



Micro Commercial Components



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20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

MJD31C

Silicon NPN epitaxial planer Transistors

Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Electrically Similar to Popular TIP31 and TIP32 Series
- Designed for general purpose amplifier and low speed switching applications.
- Maximum Thermal Resistance: 100°C/W Junction to Ambient

Maximum Ratings @ 25°C Unless Otherwise Specified

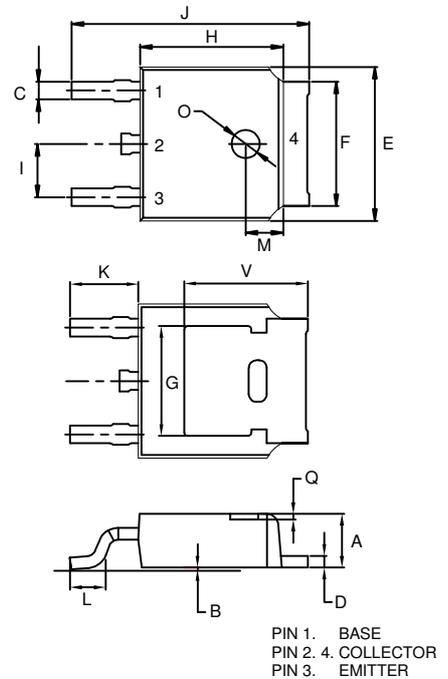
Symbol	Rating	Rating	Unit
V _{CEO}	Collector-Emitter Voltage	100	V
V _{CBO}	Collector-Base Voltage	100	V
V _{EBO}	Emitter-Base Voltage	5	V
I _C	Collector Current-Continuous	3	A
P _C	Collector Dissipation	1.25	W
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature	-65 to +150	°C

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Typ	Max	Units
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage (I _C =30mA, I _B =0)	100	---	---	Vdc
V _{(BR)CBO}	Collector-Base Breakdown Voltage (I _C =1mA, I _E =0)	100	---	---	Vdc
V _{(BR)EBO}	Emitter-Base Breakdown Voltage (I _E =1mA, I _C =0)	5	---	---	Vdc
I _{CEO}	Collector Cutoff Current (V _{CE} =60Vdc, I _B =0)	---	---	50	uAdc
I _{CES}	Collector Cutoff Current (V _{CE} =100Vdc, V _{EB} =0)	---	---	20	uAdc
I _{EBO}	Emitter Cutoff Current (V _{EB} =5Vdc, I _C =0)	---	---	1	mAdc
h _{FE}	DC Current Gain (I _C =1Adc, V _{CE} =4Vdc) (I _C =3Adc, V _{CE} =4Vdc)	25 10	---	---	
V _{CE(sat)}	Collector-Emitter Saturation Voltage (I _C =3Adc, I _B =0.375Adc) (note 1)	---	---	1.2	Vdc
V _{BE(on)}	Base-Emitter Voltage (I _C =3Adc, V _{CE} =4Vdc) (note 1)	---	---	1.8	Vdc
f _T	Transition frequency (V _{CE} =10Vdc, I _C =0.5Adc, f _r =1KHz)	3	---	---	MHz

Note: 1. Pulse Test: PW≤300μs, Duty Cycle≤2%

DPAK



DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		

TYPICAL CHARACTERISTICS

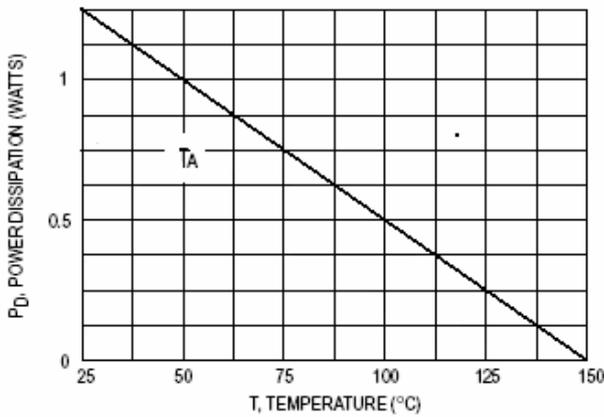
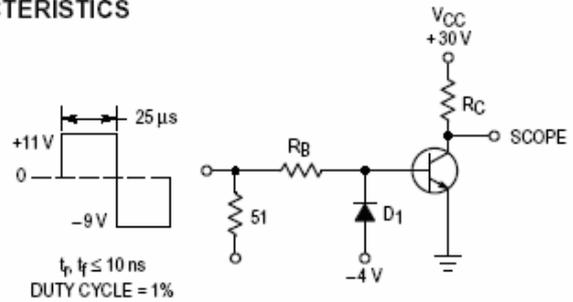


