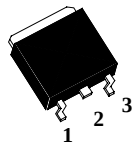
WEITRON

MJD41C

NPN PLASTIC ENCAPSULATE TRANSISTORS

Lead(Pb)-Free



D-PAK(TO-252)

Features:

* Designed for general purpose amplifier and low speed switching applications.
* Monolithic Construction With Built–in Base–Emitter Resistors.

ABSOLUTE MAXIMUM RATINGS (T_A=25˚C)

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	6.0	A
Collector Power Dissipation	P_D	1.25	W
Junction Temperature	T_j	+150	˚C
Storage Temperature Range	T_{stg}	-65 to +150	˚C

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

Parameter	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage I_C=0.1mA	BV_{CBO}	100	-	-	V
Collector-Emitter Breakdown Voltage I_C=30mA	BV_{CEO}	100	-	-	V
Emitter-Base Breakdown Voltage I_E=0.1mA	BV_{EBO}	5.0	-	-	V
Collector Emitter Cutoff Current V_{CB}=60V	I_{CEO}	-	-	50	μA
Emitter Cutoff Current V_{EB}=5.0V	I_{EBO}	-	-	0.5	mA

ON CHARACTERISTICS

DC Current Gain V_{CE}=4V, I_C=0.3A V_{CE}=4V, I_C=3A	$h_{FE(1)}$ $h_{FE(2)}$	30 15	- -	- 75	-
Collector-Emitter Saturation Voltage I_C=6A, I_B=0.6A	$V_{CE(sat)}$	-	-	1.5	V
Base-Emitter Voltage V_{CE}=4V, I_C=6A	V_{BE}	-	-	2	V
Transition frequency V_{CE}=10V, I_C=0.5A, f=1MHz	f_T	3	-	-	MHz

TYPICAL CHARACTERISTICS

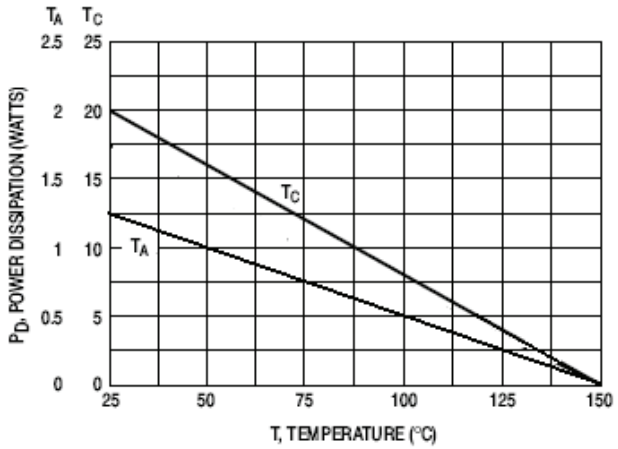
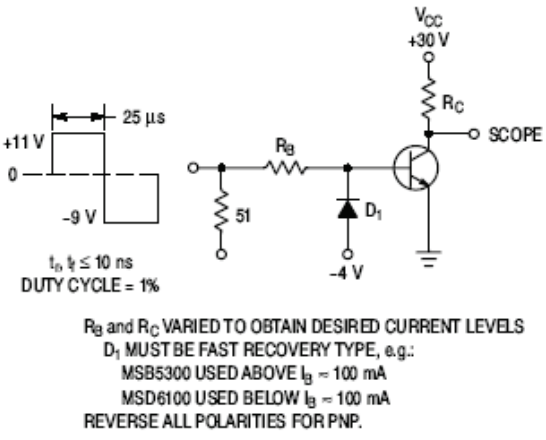


Figure 1. Power Derating



R_B and R_C VARIED TO OBTAIN DESIRED CURRENT LEVELS
D_1 MUST BE FAST RECOVERY TYPE, e.g.:
MSB5300 USED ABOVE I_B ≈ 100 mA
MSD6100 USED BELOW I_B ≈ 100 mA
REVERSE ALL POLARITIES FOR PNP.

