

MMBT2131T1

General Purpose Transistors

PNP Bipolar Junction Transistor

(Complementary NPN Device: MMBT2132T1/T3)

NOTE: Voltage and Current are negative for the PNP Transistor.

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 (Note 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 (Note 2)	$R_{\theta JA}$	188	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

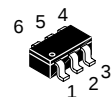
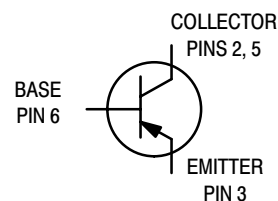
1. Minimum FR-4 or G-10 PCB, Operating to Steady State.
2. Mounted onto a 2" square FR-4 Board (1" sq. 2 oz Cu 0.06" thick single sided), Operating to Steady State.



ON Semiconductor®

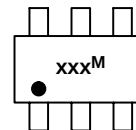
<http://onsemi.com>

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



SC-74
SUFFIX
CASE 318F
Style 2

MARKING DIAGRAM



xxx = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping
MMBT2131T1	SC-74	3000/Tape & Reel

MMBT2131T1

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Base Breakdown Voltage	($I_C = 100\ \mu\text{Adc}$)	$V_{(BR)CBO}$	40	—	—	Vdc
Collector-Emitter Breakdown Voltage	($I_C = 10\ \text{mAdc}$)	$V_{(BR)CEO}$	30	—	—	Vdc
Emitter-Base Breakdown Voltage	($I_E = 100\ \mu\text{Adc}$)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current	($V_{CB} = 25\ \text{Vdc}$, $I_E = 0\ \text{Adc}$) ($V_{CB} = 25\ \text{Vdc}$, $I_E = 0\ \text{Adc}$, $T_A = 125^\circ\text{C}$)	I_{CBO}	—	—	1.0 10	μAdc
Emitter Cutoff Current	($V_{EB} = 5.0\ \text{Vdc}$, $I_C = 0\ \text{Adc}$)	I_{EBO}	—	—	10	μAdc

ON CHARACTERISTICS

DC Current Gain	($V_{CE} = 3.0\ \text{Vdc}$, $I_C = 100\ \text{mAdc}$)	h_{FE}	150	—	—	Vdc
Collector-Emitter Saturation Voltage	($I_C = 500\ \text{mAdc}$, $I_B = 50\ \text{mAdc}$)	$V_{CE(sat)}$	—	—	0.25	Vdc
Collector-Emitter Saturation Voltage	($I_C = 700\ \text{mAdc}$, $I_B = 70\ \text{mAdc}$)	$V_{CE(sat)}$	—	—	0.4	Vdc
Base-Emitter Saturation Voltage	($I_C = 700\ \text{mAdc}$, $I_B = 70\ \text{mAdc}$)	$V_{BE(sat)}$	—	—	1.1	Vdc
Collector-Emitter Saturation Voltage	($I_C = 700\ \text{mAdc}$, $V_{CE} = 1.0\ \text{Vdc}$)	$V_{BE(on)}$	—	—	1.0	Vdc

