MOSPEC

PLASTIC DARLINGTON
COMPLEMENTARY SILICON POWER TRANSISTORS

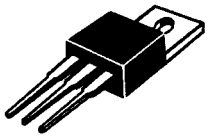
... designed for general-purpose and low-speed switching application.

FEATURES

* High DC Current Gain-
  hFE = 2000 (Typ) @I_C =2.0 A
* Monolithic Construction with Built-in Base-Emitter Resistors Limit Leakage Muliplication

PNP	NPN
MJE700T	MJE800T
MJE701T	MJE801T
MJE702T	MJE802T
MJE703T	MJE803T

4.0 AMPERE
DARLINGTON
POWER TRANSISTORS
COMPLEMENTARY SILICON
60-80 VOLTS
40 WATTS



TO-220

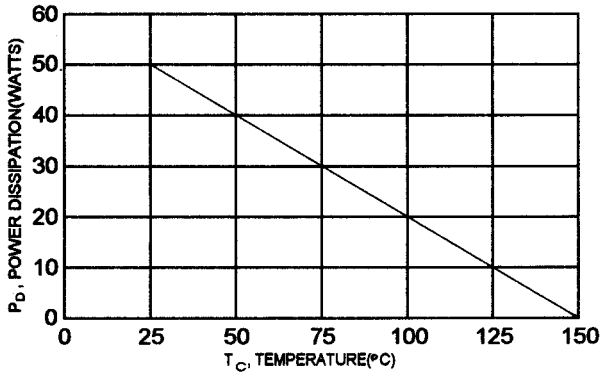
MAXIMUM RATINGS

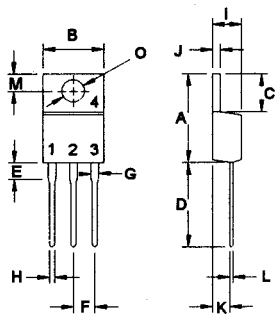
Characteristic	Symbol	MJE700T MJE701T MJE800T MJE801T	MJE702T MJE703T MJE802T MJE803T	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	V
Collector-Base Voltage	V_{CBO}	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector current	I_C	4.0		A
Base current	I_B	0.1		A
Total Power Dissipation @T_C=25°C Derate above 25°C	P_D	50 0.4		W 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	Rθjc	2.50	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Breakdown Voltage (I_C = 50 mA, I_B = 0) MJE700T,MJE701T MJE800T,MJE801T MJE702T,MJE703T MJE802T,MJE803T	V_{CEO}	 60 80		V
Collector Cutoff Current (V_{CE} = 60 V , I_B=0) MJE700T,MJE701T MJE800T,MJE801T (V_{CE} = 80 V , I_B=0) MJE702T,MJE703T MJE802T,MJE803T	I_{CEO}		 100 100	uA
Collector Cutoff Current (V_{CB} = Rated V_{CBO}, I_E=0) (V_{CB} = Rated V_{CBO}, I_E=0 ,T_C = 100°C)	I_{CBO}		 100 500	uA
Emitter Cutoff Current (V_{BE} = 5.0 V , I_C = 0)	I_{EBO}		 2.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain (I_C =1.5 A,V_{CE}=3.0 V) MJE700T,MJE702T MJE800T,MJE802T (I_C =2.0 A,V_{CE}=3.0 V) MJE701T,MJE703T MJE801T,MJE803T (I_C =4.0 A,V_{CE}=3.0 V) All devices	hFE	 750 750 100		
Collector-Emitter Saturation Voltage (I_C =1.5 A,I_B=30 mA) MJE700T,MJE702T MJE800T,MJE802T (I_C =2.0 A,I_B=40 mA) MJE701T,MJE703T MJE801T,MJE803T (I_C =4.0 A,I_B=40 mA) All devices	$V_{CE(sat)}$		 2.5 2.8 3.0	V
Base-Emitter On Voltage (I_C =1.5 A,V_{CE}=3.0 V) MJE700T,MJE702T MJE800T,MJE802T (I_C =2.0 A,V_{CE}=3.0 V) MJE701T,MJE703T MJE801T,MJE803T (I_C =4.0 A,V_{CE}=3.0 V) All devices	$V_{BE(on)}$		 2.5 2.5 3.0	V

