



**THE DATASHEET OF
MMDT5401-TP**



Features

- Ideal for Low Power Amplification and Switching
- 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)

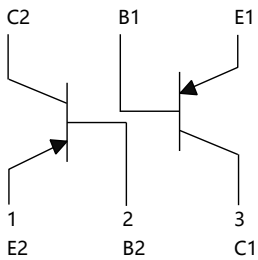
Maximum Ratings

- 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}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-200	mA
Collector Power Dissipation	P_C	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.

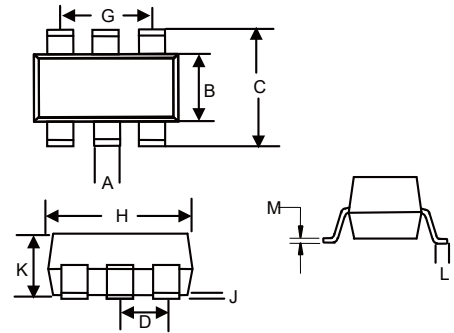
Internal Structure



Marking: K4M

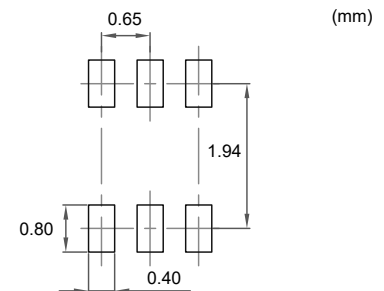
Dual PNP Plastic Encapsulate Transistor

SOT-363



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-160			V	$I_C=-100\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-150			V	$I_C=-1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-10\mu A, I_C=0$
Collector Cutoff Current	I_{CBO}			-0.05	μA	$V_{CB}=-120V, I_E=0$
Emitter-Base Cutoff Current	I_{EBO}			-0.05	μA	$V_{EB}=-3V, I_C=0$
DC Current Gain	h_{FE1}	50				$V_{CE}=-5V, I_C=-1mA$
	h_{FE2}	100		300		$V_{CE}=-5V, I_C=-10mA$
	h_{FE3}	50				$V_{CE}=-5V, I_C=-50mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.2	V	$I_C=-10mA, I_B=-1mA$
				-0.5	V	$I_C=-50mA, I_B=-5mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.0	V	$I_C=-10mA, I_B=-1mA$
				-1.0	V	$I_C=-50mA, I_B=-5mA$
Output Capacitance	C_{ob}			4.5	pF	$V_{CB}=-5V, I_E=0, f=1.0MHz$
Transition Frequency	f_T	100		300	MHz	$V_{CE}=-10V, I_C=-10mA, f=100MHz$
Noise Figure	NF			6	dB	$V_{CE}=-10V, I_C=-0.1mA, f=1kHz, R_S=1k\Omega$
Delay Time	t_d			35	ns	$V_{CC}=-3.0V, V_{BE}=-0.5V$
Rise Time	t_r			35	ns	$I_C=-10mA, I_{B1}=-I_{B2}=-1mA$
Storage Time	t_s			225	ns	$V_{CC}=-3V, I_C=-10mA$
Fall Time	t_f			75	ns	$I_{B1}=-I_{B2}=-1mA$