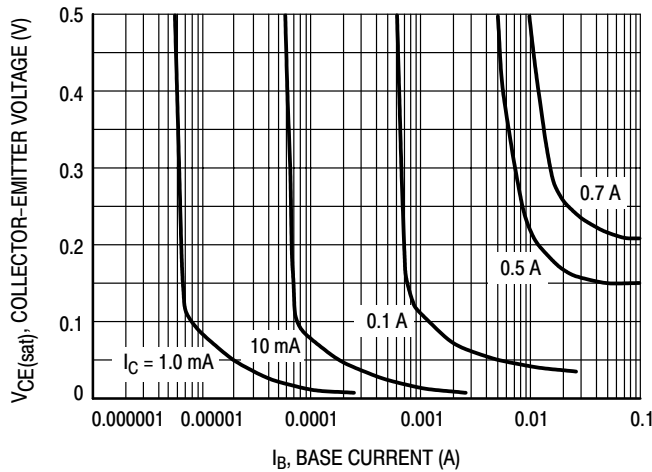


Figure 1. Collector Saturation Region

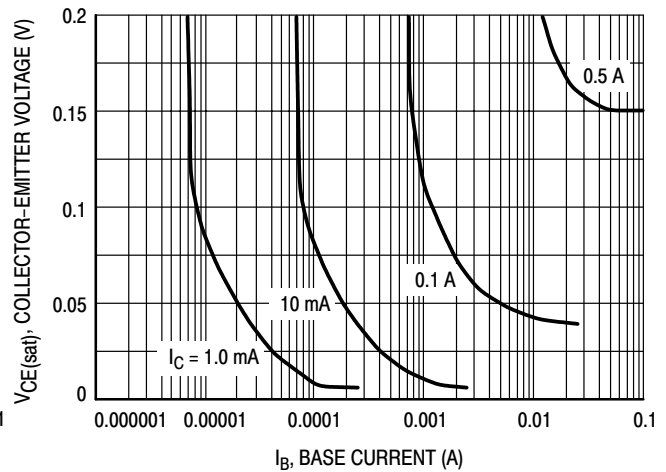


Figure 2. Collector Saturation Region

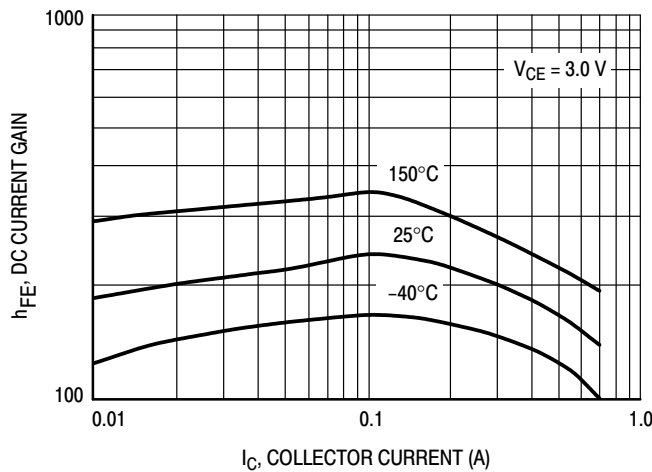


Figure 3. DC Current Gain

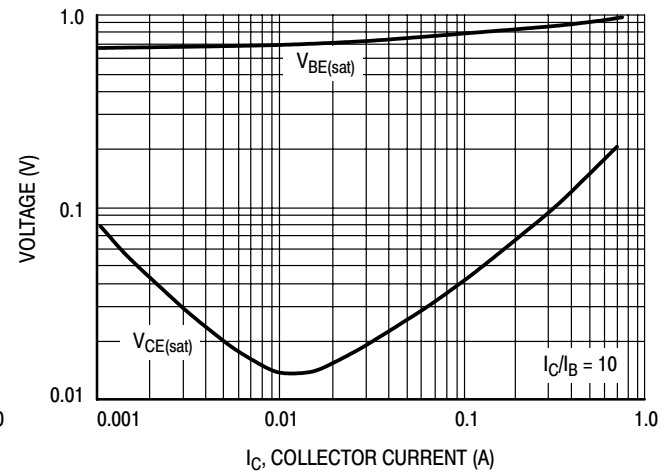


Figure 4. "ON" Voltages

MMBT2131T1

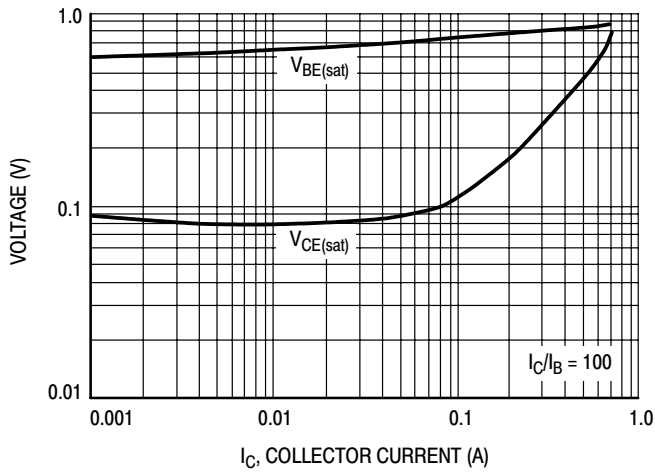


Figure 5. "ON" Voltages

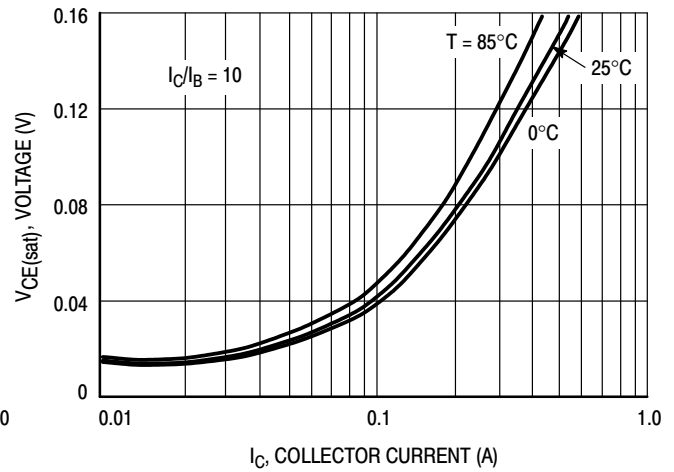


Figure 6. Collector-Emitter Saturation Voltage

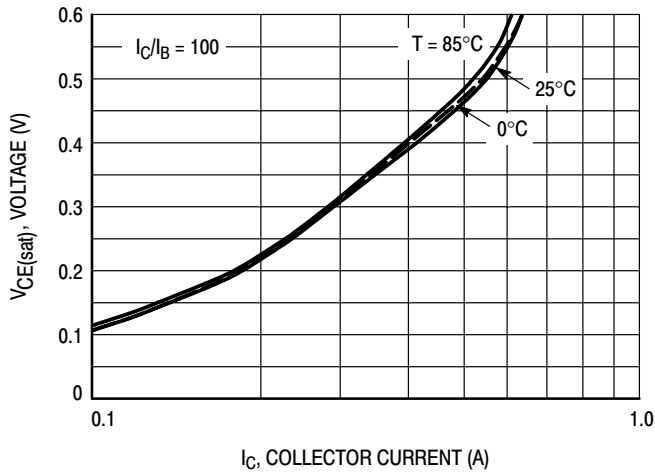


Figure 7. Collector-Emitter Saturation Voltage

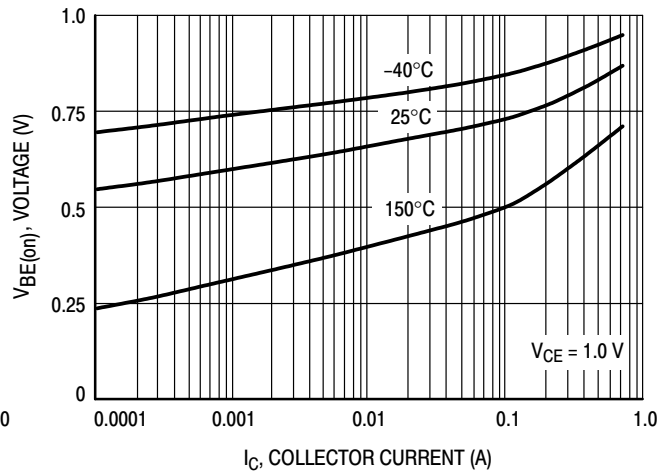