Figure 1. Power Derating



R_B and R_C VARIED TO OBTAIN DESIRED CURRENT LEVELS
 D_1 MUST BE FAST RECOVERY TYPE, e.g.:
 1N5825 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

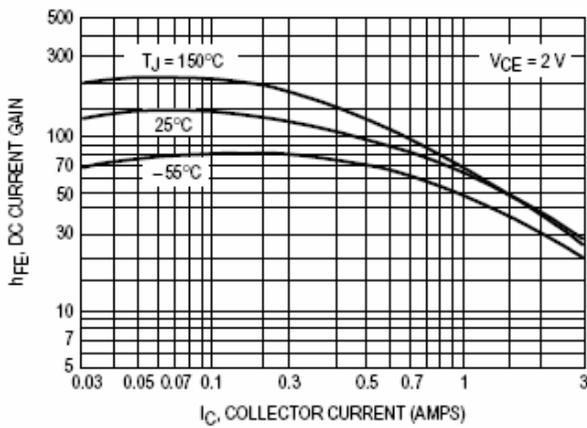


Figure 3. DC Current Gain

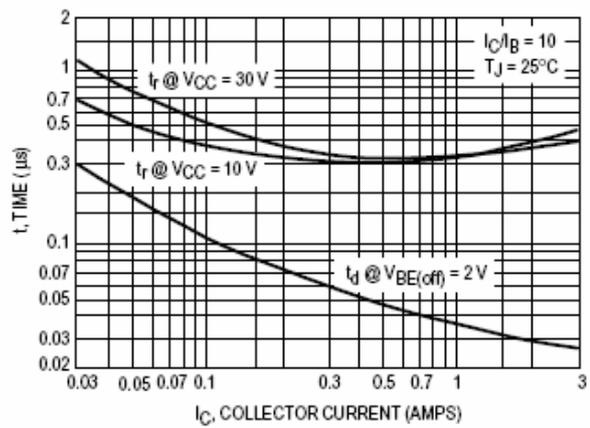


Figure 4. Turn-On Time

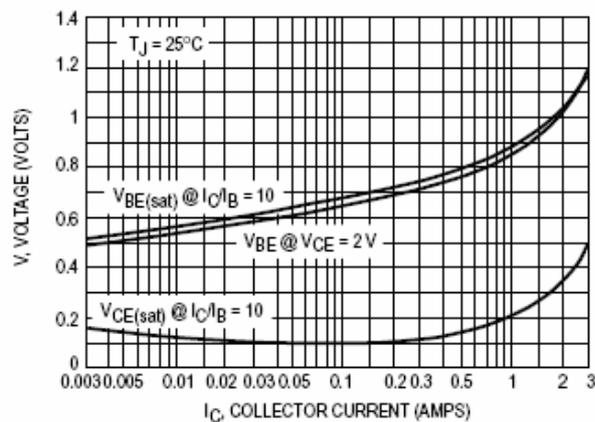


Figure 5. "On" Voltages

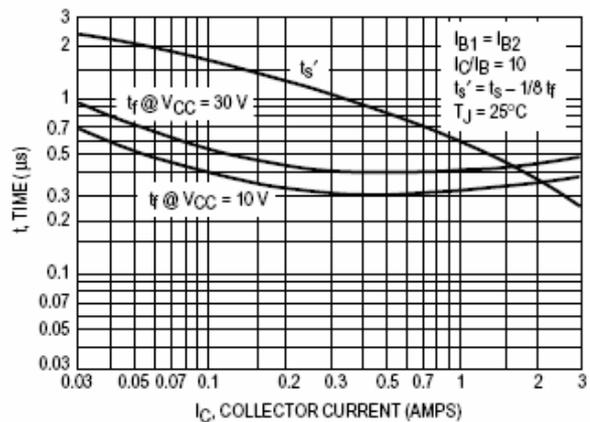


Figure 6. Turn-Off Time

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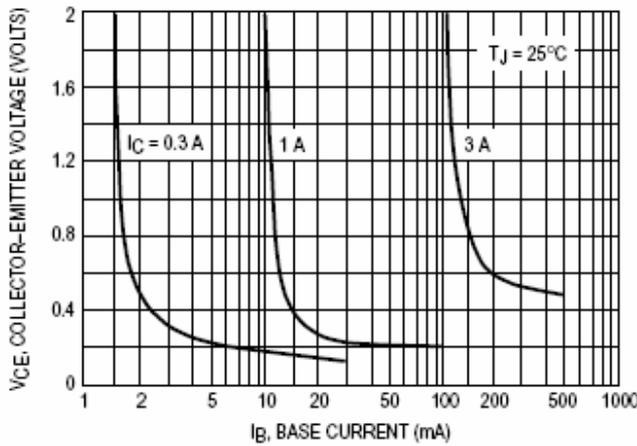


