



# THE DATASHEET OF MMBT945-H-TP



**Features**

- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

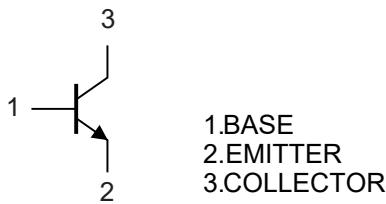
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	50	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Continuous Collector Current	$I_C$	150	mA
Power Dissipation	$P_D$	200	mW

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

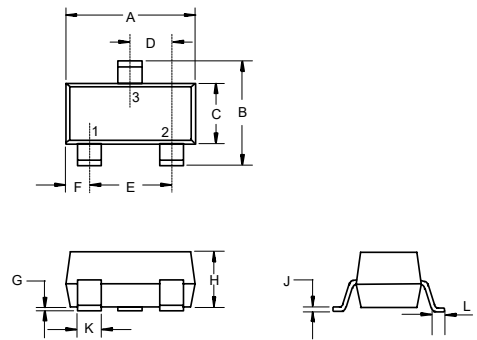
**Marking: CR•**

**Internal Structure**



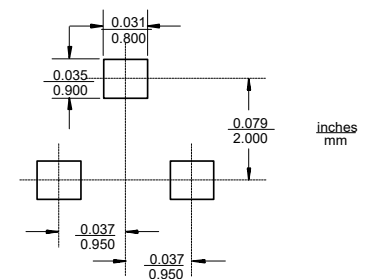
**NPN Silicon  
Plastic-Encapsulate  
Transistor**

**SOT-23**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

**Suggested Solder Pad Layout**



**Electrical Characteristics @ T<sub>A</sub>=25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	60			V	I <sub>C</sub> =100μA, I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	50			V	I <sub>C</sub> =1mA, I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	5			V	I <sub>E</sub> =100μA, I <sub>C</sub> =0
Collector-Base Cutoff Current	I <sub>CBO</sub>			0.1	μA	V <sub>CB</sub> =60V, I <sub>E</sub> =0
Collector Cutoff Current	I <sub>CER</sub>			0.1	μA	V <sub>CE</sub> =55V, R=10MΩ
Emitter-Base Cutoff Current	I <sub>EBO</sub>			0.1	μA	V <sub>EB</sub> =5V, I <sub>C</sub> =0
DC Current Gain	h <sub>FE(1)</sub>	130		400		V <sub>CE</sub> =6V, I <sub>C</sub> =1mA
	h <sub>FE(2)</sub>	40				V <sub>CE</sub> =6V, I <sub>C</sub> =0.1mA
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			0.3	V	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>			1.0	V	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA
Transition Frequency	f <sub>T</sub>	150			MHz	V <sub>CE</sub> =6V, I <sub>C</sub> =10mA, f=30MHz
Collector-Base Capacitance	C <sub>ob</sub>			3	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz

