MJD41C(NPN)/MJD42C(PNP)

Complementary Power Transistors

Features

- Lead Formed for Surface Mount Applications in Plastic Sleeves (No Suffix)
- Straight Lead Version in Plastic Sleeves ("−1" Suffix)
- power package in tape & reel (*T4" Suffx)
- Electrically Similar to Popular TIP41 and TIP42 Series
- Epoxy Meets UL 94 V−0 @ 0.125 in
- RoHS Compliant

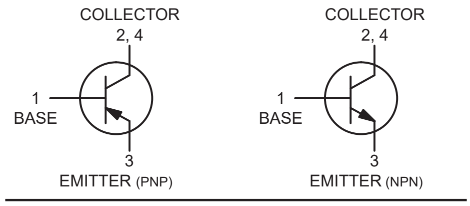
Product Summary

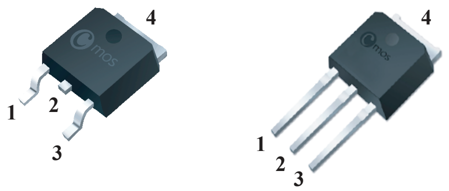
VCBO	VCEO	IC
100V	100V	6A

Applications

- Designed for general purpose amplifier and low speed switching applications.

TO-252/251 Pin Configuration





TO-252 TO-251

MAXIMUM RATINGS

Symbol	Parameter	Rating	Units
V_{CEO}	Collector−Emitter Voltage	100	Vdc
V_{CB}	Collector−Base Voltage	100	Vdc
V_{EB}	Emitter−Base Voltage	5	Vdc
I_C	Collector Current-Continuous	6	Adc
I_{CM}	Collector Current-Peak	10	Adc
I_B	Base Current	2	A
P_D	Total Power Dissipation @ T_C = 25℃ Derate above 25°C	20 0.16	W W/℃
P_D	Total Power Dissipation (Note 1)@ T_A = 25°C Derate above 25°C	1.75 0.014	W W/℃
T_J, T_{stg}	Operating and Storage Junction, Temperature Range	−65 to +150	°C
HBM	ESD − Human Body Model	3B	V
MM	ESD − Machine Model	C	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

Thermal Characteristics

Symbol	Characteristic	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-ambient (Note 2)	---	71.4	℃/W
$R_{θJC}$	Thermal Resistance Junction -Case	---	6.25	℃/W

2. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

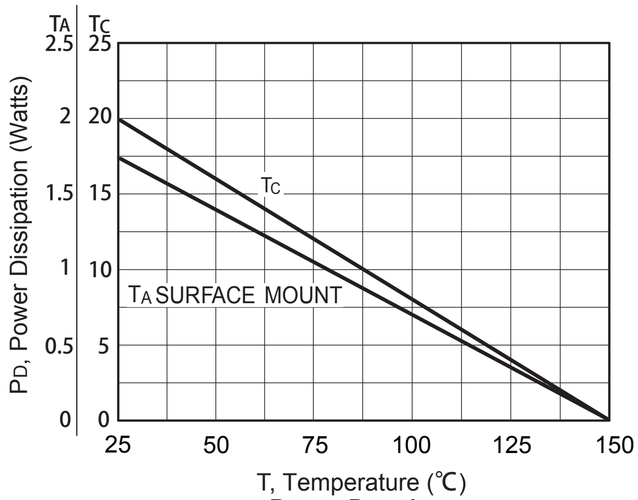
Electrical Characteristics (T_C=25℃, unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Unit
OFF CHARACTERISTICS				
V_{CEO} (sus)	Collector−Emitter Sustaining Voltage (Note 3) (I_C = 30 mAdc, I_B = 0)	100	---	Vdc
I_{CEO}	Collector Cutoff Current (V_{CE} = 60 Vdc, I_B = 0)	---	50	μAdc
I_{CES}	Collector Cutoff Current (V_{CE} =100 Vdc, V_{EB} = 0)	---	10	μAdc
I_{EBO}	Emitter Cutoff Current (V_{BE} = 5Vdc, I_C = 0)	---	0.5	mAdc
ON CHARACTERISTICS (Note 3)				
h_{FE}	DC Current Gain (I_C=0.3 Adc, V_{CE}= 4 Vdc) (I_C=3 Adc, V_{CE}= 4 Vdc)	30 15	--- 75	---
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage (I_C=6 Adc, I_B=600 mAdc)	---	1.5	Vdc
$V_{BE(on)}$	Base−Emitter On Voltage (I_C =6 Adc, V_{CE}=4 Vdc)	---	2	Vdc
DYNAMIC CHARACTERISTICS				
f_T	Current−Gain − Bandwidth Product (Note 4) (I_C = 500 mAdc, V_{CE} = 10 Vdc, f = 500 kHz)	3	---	MHz
h_{fe}	Small−Signal Current Gain (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 1kHz)	20	---	---

