

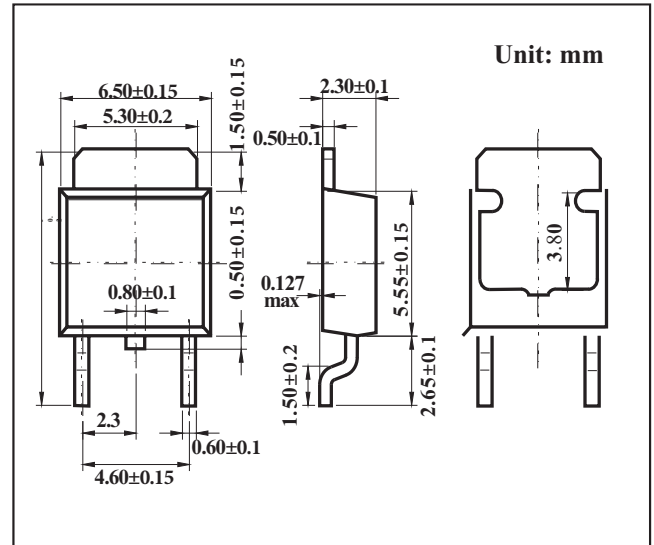
TO-252 Plastic-Encapsulate Transistors

Features

- Lead Formed for Surface Mount Applications in Plastic
- Sleeves Monolithic Construction With Built-in Base & Emitter
- Resistors Pb-Free Packages are Available
- Complementary Power Transistors

MECHANICAL DATA

- Case style:TO-252 molded plastic
- Mounting position:any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CE0}	100	V
Collector-base voltage	V_{CB}	100	V
Emitter-base voltage	V_{EB}	5	V
Collector current	I_C	6	A
Collector current (pulse)	I_{CP}	10	A
Base current	I_B	2	A
Total Device Dissipation FR-5 Board @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	20 0.16	W W/ $^\circ\text{C}$
Total Device Dissipation Alumina Substrate @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.75 0.014	W W/ $^\circ\text{C}$
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 to +150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.25	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	71.4	$^\circ\text{C/W}$

PACKAGE INFORMATION

Device	Package	Shipping
MJD41C MJD42C	TO-252	2500/Tape&Reel

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector-emitter sustaining voltage	$V_{CE0(sus)}$	$I_C = 30\text{ mA}, I_B = 0$	100			V
Collector cutoff current	I_{CEO}	$V_{CE} = 60\text{ V}, I_B = 0$			50	μA
Collector cutoff current	I_{CES}	$V_{CE} = 100\text{ V}, V_{EB} = 0$			10	μA
Emitter cutoff current	I_{EBO}	$V_{BE} = 5\text{ V}, I_C = 0$			0.5	mA
DC current gain *	h_{FE}	$I_C = 0.3\text{ A}, V_{CE} = 4\text{ V}$	30			
		$I_C = 3\text{ A}, V_{CE} = 4\text{ V}$	15		75	
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = 6\text{ A}, I_B = 600\text{ mA}$			1.5	V
Base-emitter saturation voltage *	$V_{BE(on)}$	$I_C = 6\text{ A}, V_{CE} = 4\text{ V}$			2	V
Current-gain-bandwidth product *2	f_T	$I_C = 500\text{ mA}, V_{CE} = 10\text{ V}, f_{test} = 1\text{ MHz}$	3			MHz
Small-signal current gain	h_{fe}	$I_C = 0.5\text{ A}, V_{CE} = 10\text{ V}, f = 1\text{ kHz}$	20			

*1 Pulse test: pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2.0\%$.

