

MJE243 – NPN, MJE253 – PNP

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Sustaining Voltage (I _C = 10 mAdc, I _B = 0)	V _{CEO(sus)}	100	–	V
Collector Cutoff Current (V _{CB} = 100 Vdc, I _E = 0) (V _{CE} = 100 Vdc, I _E = 0, T _C = 125°C)	I _{CBO}	– –	0.1 0.1	μA mA
Emitter Cutoff Current (V _{BE} = 7.0 Vdc, I _C = 0)	I _{EBO}	–	0.1	μAdc
ON CHARACTERISTICS				
DC Current Gain (I _C = 200 mAdc, V _{CE} = 1.0 Vdc) (I _C = 1.0 Adc, V _{CE} = 1.0 Vdc)	h _{FE}	40 15	180 –	–
Collector–Emitter Saturation Voltage (I _C = 500 mAdc, I _B = 50 mAdc) (I _C = 1.0 Adc, I _B = 100 mAdc)	V _{CE(sat)}	– –	0.3 0.6	V
Base–Emitter Saturation Voltage (I _C = 2.0 Adc, I _B = 200 mAdc)	V _{BE(sat)}	–	1.8	V
Base–Emitter On Voltage (I _C = 500 mAdc, V _{CE} = 1.0 Vdc)	V _{BE(on)}	–	1.5	V
DYNAMIC CHARACTERISTICS				
Current–Gain – Bandwidth Product (I _C = 100 mAdc, V _{CE} = 10 Vdc, f _{test} = 10 MHz)	f _T	40	–	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 0.1 MHz)	C _{ob}	–	50	pF

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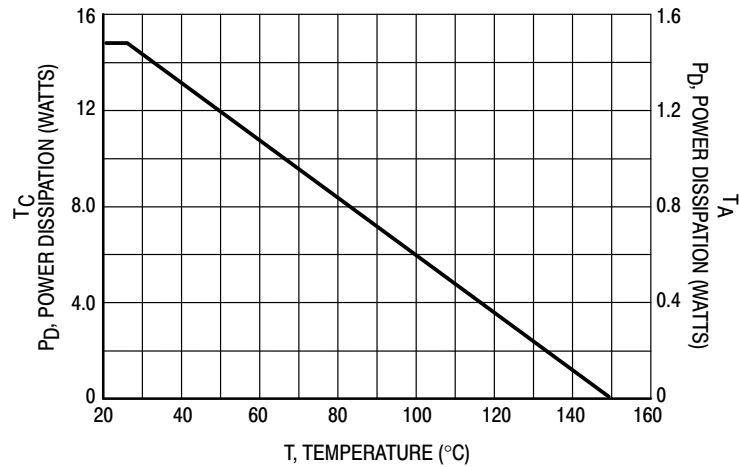