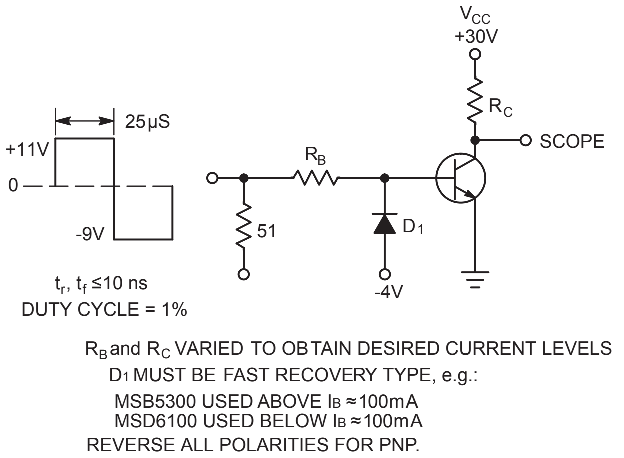
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2%.
4. f_T = /hfe/• ftest.

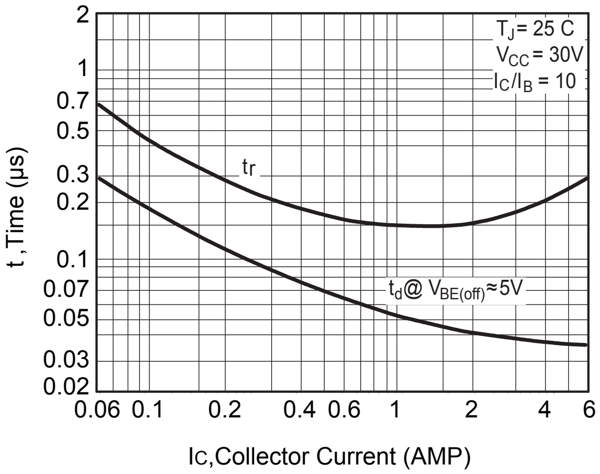
Typical Characteristics



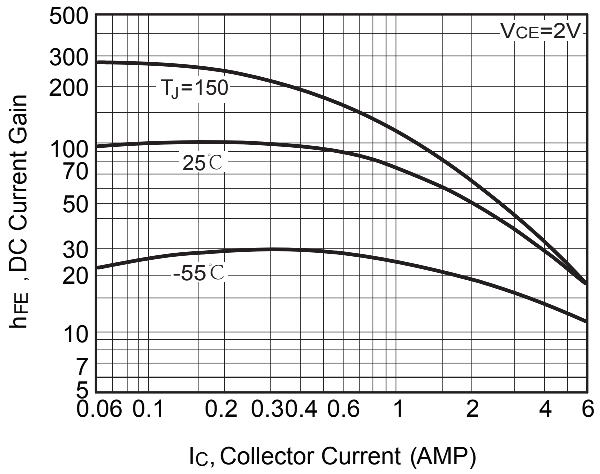
Power Derating



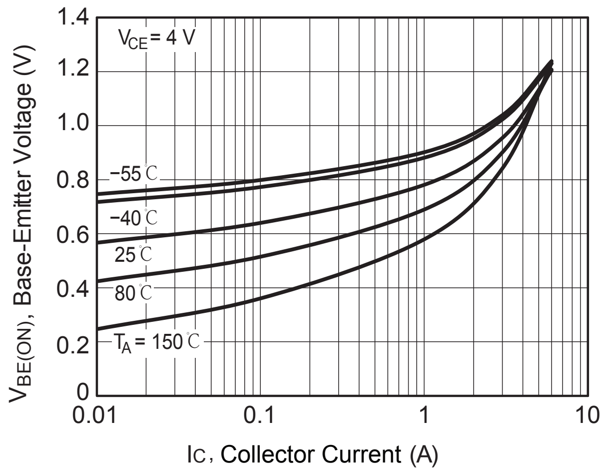
Switching Time Test Circuit



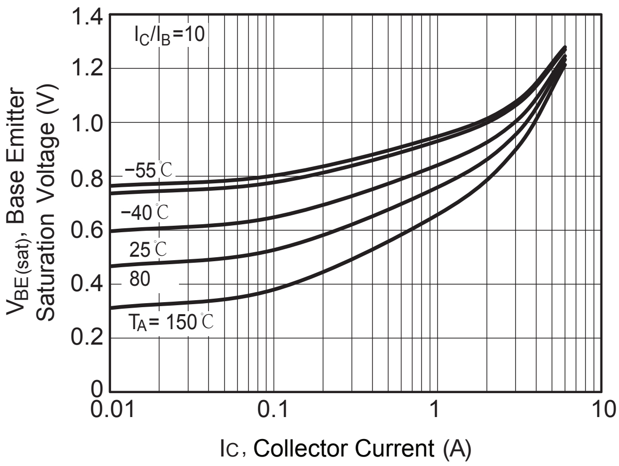
Turn-On Time



DC Current Gain