*2 $f_T = |h_{fe}| \cdot f_{test}$

hFE Classification

TYPE	MJD41C	MJD42C
Marking	J41C	J42C

RATINGS AND CHARACTERISTIC CURVES

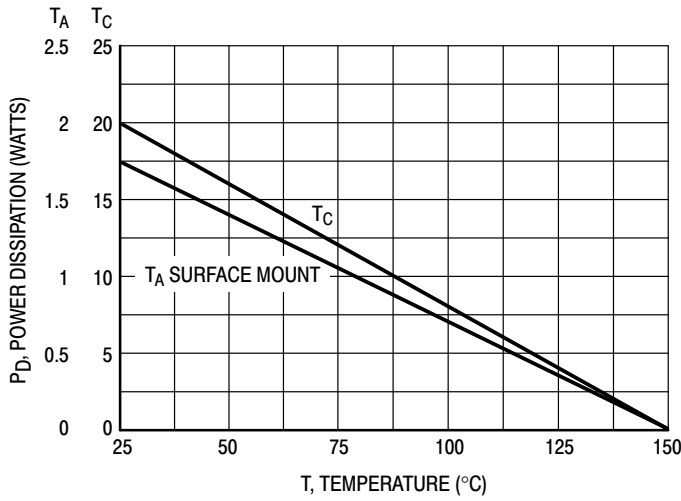
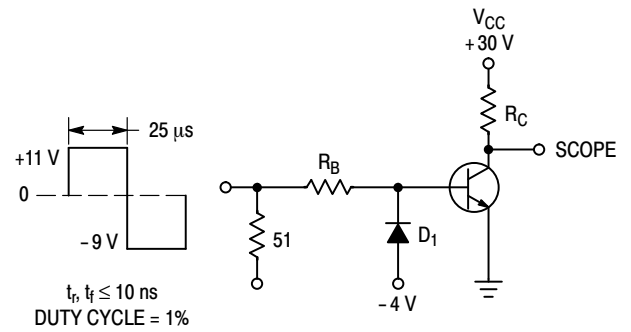


