

Product Preview
General Purpose Transistors
NPN Bipolar Junction Transistor

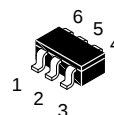
(Complementary PNP Device: MMBT2131T1/T3)

MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

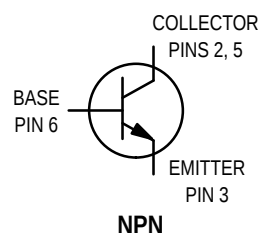
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	30	V
Collector–Base Voltage	V_{CBO}	40	V
Emitter–Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	700	mA
Base Current	I_B	350	mA
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	342	mW
Total Power Dissipation @ $T_C = 85^\circ\text{C}$	P_D	178	mW
Thermal Resistance — Junction to Ambient (1)	$R_{\theta JA}$	366	$^\circ\text{C/W}$
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	665	mW
Total Power Dissipation @ $T_C = 85^\circ\text{C}$	P_D	346	mW
Thermal Resistance — Junction to Ambient (2)	$R_{\theta JA}$	188	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

MMBT2132T1
MMBT2132T3

0.7 AMPERES
30 VOLTS — $V_{(BR)CEO}$
342 mW



CASE 318F–02, STYLE 2
SC–59 — 6 Lead



ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{A dc}$)	$V_{(BR)CBO}$	40	—	—	Vdc
Collector–Emitter Breakdown Voltage ($I_C = 10 \text{ mA dc}$)	$V_{(BR)CEO}$	30	—	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 100 \mu\text{A dc}$)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 25 \text{ Vdc}$, $I_E = 0 \text{ A dc}$) ($V_{CB} = 25 \text{ Vdc}$, $I_E = 0 \text{ A dc}$, $T_A = 125^\circ\text{C}$)	I_{CBO}	—	—	1.0 10	$\mu\text{A dc}$
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}$, $I_C = 0 \text{ A dc}$)	I_{EBO}	—	—	10	$\mu\text{A dc}$
ON CHARACTERISTICS					
DC Current Gain ($V_{CE} = 3.0 \text{ Vdc}$, $I_C = 100 \text{ mA dc}$)	h_{FE}	150	—	—	Vdc
Collector–Emitter Saturation Voltage ($I_C = 500 \text{ mA dc}$, $I_B = 50 \text{ mA dc}$)	$V_{CE(sat)}$	—	—	0.25	Vdc
Collector–Emitter Saturation Voltage ($I_C = 700 \text{ mA dc}$, $I_B = 70 \text{ mA dc}$)	$V_{CE(sat)}$	—	—	0.4	Vdc
Base–Emitter Saturation Voltage ($I_C = 700 \text{ mA dc}$, $I_B = 70 \text{ mA dc}$)	$V_{BE(sat)}$	—	—	1.1	Vdc
Collector–Emitter Saturation Voltage ($I_C = 700 \text{ mA dc}$, $V_{CE} = 1.0 \text{ Vdc}$)	$V_{BE(on)}$	—	—	1.0	Vdc

1. Minimum FR–4 or G–10 PCB, Operating to Steady State.

2. Mounted onto a 2" square FR–4 Board (1" sq. 2 oz Cu 0.06" thick single sided), Operating to Steady State.

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.



