New Jersey Semi-Conductor Products, Inc.

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Plastic Darlington Complementary Silicon Power Transistors

PNP
MJE700,T
MJE702
MJE703
NPN
MJE800,T
MJE802
MJE803

. . . designed for general–purpose amplifier and low–speed switching applications.

- High DC Current Gain —
  h_{FE} = 2000 (Typ) @ I_C = 2.0 Adc
- Monolithic Construction with Built–in Base–Emitter Resistors to Limit Leakage Multiplication
- Choice of Packages —
  MJE700 and MJE800 series
  T0220AB, MJE700T and MJE800T

4.0 AMPERE DARLINGTON POWER TRANSISTORS COMPLEMENTARY SILICON 40 WATT 50 WATT

MAXIMUM RATINGS

Rating	Symbol	MJE700,T MJE800,T	MJE702 MJE703 MJE802 MJE803	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	4.0		Adc
Base Current	I_B	0.1		Adc
		CASE 77	TO–220	
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	40 0.32	50 0.40	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case CASE 77 TO–220	$R_{\theta JC}$	 3.13 2.50	°C/W

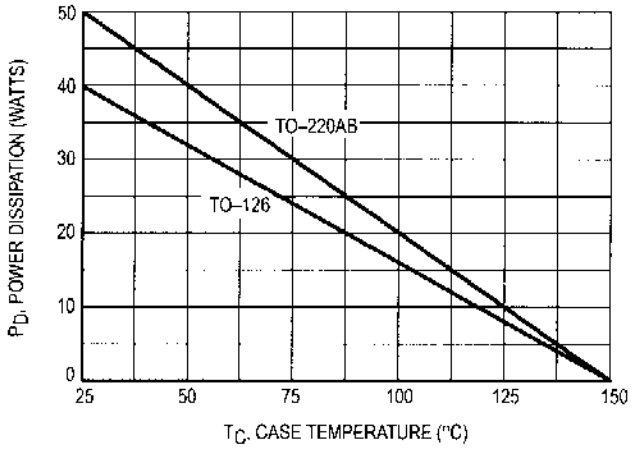
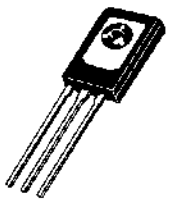
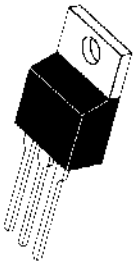


Figure 1. Power Derating



TO–225AA TYPE
MJE700–703
MJE800–803



CASE 221A–06
TO–220AB
MJE700T
MJE800T

Quality Semi-Conductors

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (1) (I_C = 50 mAdc, I_B = 0)	MJE700,T, MJE800,T MJE702, MJE703, MJE802, MJE803	$V_{(BR)CEO}$	60 80	— —	Vdc
Collector Cutoff Current (V_{CE} = 60 Vdc, I_B = 0) (V_{CE} = 80 Vdc, I_B = 0)	 MJE700,T, MJE800,T MJE702, MJE703, MJE802, MJE803	I_{CEO}	 — —	 100 100	µAdc
Collector Cutoff Current (V_{CB} = Rated BV_{CEO}, I_E = 0) (V_{CB} = Rated BV_{CEO}, I_E = 0, T_C = 100°C)		I_{CBO}	— —	100 500	µAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	—	2.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (1) (I_C = 1.5 Adc, V_{CE} = 3.0 Vdc) (I_C = 2.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)	 MJE700,T, MJE702, MJE800,T, MJE802 MJE703, MJE803 All devices	h_{FE}	 750 750 100	 — — —	—
Collector–Emitter Saturation Voltage (1) (I_C = 1.5 Adc, I_B = 30 mAdc) (I_C = 2.0 Adc, I_B = 40 mAdc) (I_C = 4.0 Adc, I_B = 40 mAdc)	 MJE700,T, MJE702, MJE800,T, MJE802 MJE703, MJE803 All devices	$V_{CE(sat)}$	 — — —	 2.5 2.8 3.0	Vdc
Base–Emitter On Voltage (1) (I_C = 1.5 Adc, V_{CE} = 3.0 Vdc) (I_C = 2.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)	 MJE700,T, MJE702, MJE800,T, MJE802 MJE703, MJE803 All devices	$V_{BE(on)}$	 — — —	 2.5 2.5 3.0	Vdc
DYNAMIC CHARACTERISTICS					
Small–Signal Current Gain (I_C = 1.5 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz)		h_{fe}	1.0	—	—

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