



MMDT3906V

RoHS
COMPLIANT

Features

Moisture sensitivity level 1
Halogen free and RoHS compliant
Surface mount package ideally suited for automatic Insertion

Mechanical data

Package SOT-563

Terminals Tin plated leads, solderable per J-STD-002 and JESD22-B102

Ω **Maximum Ratings** ($T_a=25$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Device marking code				KAR
Collector-base voltage	V_{CBO}	V	$I_C=-10\mu A, I_E=0$	-40
Collector-emitter voltage	V_{CEO}	V	$I_C=-1mA, I_B=0$	-40
Emitter-base voltage	V_{EBO}	V	$I_E=-10\mu A, I_C=0$	-5
Collector current	I_C	mA		-200
Power dissipation	P_D	mW		150
Junction temperature	T_J			-55 to +150
Storage temperature	T_{STG}			-55 to +150

° Switching circuit



MMDT3906V

RoHS
COMPLIANT

Ω Electrical Characteristics (T_A=25 Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V _{(BR)CBO}	V	I _C =-10μA, I _E =0	-40		
Collector-emitter breakdown voltage	V _{(BR)CEO}	V	I _C =-1mA, I _B =0	-40		
Emitter-base breakdown voltage	V _{(BR)EBO}	V	I _E =-10μA, I _C =0	-5		
Collector-base cut-off current	I _{CBO}	nA	V _{CB} =-40V, I _E =0			-100
Collector cutoff current	I _{CEX}	nA	V _{CE} =-30V, V _{EB(OFF)} =-3V			-50
Emitter-base cut-off current	I _{EBO}	nA	V _{EB} =-5V, I _C =0			-100
DC current gain	h _{FE1}		V _{CE} =-1V, I _C =-0.1mA	40		
	h _{FE2}		V _{CE} =-1V, I _C =-1mA	70		
	h _{FE3}		V _{CE} =-1V, I _C =-10mA	100		300
	h _{FE4}		V _{CE} =-1V, I _C =-50mA	60		
	h _{FE5}		V _{CE} =-1V, I _C =-100mA	30		
Collector-emitter saturation voltage	V _{CE(sat)1}	V	I _C =-10mA, I _B =-1mA			-0.25
	V _{CE(sat)2}	V	I _C =-50mA, I _B =-5mA			-0.4
Base-emitter saturation voltage	V _{BE(sat)1}	V	I _C =-10mA, I _B =-1mA	-0.65		-0.85
	V _{BE(sat)2}	V	I _C =-50mA, I _B =-5mA			-0.95
Collector-base Output Capacitance	Cob	pF	V _{CB} =-5.0Vdc, f=1.0MHz, I _E =0			4.5
Transition frequency	f _T	MHz	V _{CE} =-20V, I _C =-10mA, f=100MHz	250		
Noise figure	N _F	dB	V _{CE} =-5V, I _C =-0.1mA, f=1kHz, R _S =1K _Ω			4
Delay time	t _d	ns	V _{CC} =-3V, I _C =-10mA, V _{BE} =-0.5V, I _{B1} =-1mA			35
Rise time	t _r	ns				35
Storage time	t _s	ns	V _{CC} =-3V, I _C =-10mA, I _{B1} =-I _{B2} =-1mA			225
Fall time	t _f	ns				75



Ω Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta JA}^{(1)}$	/W	833
Thermal resistance, junction-to-case	$R_{\theta JC}^{(1)}$	/W	667

Note:

- 1 Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 25.4mm*25.4mm copper pad areas

