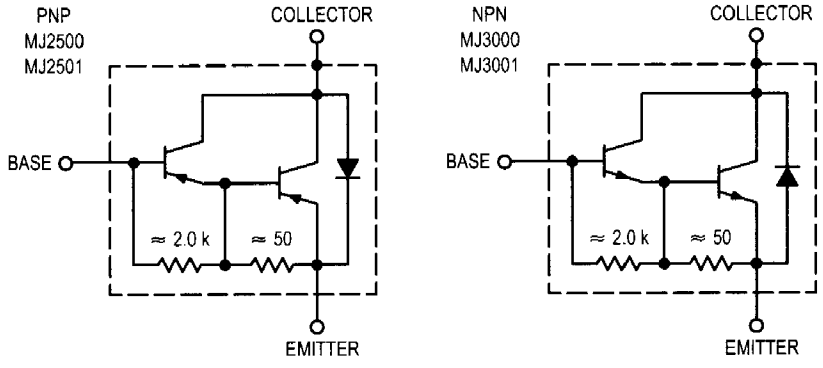
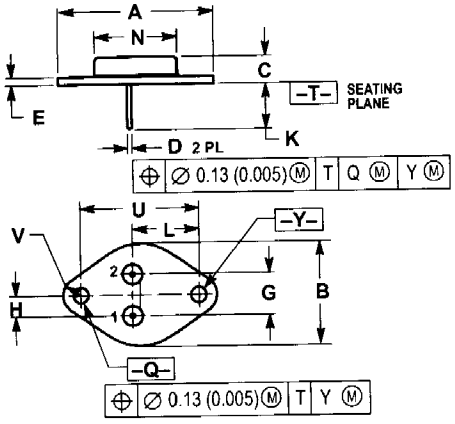


Figure 1. Darlington Circuit Schematic

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage(1) (I_C = 100 mAdc, I_B = 0)	MJ2500, MJ3000 MJ2501, MJ3001	$V_{(BR)CEO}$	60 80	— —	Vdc
Collector–Emitter Leakage Current		I_{CER}			mAdc
(V_{EB} = 60 Vdc, R_{BE} = 1.0 k ohm)	MJ2500, MJ3000		—	1.0	
(V_{EB} = 80 Vdc, R_{BE} = 1.0 k ohm)	MJ2501, MJ3001		—	1.0	
(V_{EB} = 60 Vdc, R_{BE} = 1.0 k ohm, T_C = 150°C)	MJ2500, MJ3000		—	5.0	
(V_{EB} = 80 Vdc, R_{BE} = 1.0 k ohm, T_C = 150°C)	MJ2501, MJ3001		—	5.0	
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	—	2.0	mAdc
Collector Emitter Leakage Current (V_{CE} = 30 Vdc, I_B = 0)	MJ2500, MJ3000	I_{CEO}	—	1.0	mAdc
(V_{CE} = 40 Vdc, I_B = 0)	MJ2501, MJ3001		—	1.0	
ON CHARACTERISTICS(1)					
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc)		h_{FE}	1000	—	—
Collector–Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 20 mAdc)		$V_{CE(sat)}$	—	2.0	Vdc
(I_C = 10 Adc, I_B = 50 mAdc)			—	4.0	
Base Emitter Voltage (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc)		$V_{BE(on)}$	—	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 MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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