MJE700 thru MJE703 PNP (SILICON)
MJE800 thru MJE803 NPN

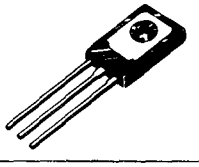
PLASTIC MEDIUM-POWER COMPLEMENTARY SILICON TRANSISTORS

. . . designed to replace discrete driver and output stages in complementary audio amplifier applications.

- High DC Current Gain – h_{FE} = 750 (Min) @ I_C = 1.5 and 2.0 Adc
- Monolithic Construction
- Three Lead Design – Emitter-Base Resistors to Prevent Leakage Multiplication are Built-In.

4.0 AMPERE DARLINGTON POWER TRANSISTORS COMPLEMENTARY SILICON

60-80 VOLTS 40 WATTS



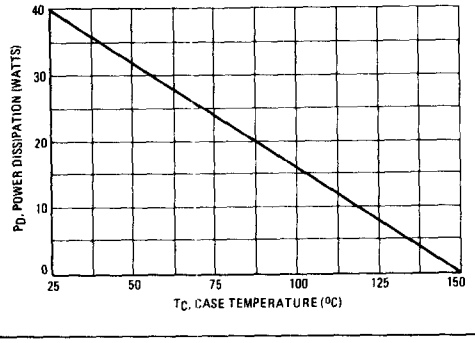
MAXIMUM RATINGS

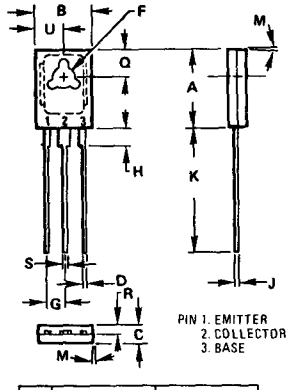
Rating	Symbol	MJE700 MJE701 MJE800 MJE801	MJE702 MJE703 MJE802 MJE803	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CB}	60	80	Vdc
Emitter-Base Voltage	V_{EB}	5.0		Vdc
Collector Current	I_C	4.0		Adc
Base Current	I_B	0.1		Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	40 0.32		Watts W/°C
Operating and Storage Junction Temperating Range	T_J, T_{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.13	°C/W

FIGURE 1 – POWER DERATING





DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	10.80	11.05	0.425	0.435
B	7.49	7.75	0.295	0.305
C	2.41	2.67	0.095	0.105
D	0.51	0.66	0.020	0.026
F	2.92	3.00	0.115	0.118
G	2.31	2.46	0.091	0.097
H	2.16	2.41	0.085	0.095
J	0.38	0.64	0.015	0.025
K	15.38	16.64	0.605	0.655
M	3° TYP		3° TYP	
Q	3.76	4.01	0.148	0.158
R	1.14	1.40	0.045	0.055
S	0.64	0.89	0.025	0.035
U	3.68	3.94	0.145	0.155

CASE 77-03

When mounting the device, torque not to exceed 6.0 in.-lb.

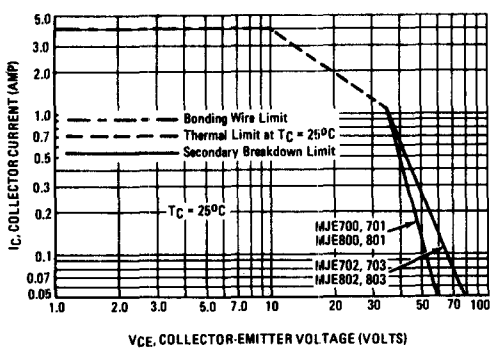
If lead bending is required, use suitable clamps or other supports between transistor case and point of bend.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1)		BV_{CEO}			Vdc
(I_C = 50 mAdc, I_B = 0)	MJE700, MJE701, MJE800, MJE801		60	–	
	MJE702, MJE703, MJE802, MJE803		80	–	
Collector Cutoff Current		I_{CEO}			μAdc
(V_{CE} = 30 Vdc, I_B = 0)	MJE700, MJE701, MJE800, MJE801		–	500	
(V_{CE} = 40 Vdc, I_B = 0)	MJE702, MJE703, MJE802, MJE803		–	500	
Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = Rated BV_{CEO}, I_E = 0)			–	0.2	
(V_{CB} = Rated BV_{CEO}, I_E = 0, T_C = 100°C)			–	2.0	
Emitter Cutoff Current		I_{EBO}	–	2.0	mAdc
(V_{BE} = 5.0 Vdc, I_C = 0)					
ON CHARACTERISTICS					
DC Current Gain(1)		h_{FE}			–
(I_C = 1.5 Adc, V_{CE} = 3.0 Vdc)	MJE700, MJE702, MJE800, MJE802		750	–	
(I_C = 2.0 Adc, V_{CE} = 3.0 Vdc)	MJE701, MJE703, MJE801, MJE803		750	–	
Collector-Emitter Saturation Voltage(1)		$V_{CE(sat)}$			Vdc
(I_C = 1.5 Adc, I_B = 30 mAdc)	MJE700, MJE702, MJE800, MJE802		–	2.5	
(I_C = 2.0 Adc, I_B = 40 mAdc)	MJE701, MJE703, MJE801, MJE803		–	2.8	
Base-Emitter On Voltage(1)		$V_{BE(on)}$			Vdc
(I_C = 1.5 Adc, V_{CE} = 3.0 Vdc)	MJE700, MJE702, MJE800, MJE802		–	2.5	
(I_C = 2.0 Adc, V_{CE} = 3.0 Vdc)	MJE701, MJE703, MJE801, MJE803		–	2.5	
DYNAMIC CHARACTERISTICS					
Small-Signal Current Gain		h_{fe}	1.0	–	–
(I_C = 1.5 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz)					

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

FIGURE 2 – DC SAFE OPERATING AREA



There are two limitations on the power handling ability of a transistor: average junction temperature and secondary breakdown. Safe operating area curves indicate I_C–V_{CE} limits of the transistor that must be observed for reliable operation; e.g., the transistor must not be subjected to greater dissipation than the curves indicate.

At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown. (See AN-415)

FIGURE 3 – DARLINGTON CIRCUIT SCHEMATIC