Figure 1. Power Derating

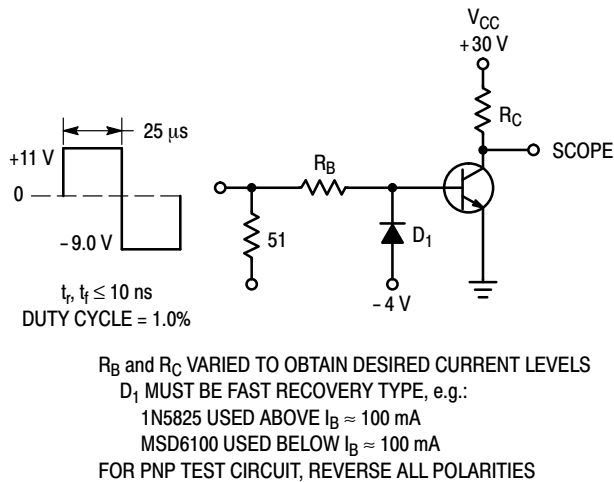


Figure 2. Switching Time Test Circuit

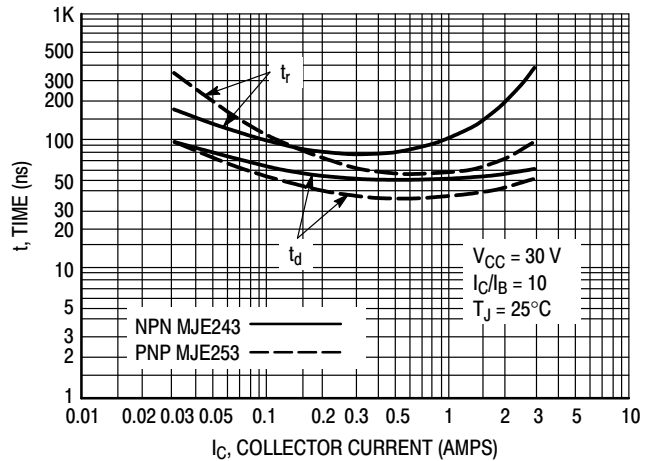


Figure 3. Turn-On Time

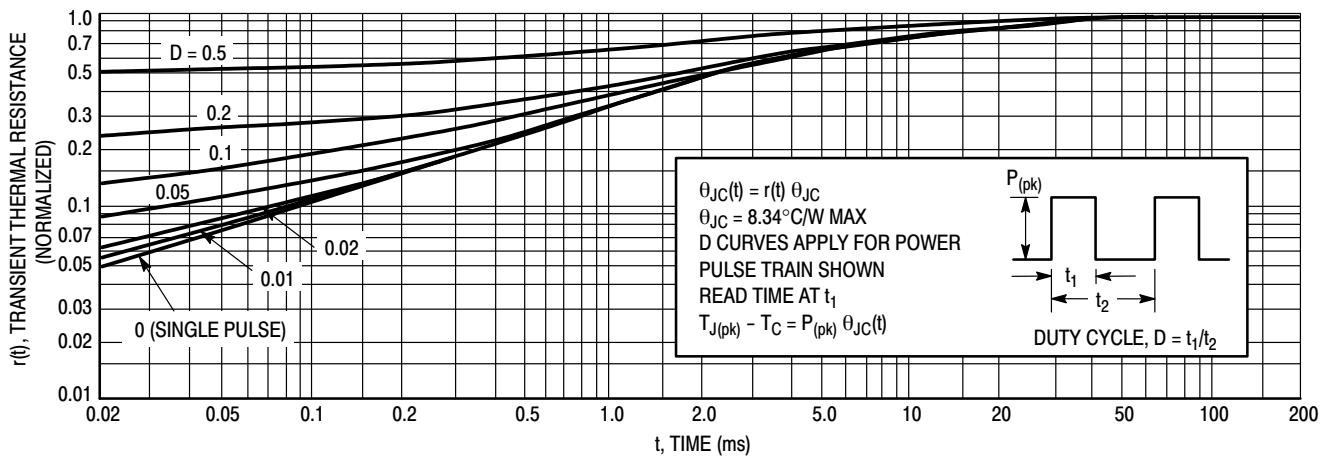


Figure 4. Thermal Response

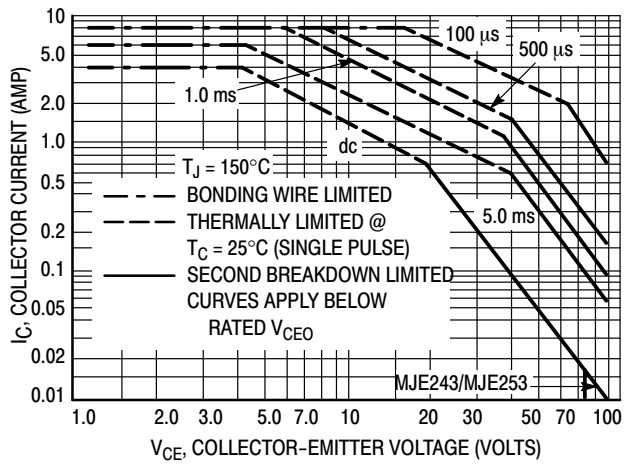


Figure 5. Active Region Safe Operating Area

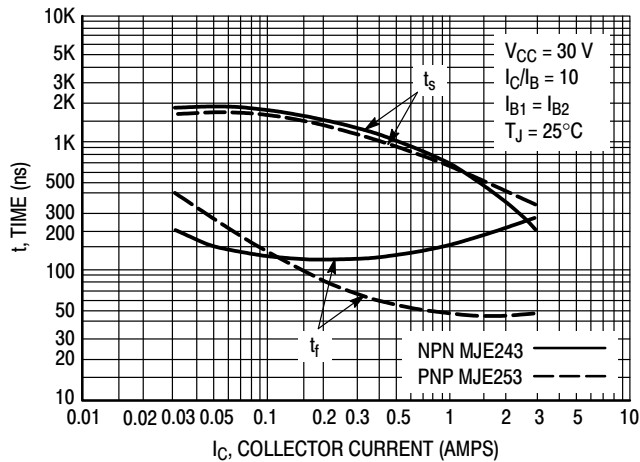


Figure 6. Turn-Off Time

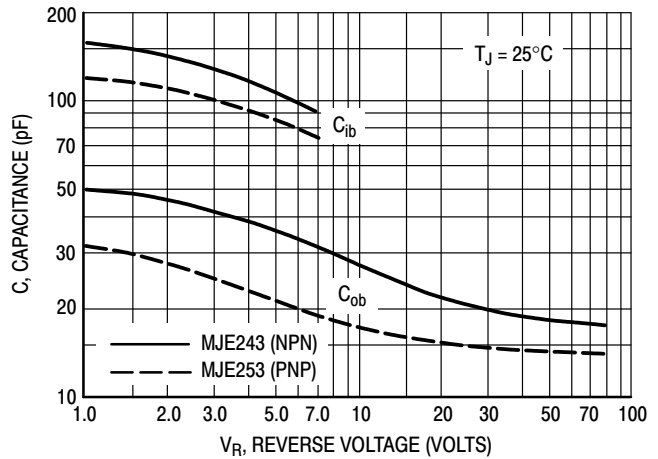


Figure 7. Capacitance