Figure 8. $V_{BE(on)}$ Voltage

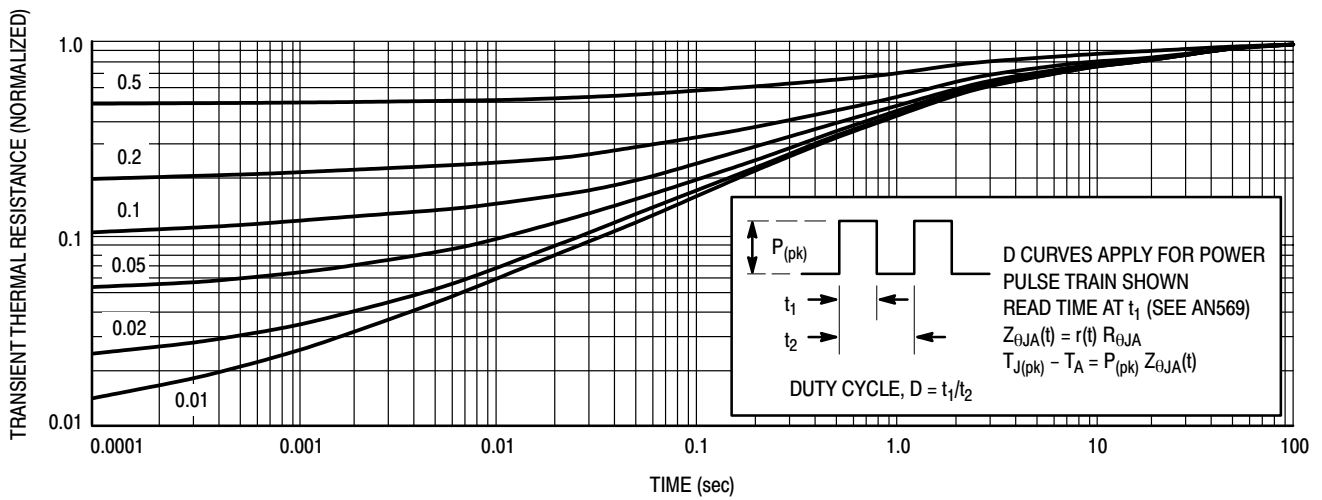
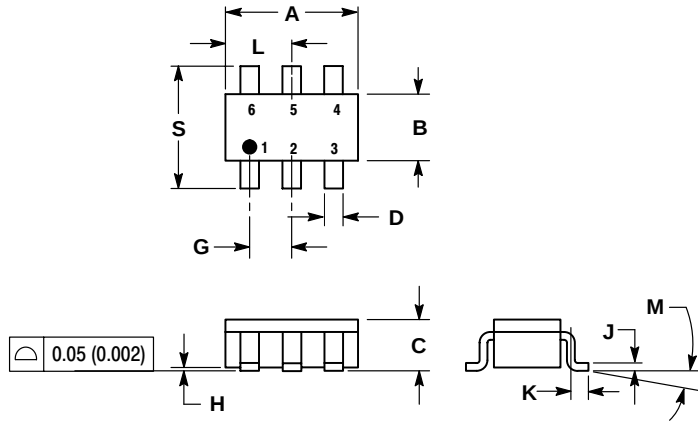


Figure 9. Thermal Response Curve

MMBT2131T1

PACKAGE DIMENSIONS

SC-74 CASE 318F-03 ISSUE F



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.
4. 318F-01 AND -02 OBSOLETE. NEW STANDARD 318F-03.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1142	0.1220	2.90	3.10
B	0.0512	0.0669	1.30	1.70
C	0.0354	0.0433	0.90	1.10
D	0.0098	0.0197	0.25	0.50
E	0.0335	0.0413	0.85	1.05
F	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

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