Figure 2. Switching Time Test Circuit

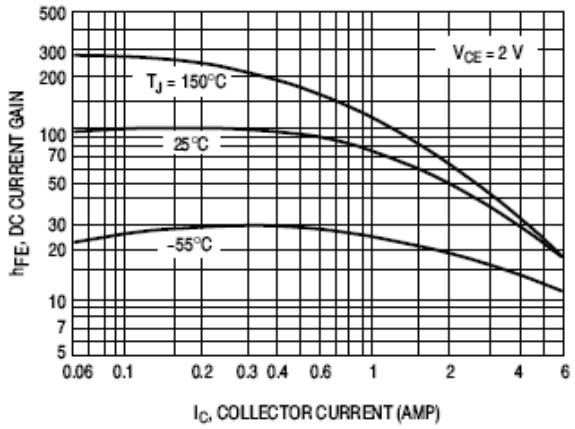


Figure 3. DC Current Gain

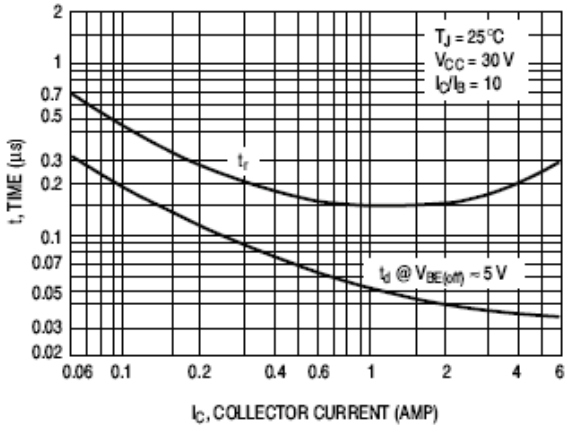


Figure 4. Turn–On Time

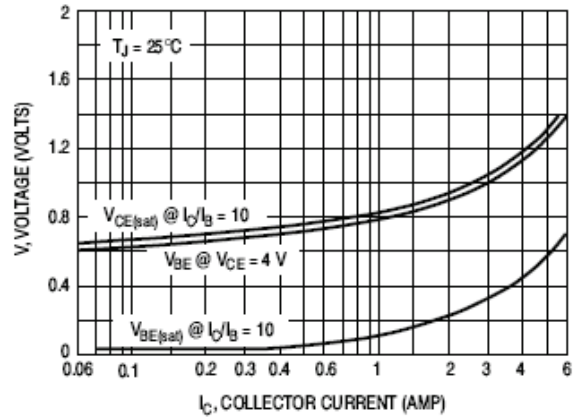


Figure 5. “On” Voltages

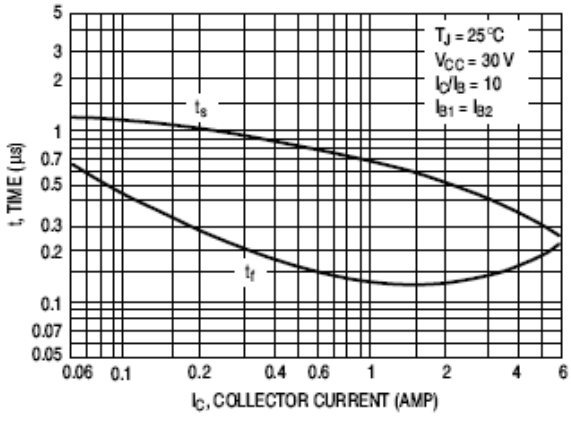


Figure 6. Turn–Off Time

Typical Characteristics

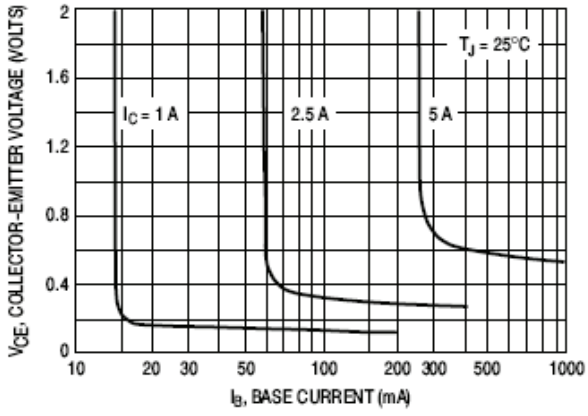


Figure 7. Collector Saturation Region

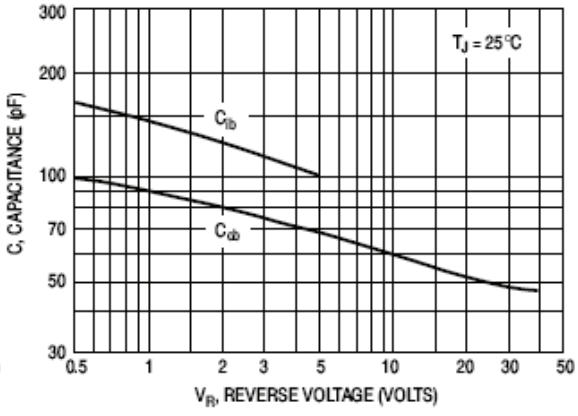


Figure 8. Capacitance

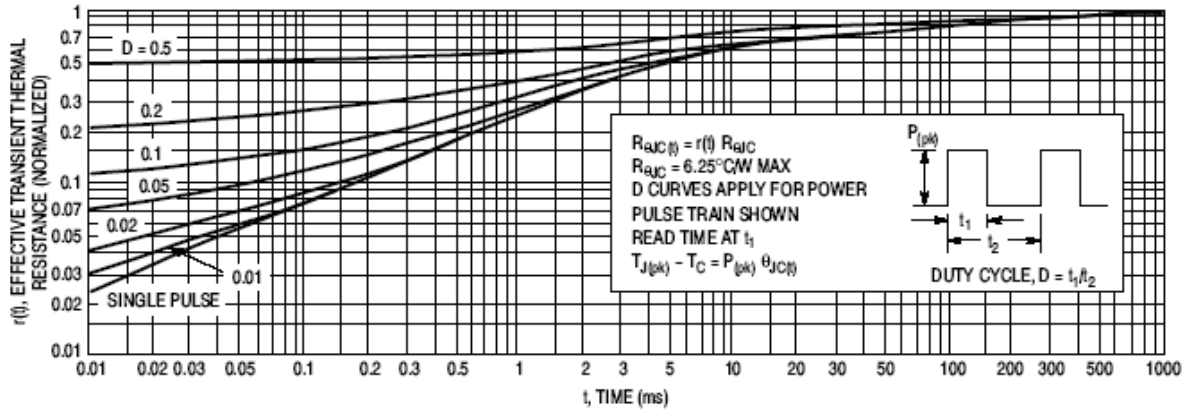


Figure 9. Thermal Response