Figure 1. Power Derating



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

Figure 2. Switching Time Test Circuit

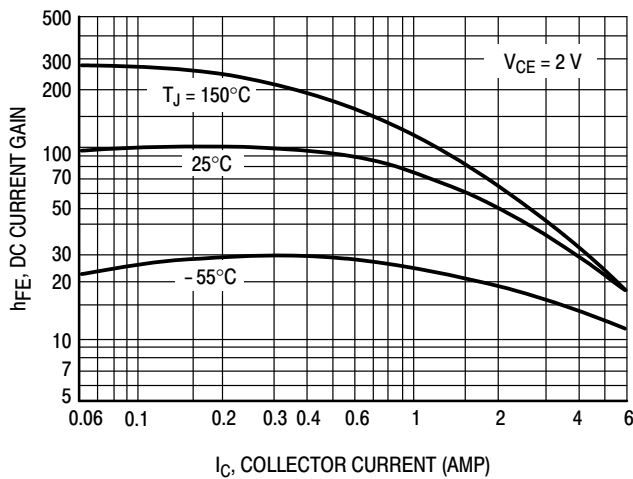


Figure 3. DC Current Gain

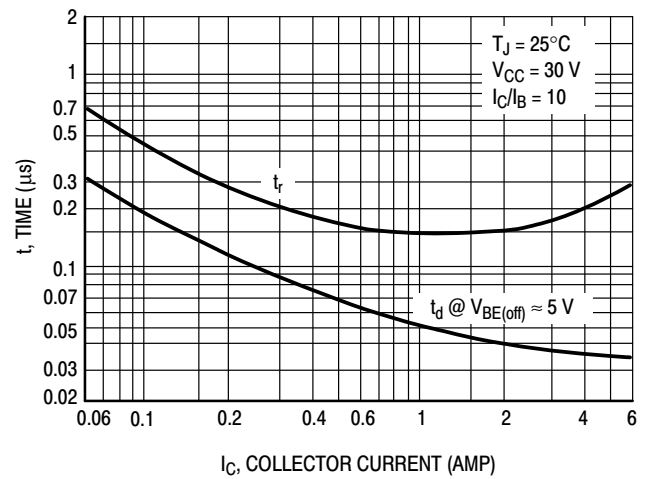


Figure 4. Turn-On Time

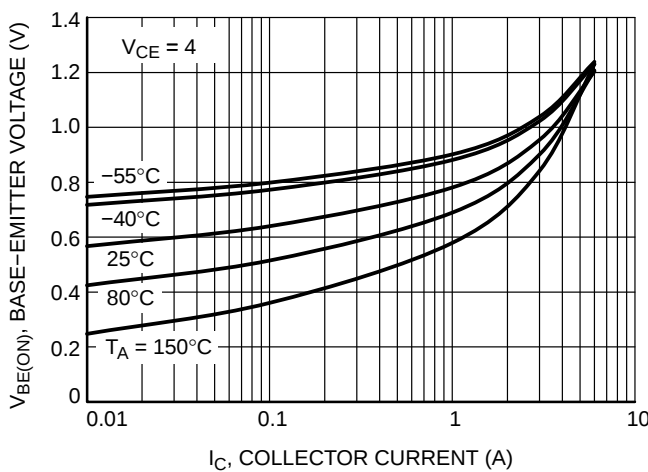


Figure 5. Base Emitter Voltage vs. Collector Current

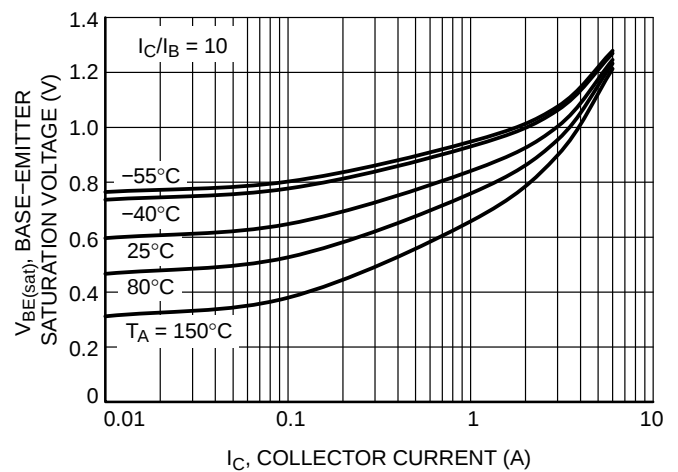


Figure 6. Base Emitter Saturation Voltage vs. Collector Current