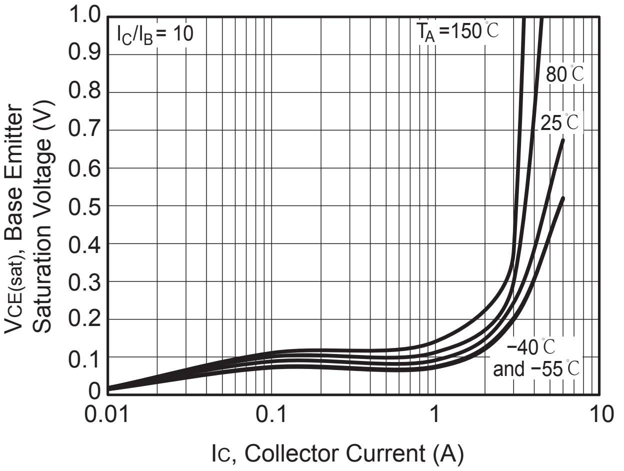


Base Emitter Voltage vs. Collector Current

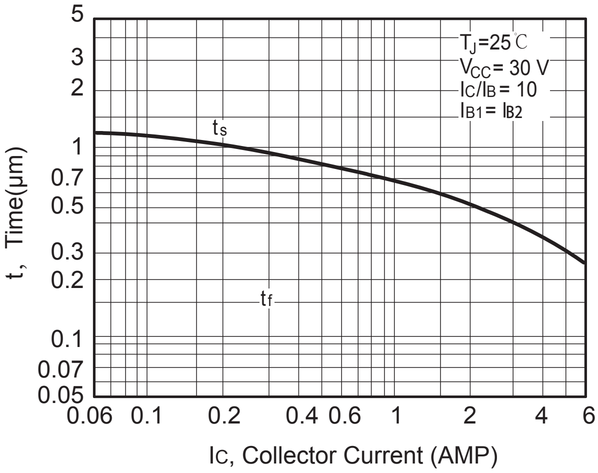


Base Emitter Saturation Voltage vs. Collector Current

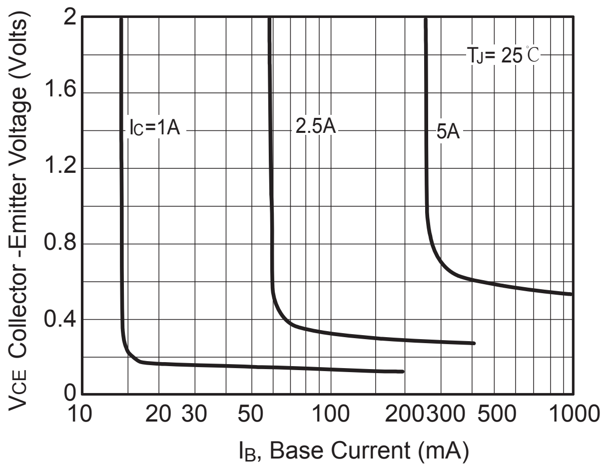
Typical Characteristics



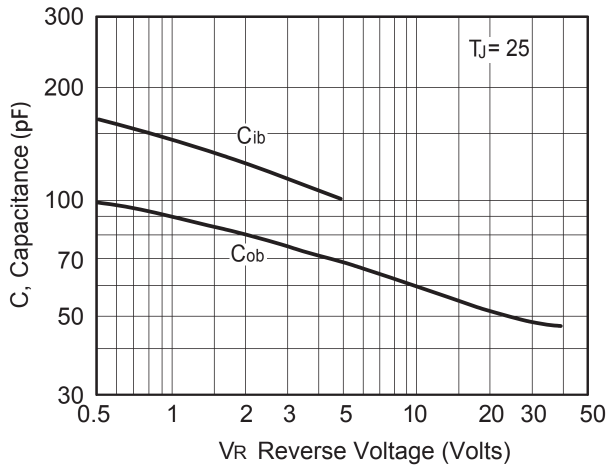
Collector Emitter Saturation Voltage vs. Collector Current



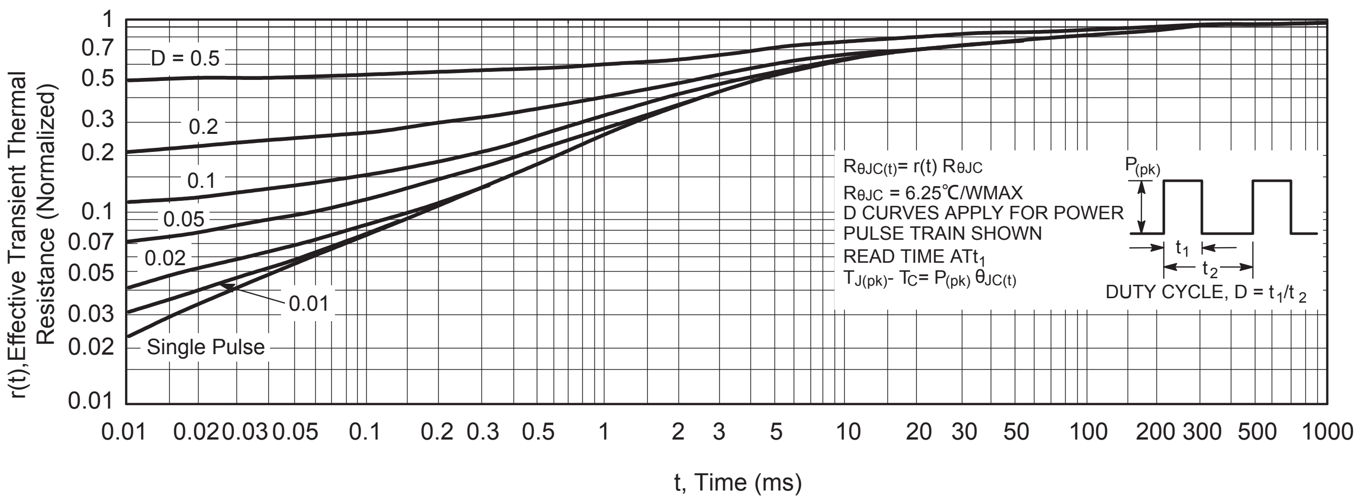
Turn−Off Time



Collector Saturation Region

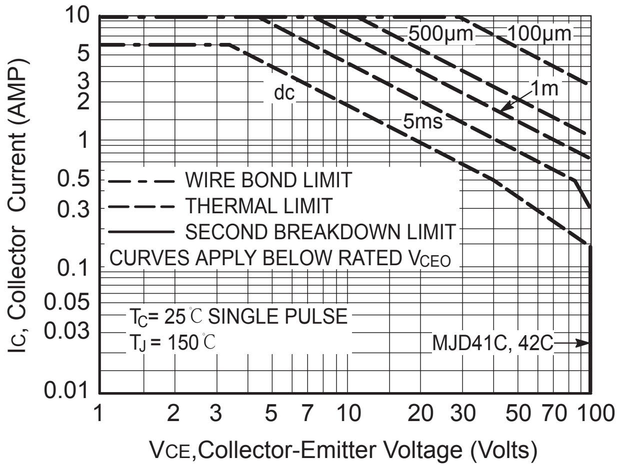


Capacitance



Thermal Response

Typical Characteristics



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 12 is based on $T_{J(pk)} = 150$℃, T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150$℃. $T_{J(pk)}$ may be calculated from the data in Figure 11. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.