MMJT350T1

Bipolar Power Transistors

PNP Silicon

. . . designed for use in line−operated applications such as low power, line−operated series pass and switching regulators requiring PNP capability.

- High Collector−Emitter Sustaining Voltage −
  $V_{CEO(sus)}$ = 300 Vdc @ I_C
  = 1.0 mAdc
- Excellent DC Current Gain −
  h_{FE} = 30−240 @ I_C
  = 50 mAdc
- Epoxy Meets UL94, V−0 @ 0.125 in
- ESD Ratings: Human Body Model, 3B; > 8000 V
  Machine Model, C; > 400 V

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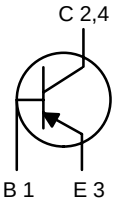
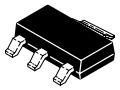
0.5 AMPERE
POWER TRANSISTOR
PNP SILICON
300 VOLTS
2.75 WATTS

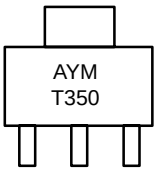


Schematic

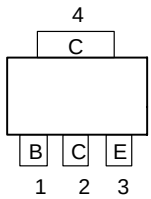


SOT−223
CASE 318E
Style 1

MARKING DIAGRAM



T350 = Specific Device Code
A = Assembly Location
Y = Last Digit of Year
M = Month Code



Top View Pinout

ORDERING INFORMATION

Device	Package	Shipping
MMJT350T1	SOT−223	1000 / Tape & Reel

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	300	Vdc
Collector−Base Voltage	V_{CB}	300	Vdc
Emitter−Base Voltage	V_{EB}	3.0	Vdc
Collector Current − Continuous − Peak	I_C	0.5 0.75	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C Total P_D @ T_A = 25°C mounted on 1” sq. (645 sq. mm) Collector pad on FR−4 bd material Total P_D @ T_A = 25°C mounted on 0.012” sq. (7.6 sq. mm) Collector pad on FR−4 bd material	P_D	2.75 22 1.40 0.65	W mW/°C W W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance − Junction to Case − Junction−to−Ambient on 1” sq. (645 sq. mm) Collector pad on FR−4 bd material − Junction−to−Ambient on 0.012” sq. (7.6 sq. mm) Collector pad on FR−4 bd material	$R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JA}$	45 85 190	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/8” from case for 5 seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (I_C = 1.0 mAdc, I_B = 0 Adc)	$V_{CEO(SUS)}$	300	−	Vdc
Collector−Base Current (V_{CB} = Rated V_{CBO}, V_{EB} = 0)	I_{CBO}	−	100	μAdc
Emitter Cut−off Current (V_{BE} = 5.0 Vdc)	I_{EBO}	−	100	μAdc
ON CHARACTERISTICS (Note)				
DC Current Gain (I_C = 50 mAdc, V_{CE} = 10 Vdc) (I_C = 100 mAdc, V_{CE} = 10 Vdc)	h_{FE}	 30 20	 240 −	−