Figure 7. Collector Saturation Region

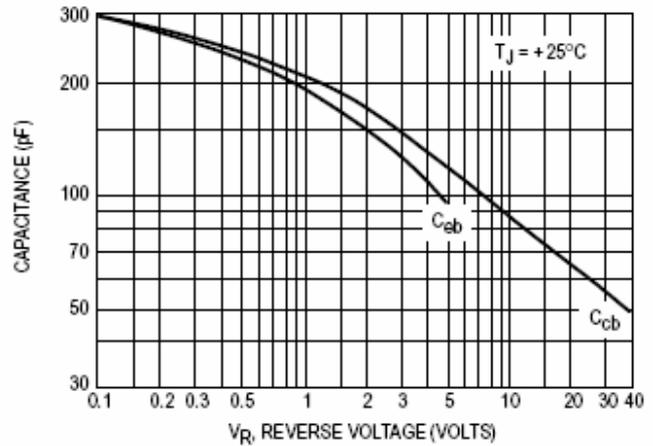


Figure 8. Capacitance

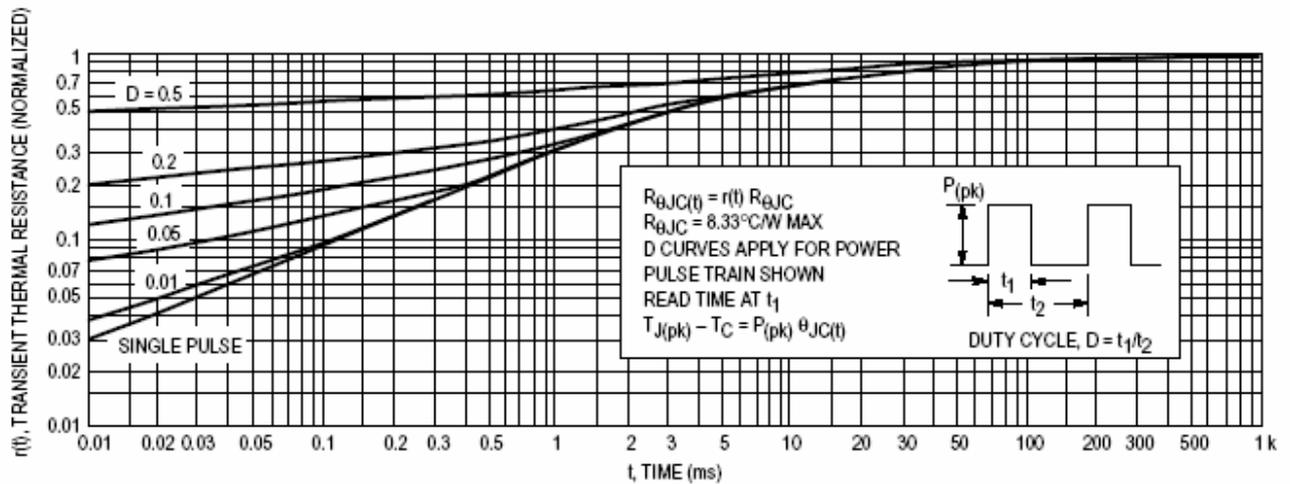


Figure 9. Thermal Response

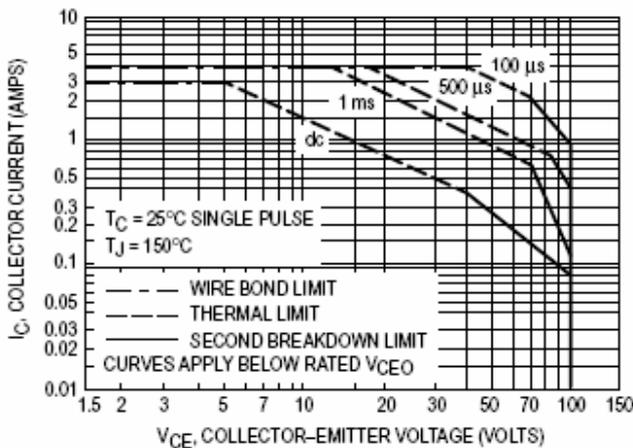


Figure 10. Active Region Safe Operating Area

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 $T_{J(pk)} = 150^\circ\text{C}$; 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 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.



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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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