There are two limitations 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 the curves indicate.

The data of Figure 5 is based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 4. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

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NPN MJE243

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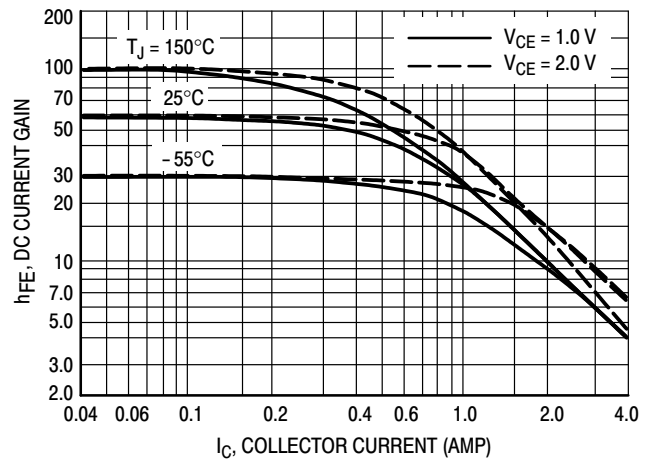
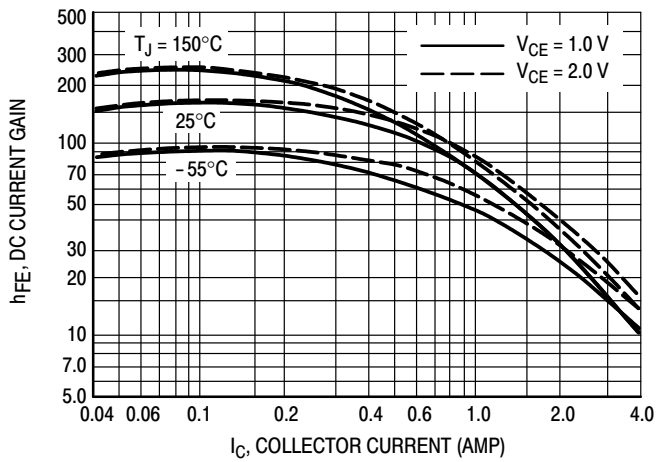


Figure 8. DC Current Gain

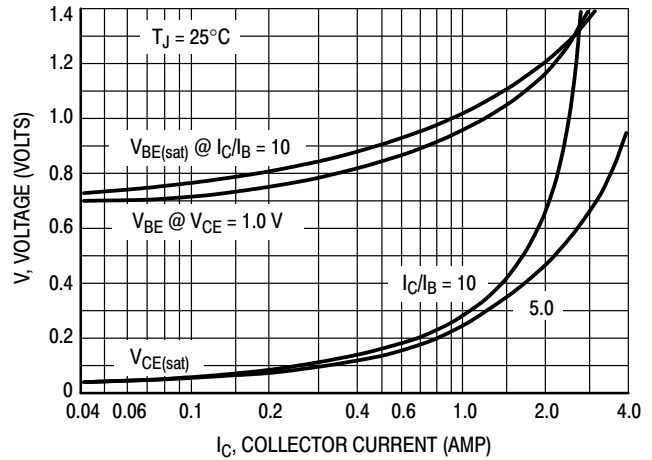
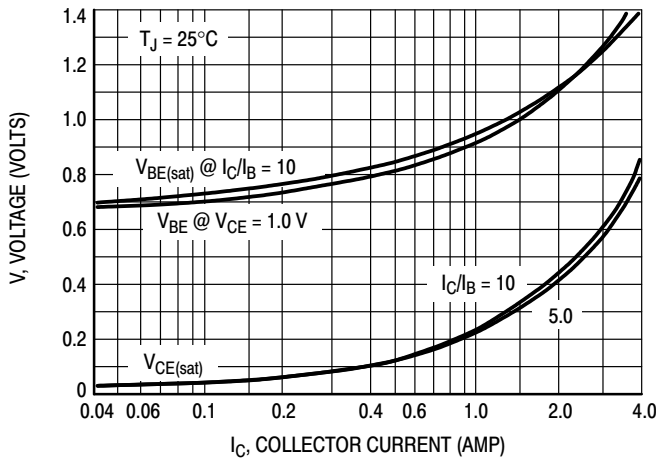


