



**THE DATASHEET OF
MMBT2222A-TP-HF**



Features

- Ideally Suited For Automatic Insertion
- 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

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	0.6	A
Collector Current-Peak ⁽²⁾	I_{CM}	1.1	A
Power Dissipation	P_D	350	mW

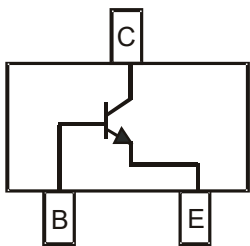
Thermal characteristics

Parameter	Symbol	Rating	Unit
Junction Temperature Range	T_j	-55~+150	°C
Storage Temperature Range	T_{stg}	-55~+150	°C
Thermal Resistance from Junction to Ambient	$R_{th(J-A)}$	357	°C/W

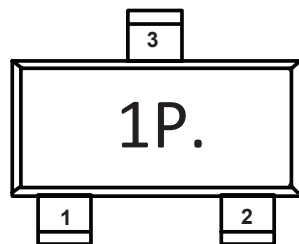
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. pulse width≤40us.

Internal Structure

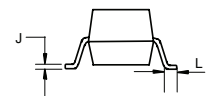
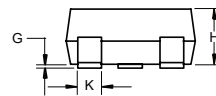
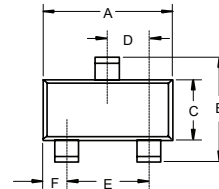


Device Marking



**NPN
General Purpose
Amplifier**

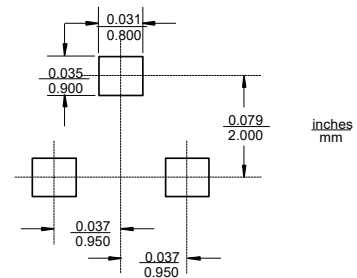
SOT-23



DIMENSIONS

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	0.014	0.020	0.35	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout