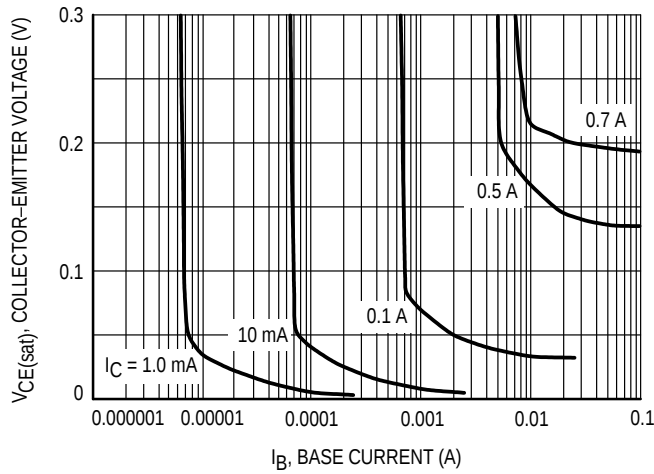


Figure 1. Collector Saturation Region

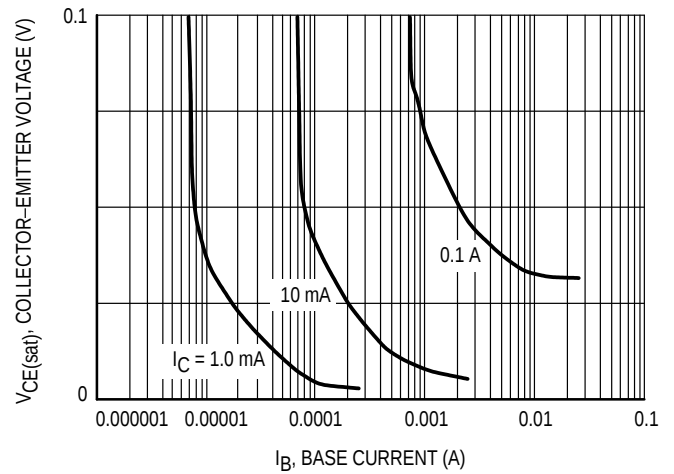


Figure 2. Collector Saturation Region

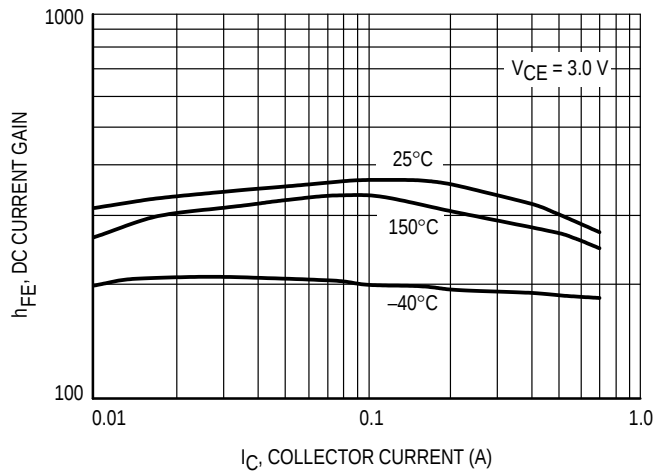


Figure 3. DC Current Gain

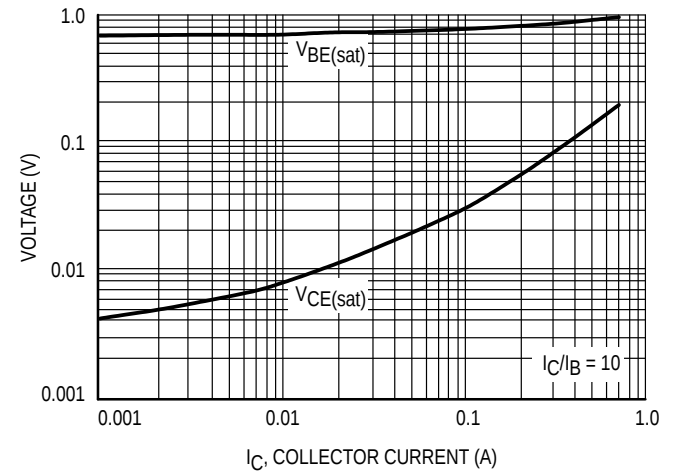


Figure 4. "ON" Voltages

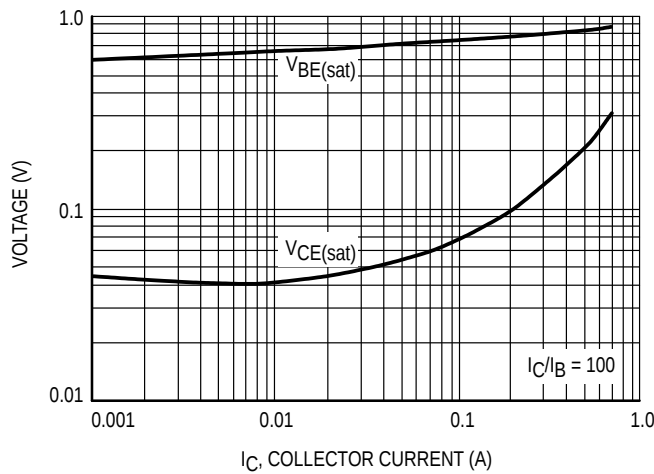


Figure 5. "ON" Voltages

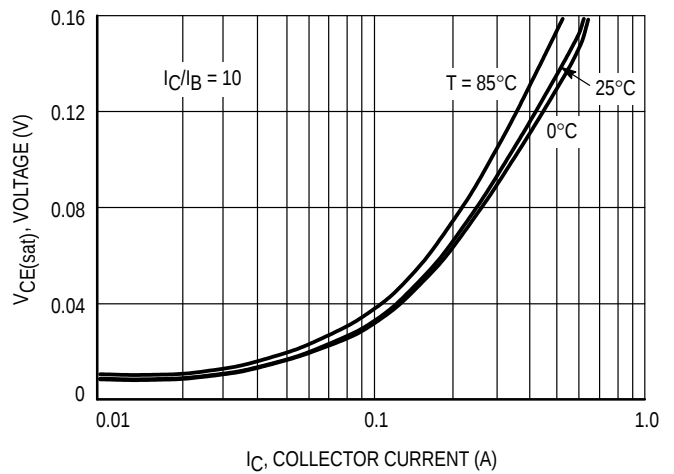


Figure 6. Collector-Emitter Saturation Voltage

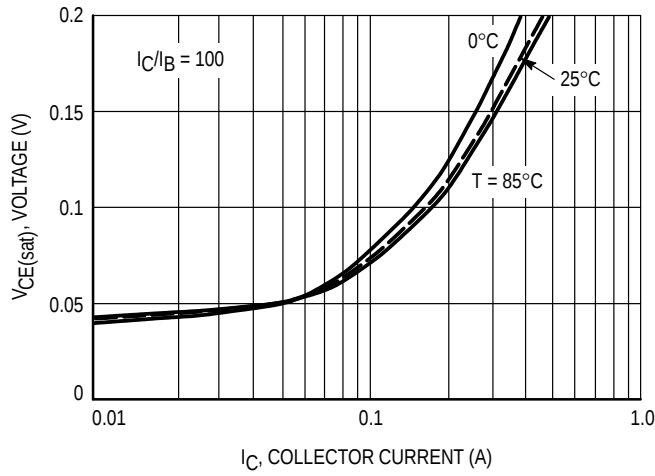


Figure 7. Collector-Emitter Saturation Voltage