**Classification of h<sub>FE(1)</sub>**

Rank	L	H
Range	130-200	200-400

**Curve Characteristics**

Fig. 1 - Static Characteristics

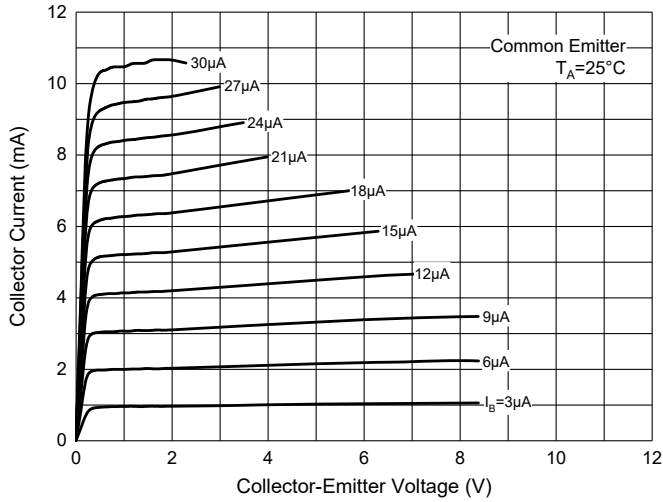


Fig. 2 - DC Current Gain Characteristics

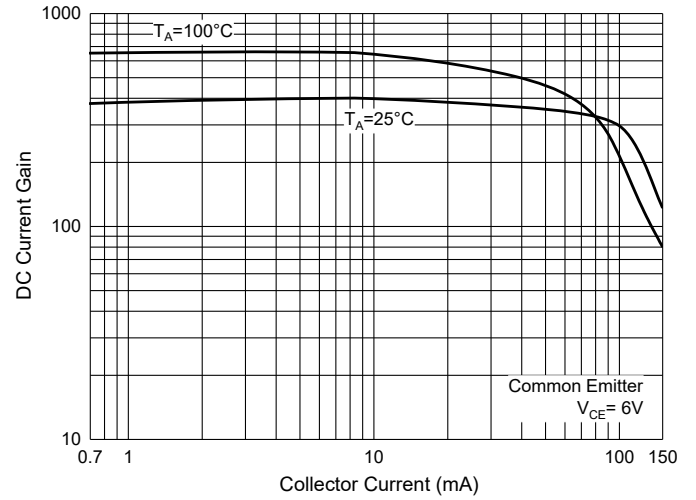


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

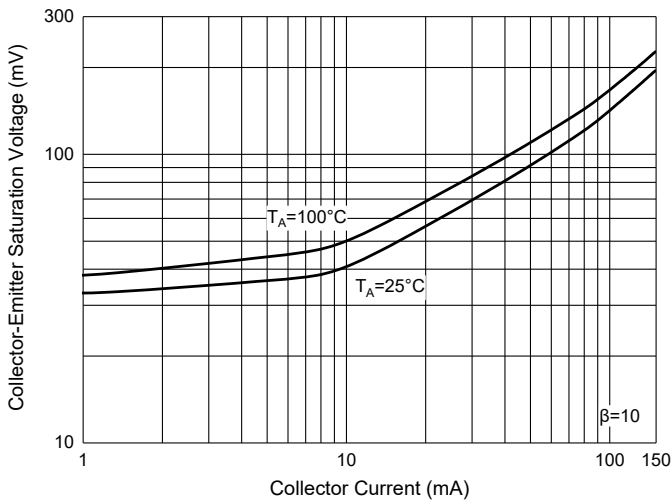


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

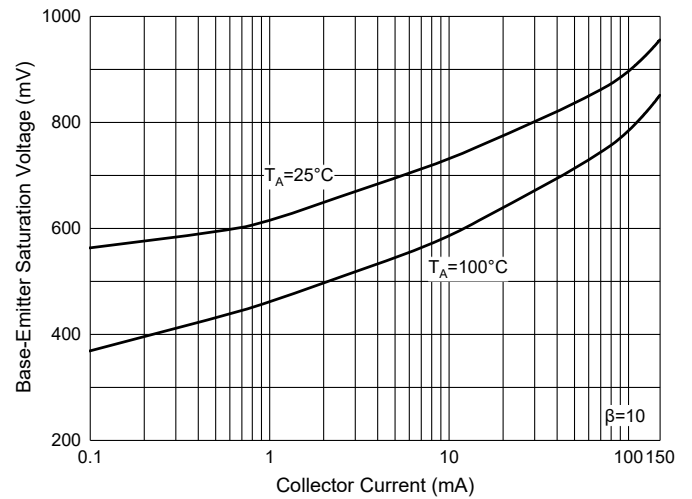
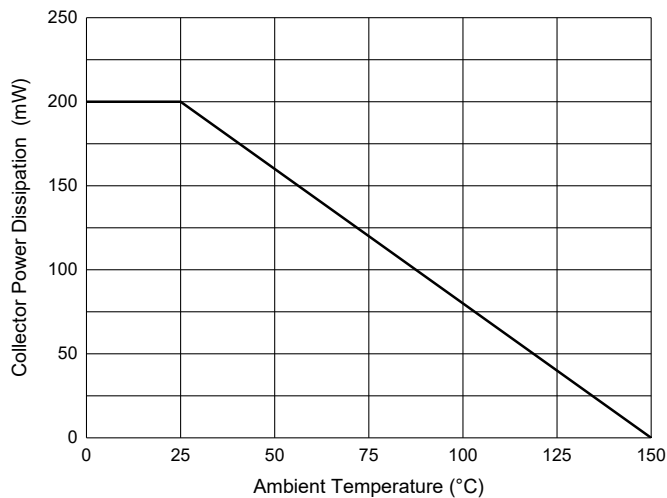


Fig. 5 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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