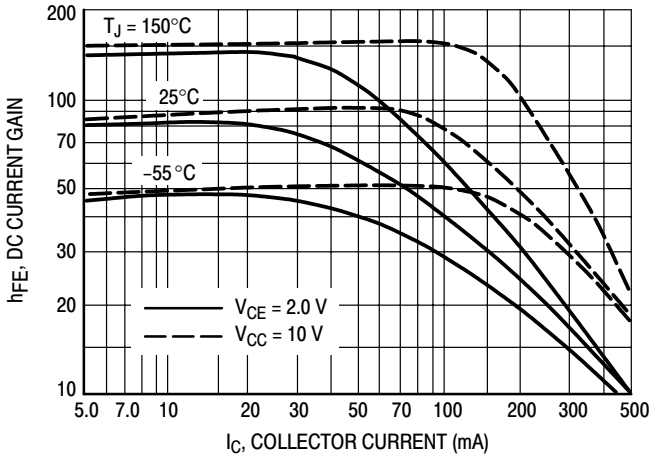


Figure 1. DC Current Gain

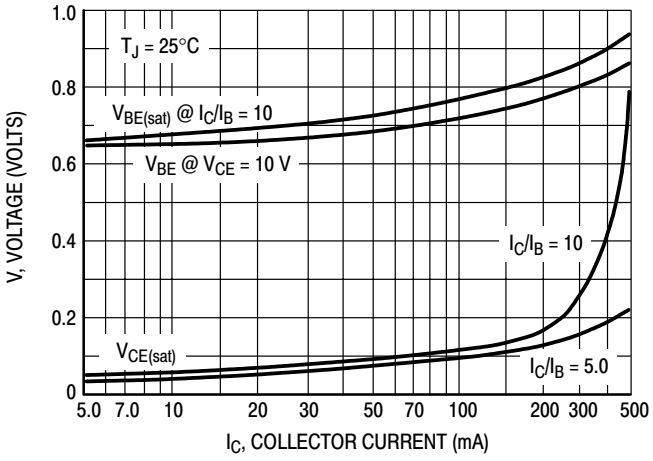


Figure 2. "On" Voltages

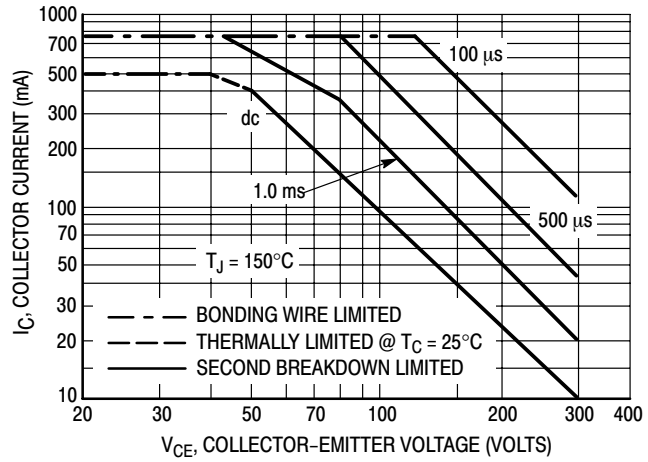


Figure 3. Active−Region Safe Operating Area

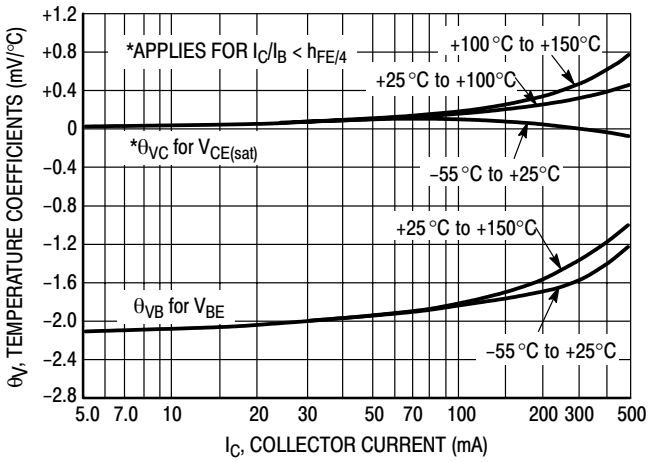


Figure 4. Temperature Coefficients

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 3 is based on $T_{J(pk)}$ = 150°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°C. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

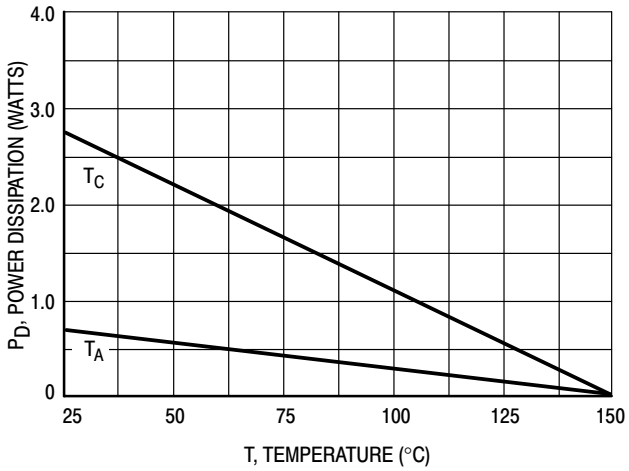
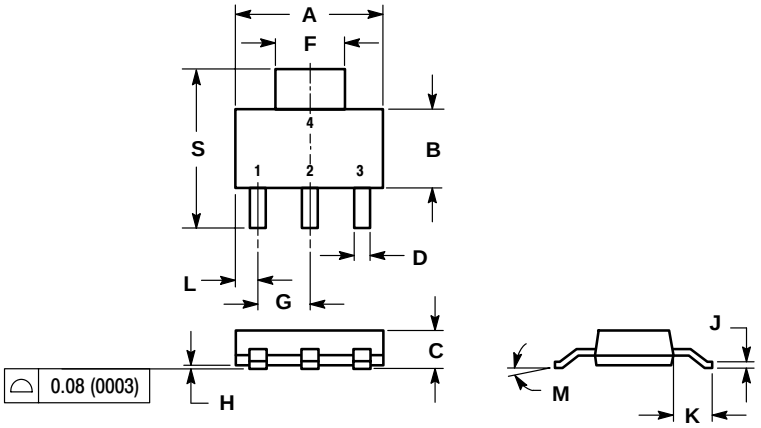


Figure 5. Power Derating

MMJT350T1

PACKAGE DIMENSIONS

SOT−223 (TO−261)
CASE 318E−04
ISSUE K



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.249	0.263	6.30	6.70
B	0.130	0.145	3.30	3.70
C	0.060	0.068	1.50	1.75
D	0.024	0.035	0.60	0.89
F	0.115	0.126	2.90	3.20
G	0.087	0.094	2.20	2.40
H	0.0008	0.0040	0.020	0.100
J	0.009	0.014	0.24	0.35
K	0.060	0.078	1.50	2.00
L	0.033	0.041	0.85	1.05
M	0°	10°	0°	10°
S	0.264	0.287	6.70	7.30

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

PUBLICATION ORDERING INFORMATION

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MMJT350T1/D