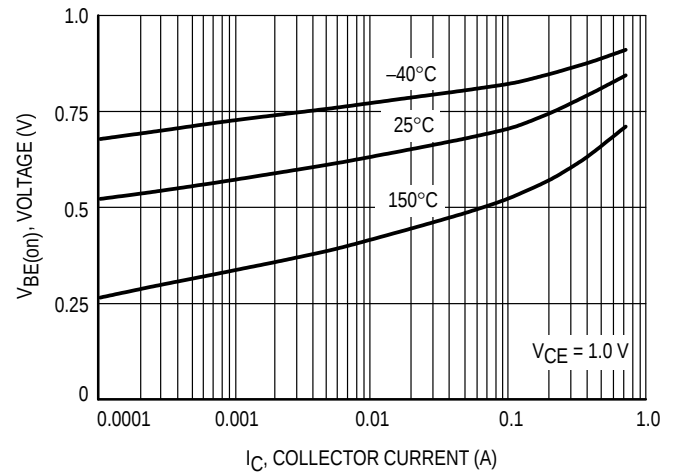
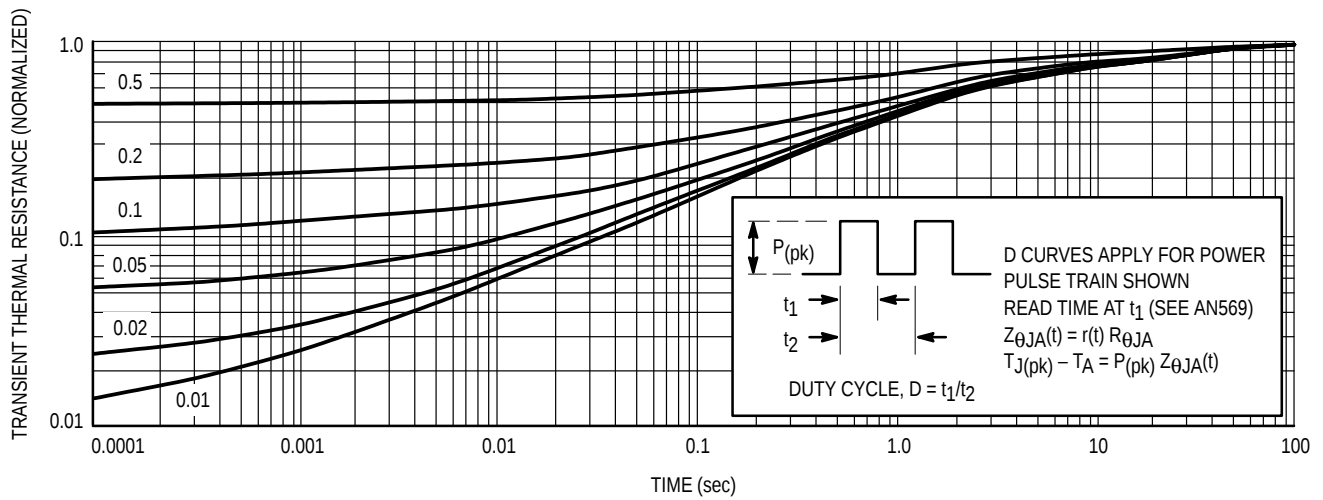
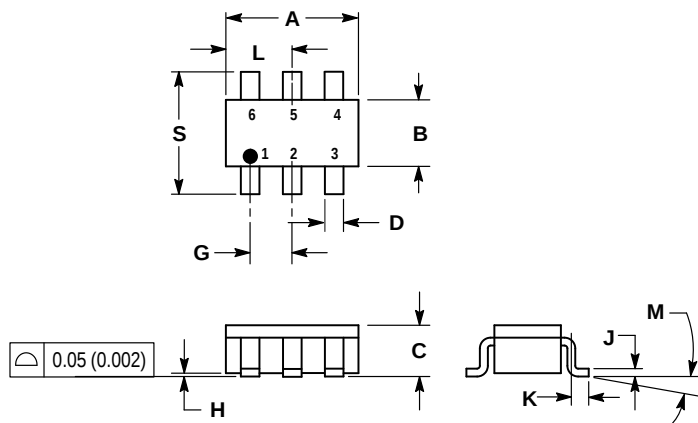
Figure 8. $V_{BE(on)}$ Voltage

Figure 9. Thermal Response Curve

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1063	0.1220	2.70	3.10
B	0.0512	0.0669	1.30	1.70
C	0.0394	0.0511	1.00	1.30
D	0.0098	0.0157	0.25	0.40
G	0.0335	0.0413	0.85	1.05
H	0.0005	0.0040	0.013	0.100
J	0.0040	0.0102	0.10	0.26
K	0.0079	0.0236	0.20	0.60
L	0.0493	0.0649	1.25	1.65
M	0°	10°	0°	10°
S	0.0985	0.1181	2.50	3.00

STYLE 2:

- PIN 1. NO CONNECTION
 2. COLLECTOR
 3. EMITTER
 4. NO CONNECTION
 5. COLLECTOR
 6. BASE

**CASE 318F-02
 ISSUE C**

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 P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 141,
 4-32-1 Nishi-Gotanda, Shagawa-ku, Tokyo, Japan. 03-5487-8488

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Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609
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ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

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