(1) Pulse Test: Pulse Width =300 us,Duty Cycle ≦ 2.0%

FIGURE 2 – SWITCHING TIMES TEST CIRCUIT

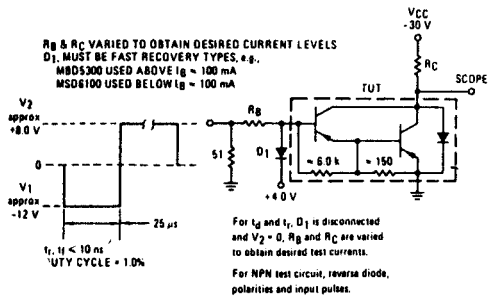


FIG-3 TURN-ON TIME

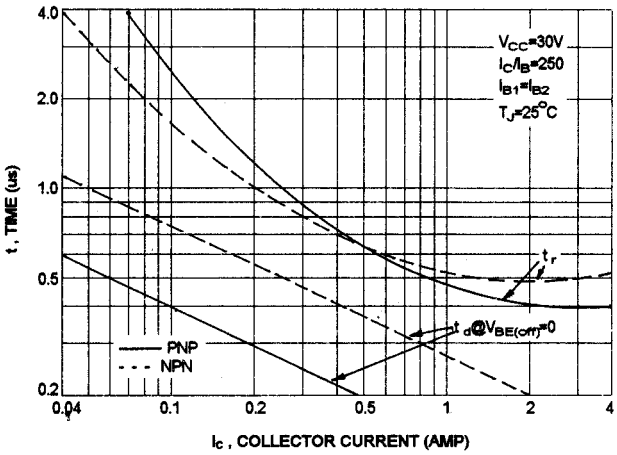


FIG-4 TURN-OFF TIME

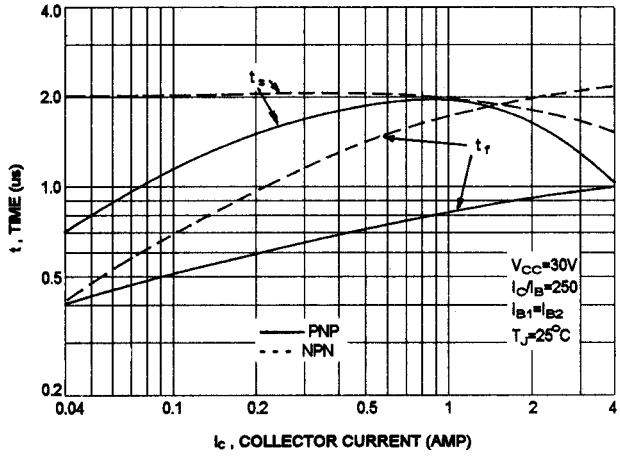


FIG-5 ACTIVE REGION SAFE OPERATING AREA

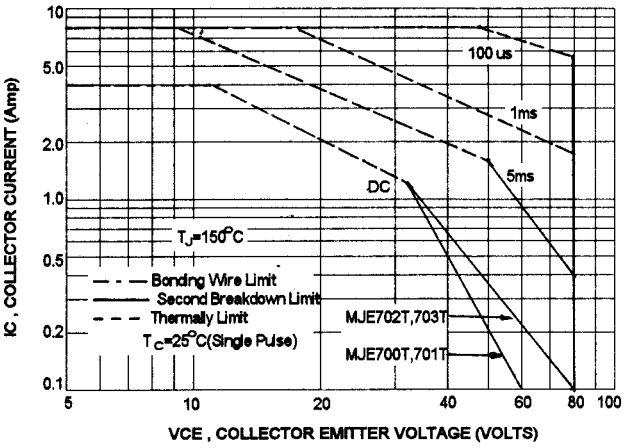
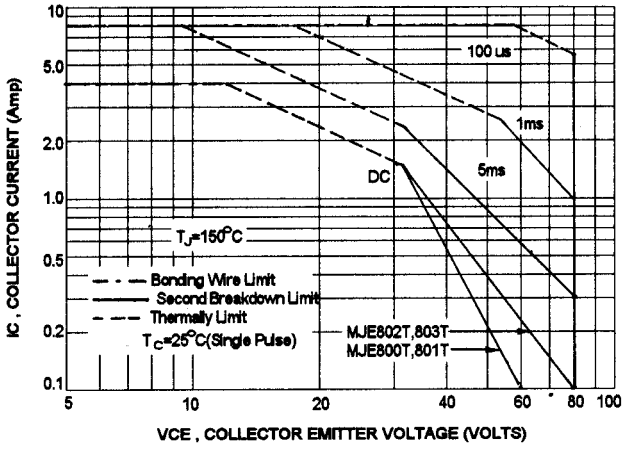