Curve Characteristics

Fig. 1 - Static Characteristics

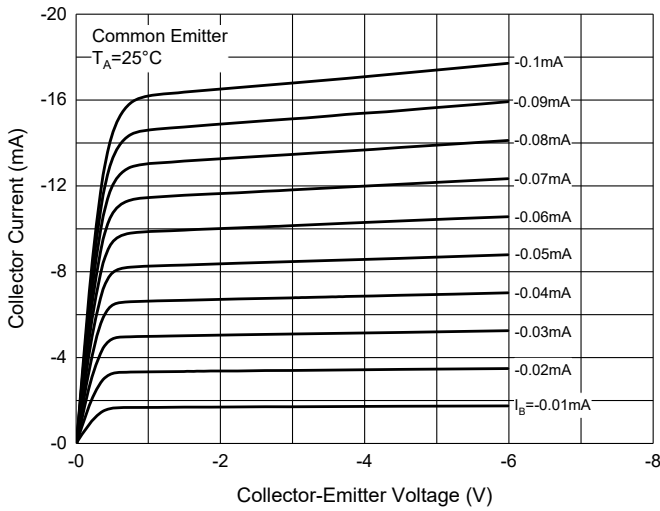


Fig. 2 - DC Current Gain Characteristics

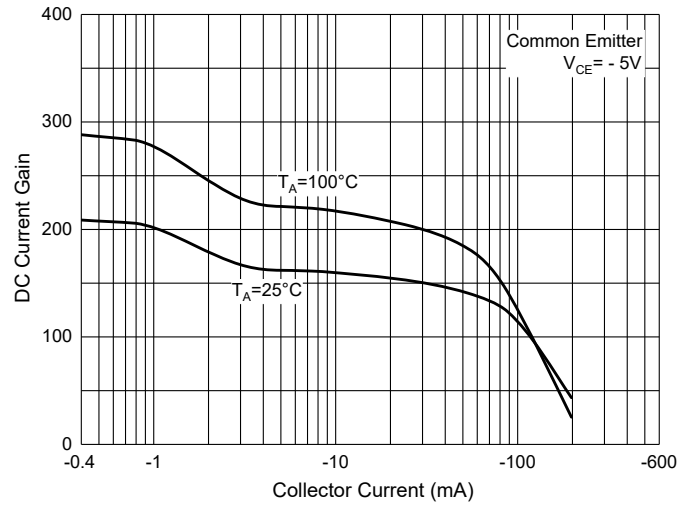


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

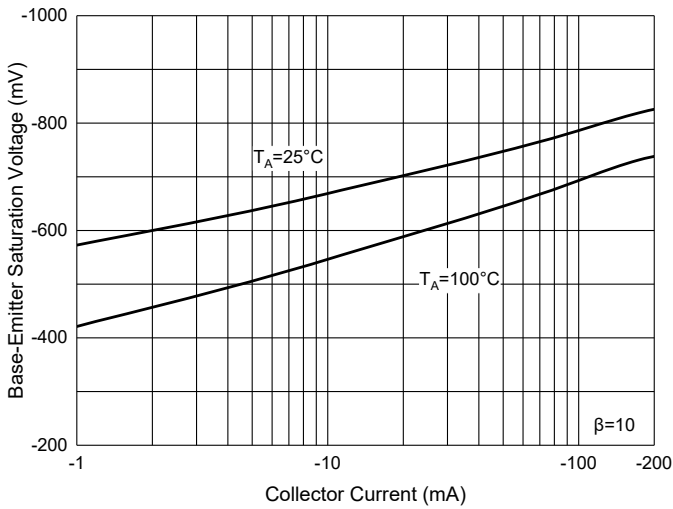


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

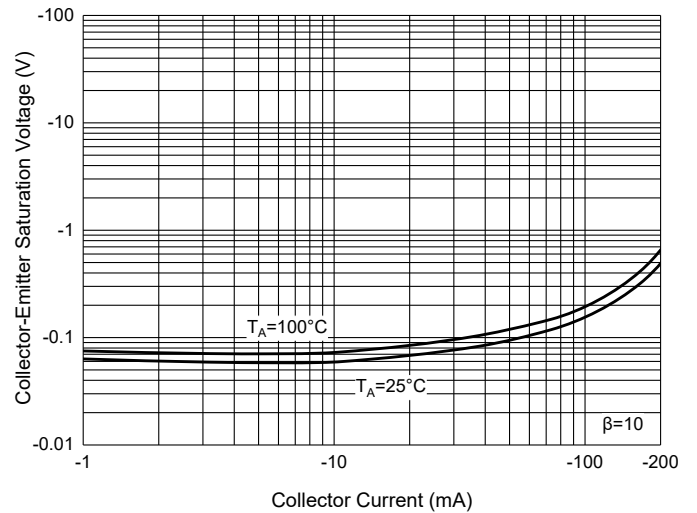


Fig. 5 - Base-Emitter Voltage Characteristics

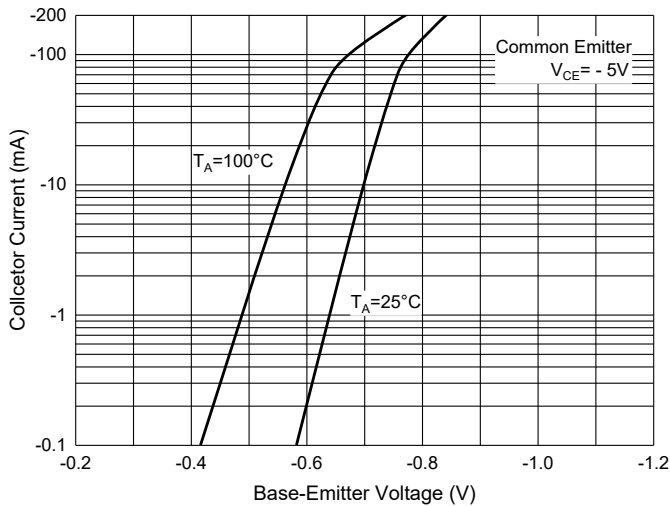
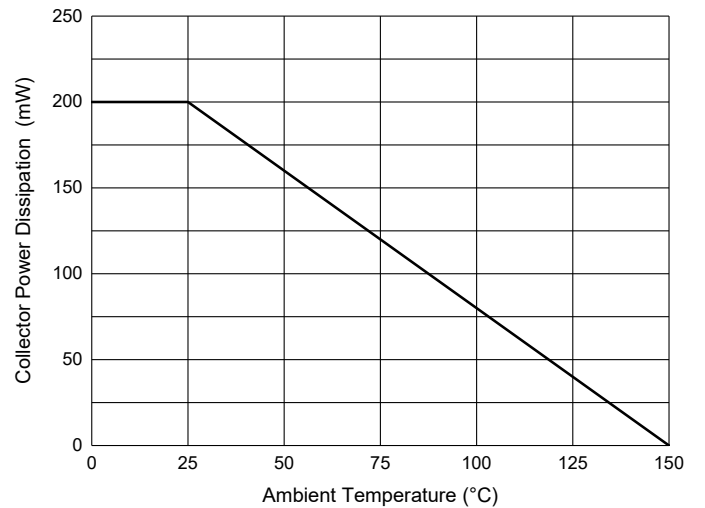


Fig. 6 - Collector Power Derating Curve



Ordering Information

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

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