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Plastic Darlington Complementary Silicon Power Transistors

... 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

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
Total Power Dissipation @ T _C = 25°C Derate above 25°C	P _D	CASE 77	TO-220	Watts W/°C
		40 0.32	50 0.40	
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 _{θJC}	3.13 2.50	°C/W

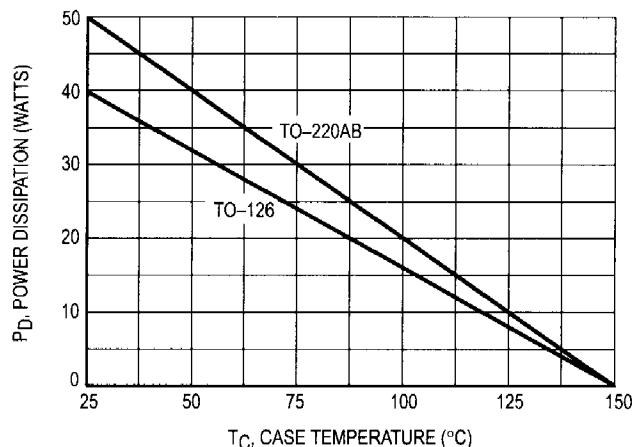
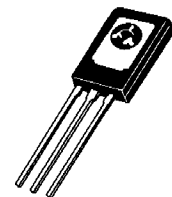


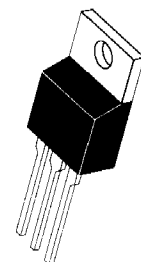
Figure 1. Power Derating

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

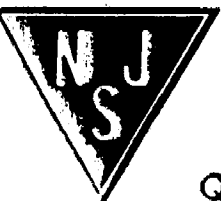
**4.0 AMPERE
DARLINGTON
POWER TRANSISTORS
COMPLEMENTARY
SILICON
40 WATT
50 WATT**



TO-225AA TYPE
MJE700-703
MJE800-803



CASE 221A-06
TO-220AB
MJE700T
MJE800T



MJE700,T MJE702 MJE703 MJE800,T MJE802 MJE803

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

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

(1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.