FIG-6 ACTIVE REGION SAFE OPERATING AREA

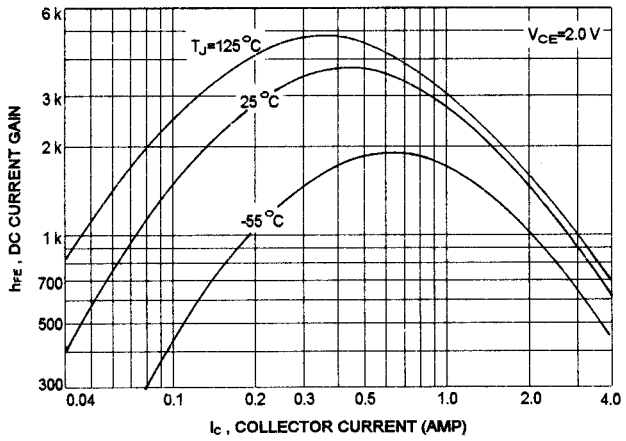


There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of Fig-5 and Fig-6 is base on $T_{J(PK)}$=150 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 150°C$,At high case temperatures, thermal limita - tion will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

FIG-7 DC CURRENT GAIN

PNP MJE700T Series



NPN MJE800T Series

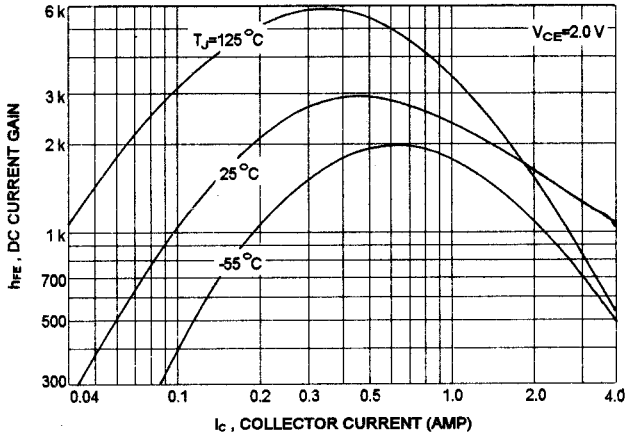
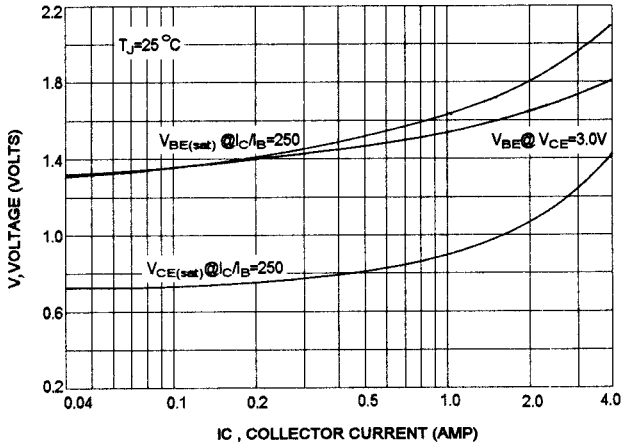


FIG-8 "ON" VOLTAGE

PNP MJE700T Series



NPN MJE800T Series

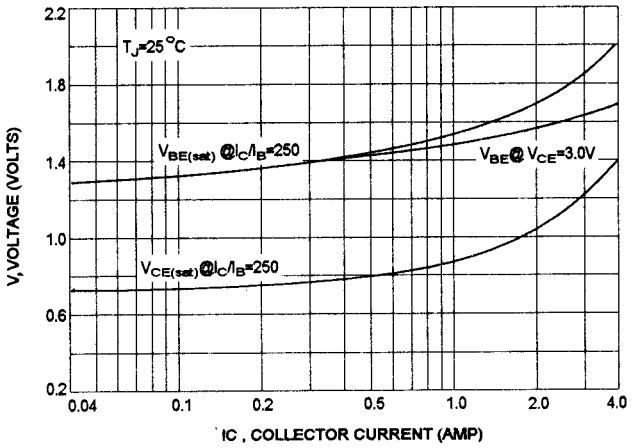
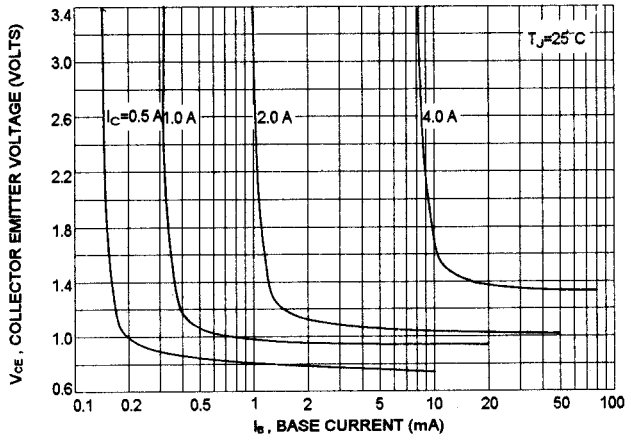


FIG-9 COLLECTOR SATURATION REGION

PNP MJE700T Series



NPN MJE800T Series