Figure 9. "On" Voltages

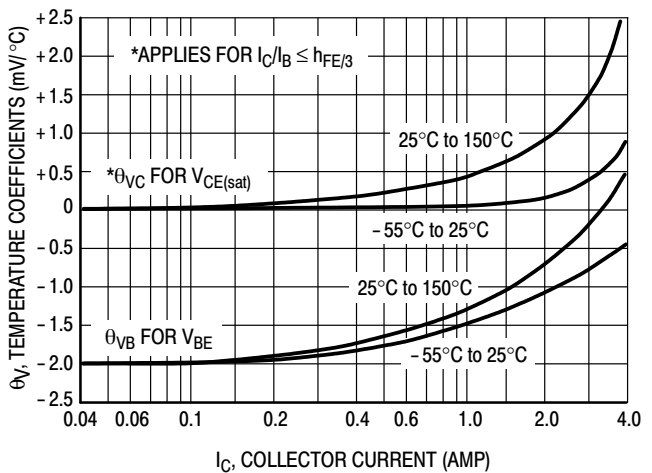
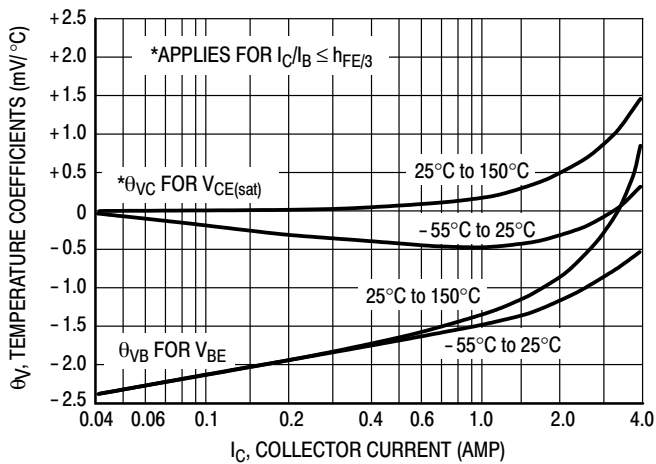
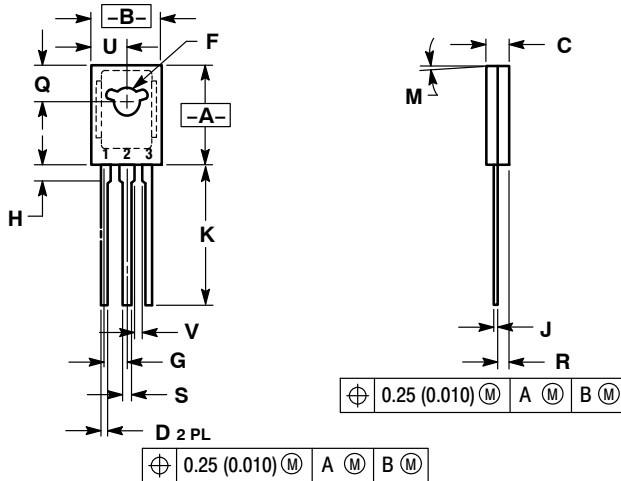


Figure 10. Temperature Coefficients

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PACKAGE DIMENSIONS

TO-225
CASE 77-09
ISSUE Z




NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077-01 THRU -08 OBSOLETE, NEW STANDARD 077-09.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	---	1.02	---

STYLE 1:

1. PIN 1. EMITTER
2. COLLECTOR
3. BASE

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