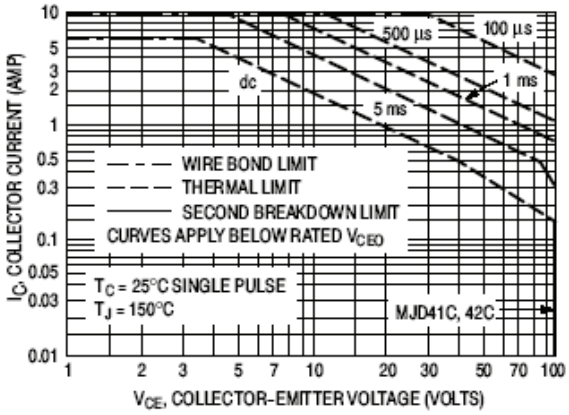


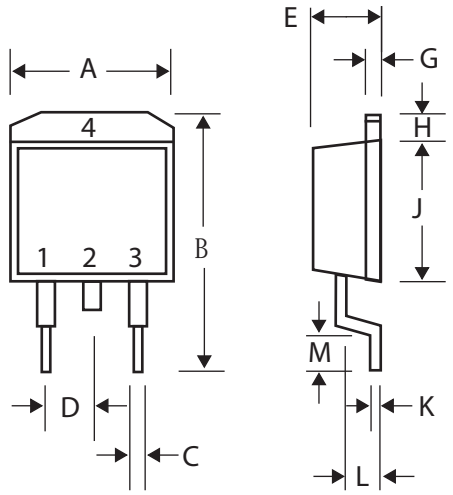
Figure 10. Maximum Forward Bias Safe Operating Area

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 10 is based 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 $T_{J(pk)} \leq 150°C$. $T_{J(pk)}$ may be calculated from the data in Figure 9. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

TO-252 Outline Dimensions

unit:mm



TO-252		
Dim	Min	Max
A	6.40	6.80
B	9.00	10.00
C	0.50	0.80
D	-	2.30
E	2.20	2.50
G	0.45	0.55
H	1.00	1.60
J	5.40	5.80
K	0.30	0.64
L	0.70	1.70
M	0.90	1.50