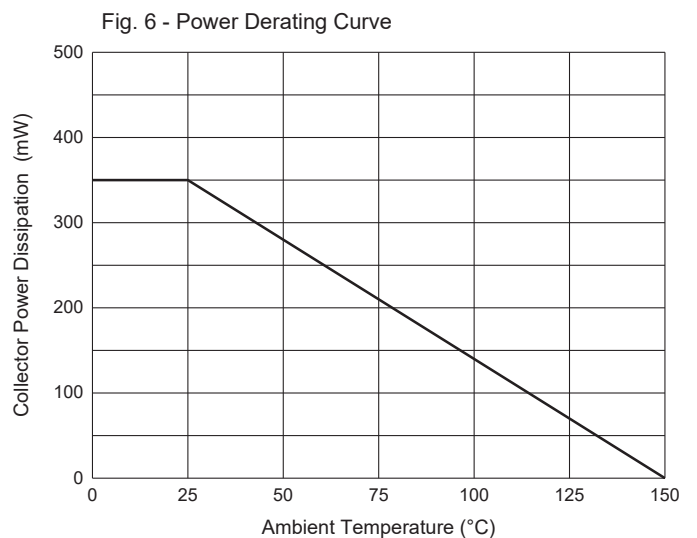
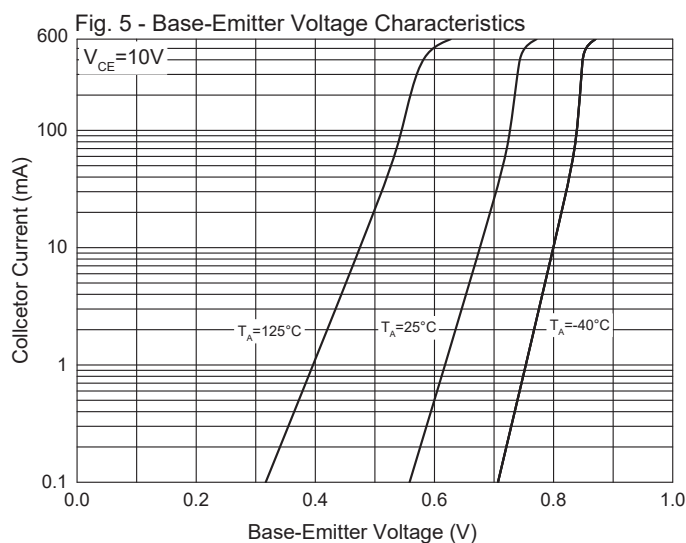
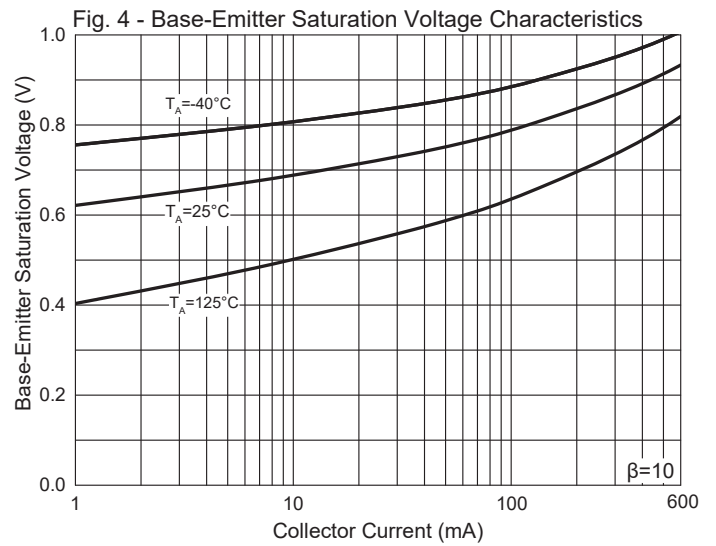
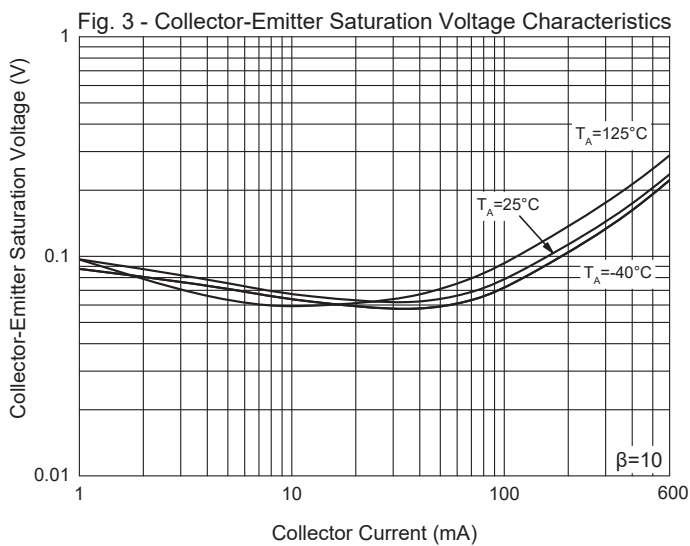
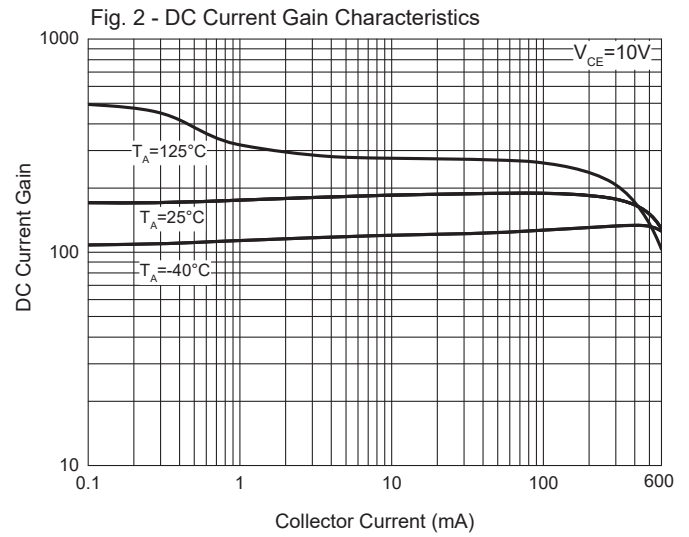
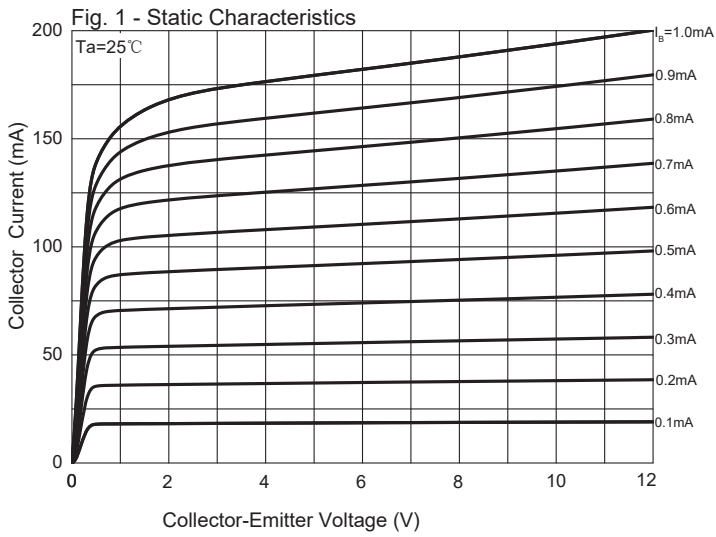


Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage*	$V_{(BR)CBO}$	75			V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C=10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu A, I_C=0$
Collector Cutoff Current	I_{CEX}			10	nA	$V_{CE}=60V, V_{BE}=3V$
DC Current Gain*	h_{FE1}	35				$V_{CE}=10V, I_C=0.1mA$
	h_{FE2}	50				$V_{CE}=10V, I_C=1mA$
	h_{FE3}	75				$V_{CE}=10V, I_C=10mA$
	h_{FE4}	100		300		$V_{CE}=10V, I_C=150mA$
	h_{FE5}	50				$V_{CE}=1V, I_C=150mA$
	h_{FE6}	40				$V_{CE}=10V, I_C=500mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_C=150mA, I_B=15mA$
				1.0	V	$I_C=500mA, I_B=50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.6		1.2	V	$I_C=150mA, I_B=15mA$
				2.0	V	$I_C=500mA, I_B=50mA$
Transition Frequency	f_T	300			MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$
Output Capacitance	C_{obo}			8	pF	$V_{CB}=10V, I_E=0, f=1MHz$
Input Capacitance	C_{ibo}			45	pF	$V_{BE}=0.5V, I_C=0, f=1MHz$
Noise Figure	NF			4	dB	$V_{CE}=10V, I_C=100\mu A, f=1kHz, R_S=1k\Omega$
Delay Time	t_d			10	ns	$V_{CC}=30V, V_{BE}=0.5V$
Rise Time	t_r			25	ns	$I_C=150mA, I_{B1}=15mA$
Storage Time	t_s			225	ns	$V_{CC}=30V, I_C=150mA$
Fall Time	t_f			60	ns	$I_{B1}=I_{B2}=15mA$

*Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2.0\%$

Curve Characteristics



Ordering Information

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

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