RATINGS AND CHARACTERISTIC CURVES

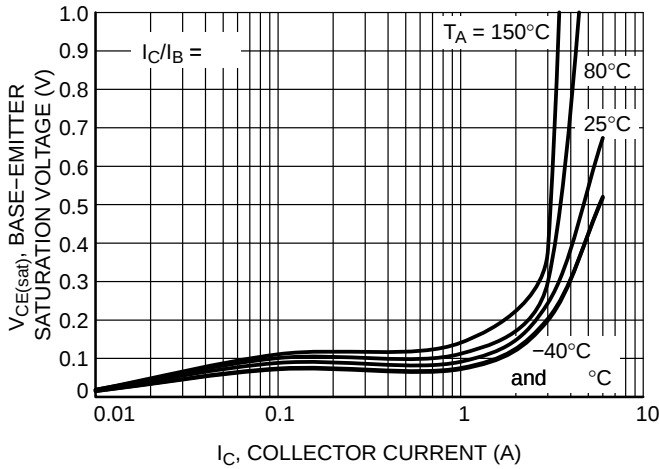


Figure 7. Collector Emitter Saturation Voltage vs. Collector Current

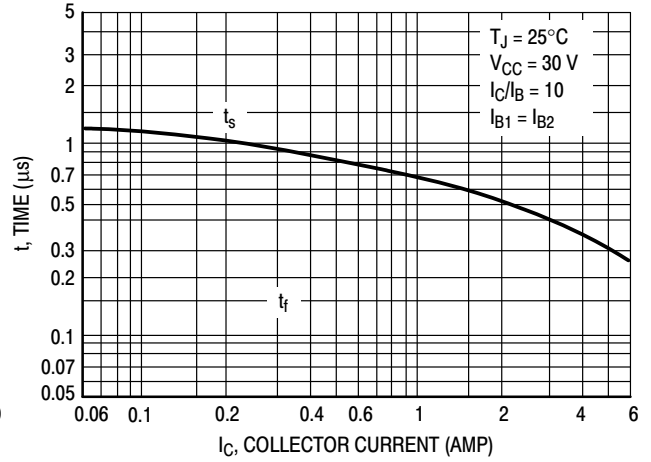


Figure 8. Turn-Off Time

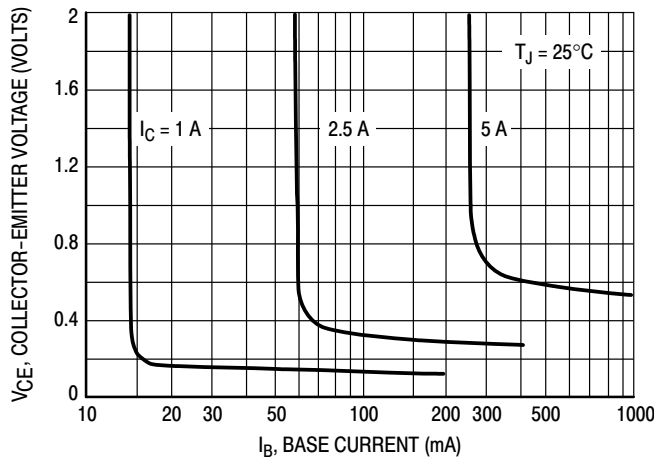


Figure 9. Collector Saturation Region

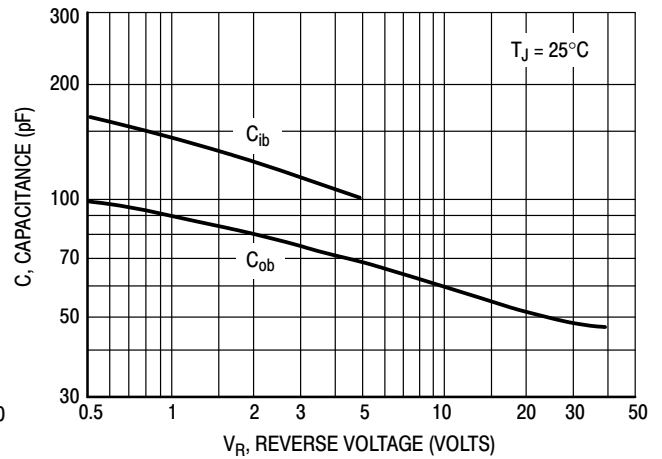


Figure 10. Capacitance

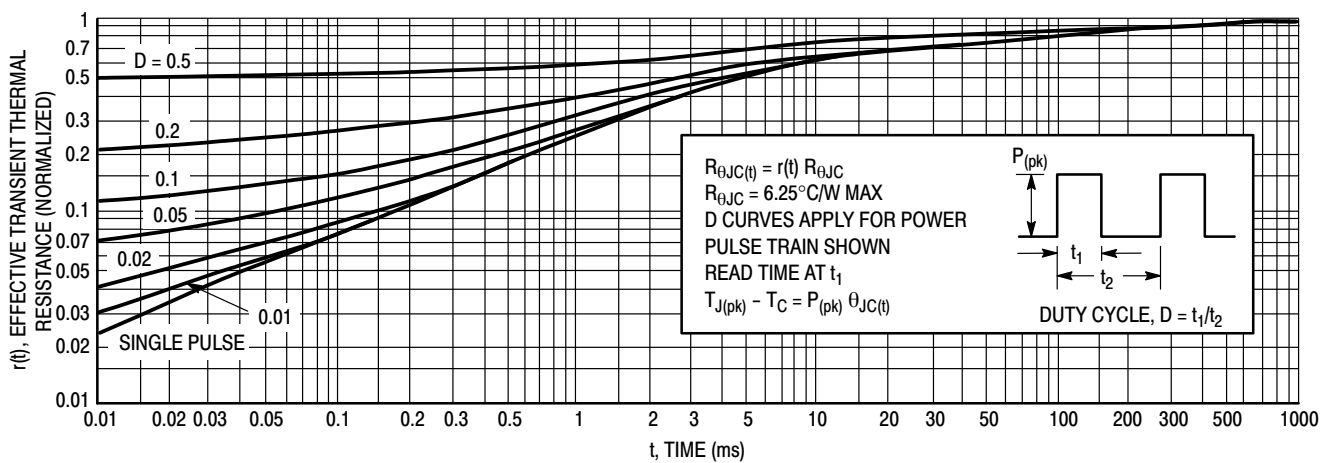


Figure 11. Thermal Response