Ω Characteristics

Fig 1 Static Characteristics

Fig 2 DC Current Gain

Fig 3 Collector-Emitter Saturation Voltage

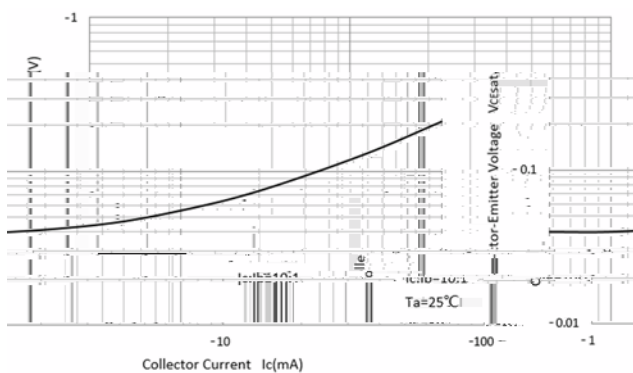


Fig 4 Base-Emitter Saturation Voltage

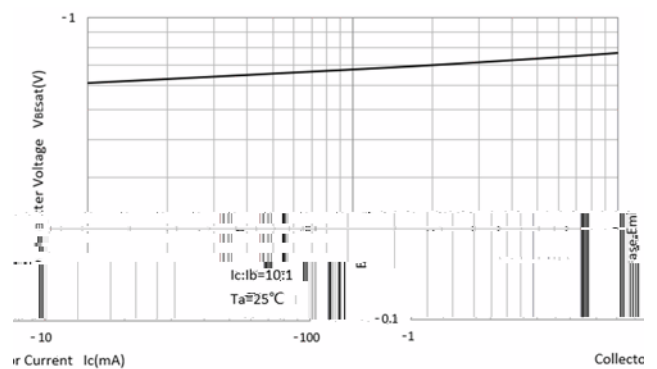




Fig 5 Base-Emitter Voltage

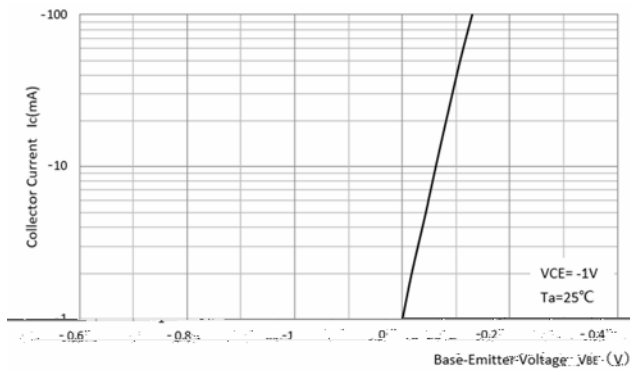


Fig 6 Cob/Cib- V_{CB}/V_{EB}

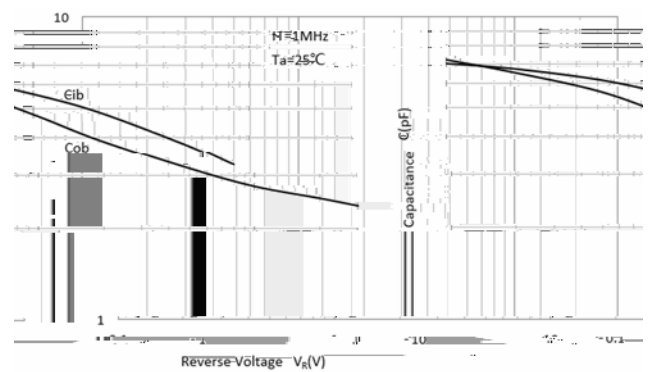
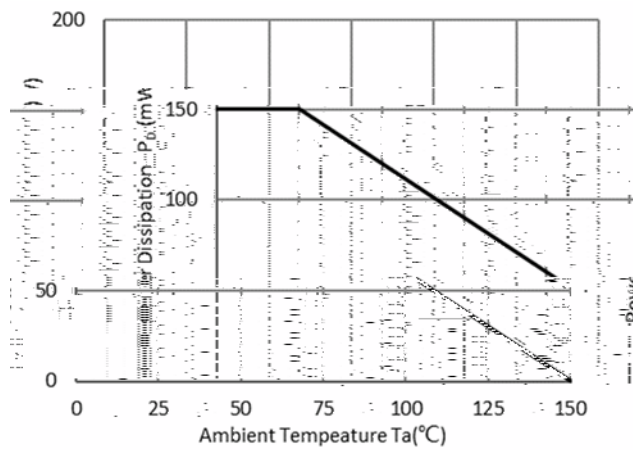


Fig 7 P_D - T_a Curve





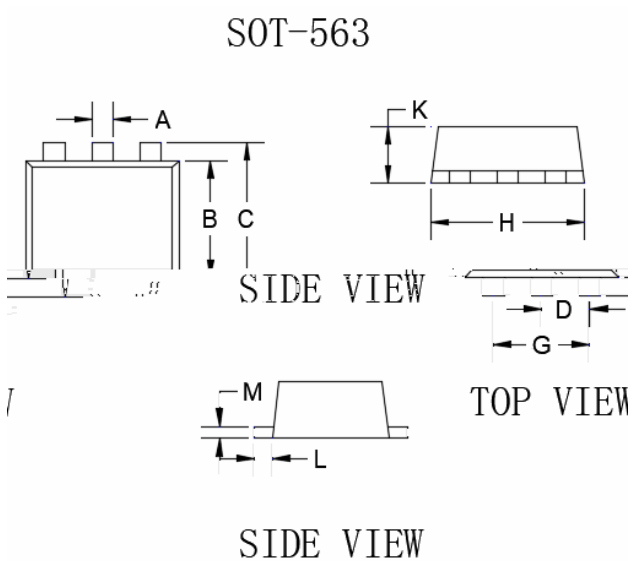
MMDT3906V

RoHS
COMPLIANT

Ordering Information

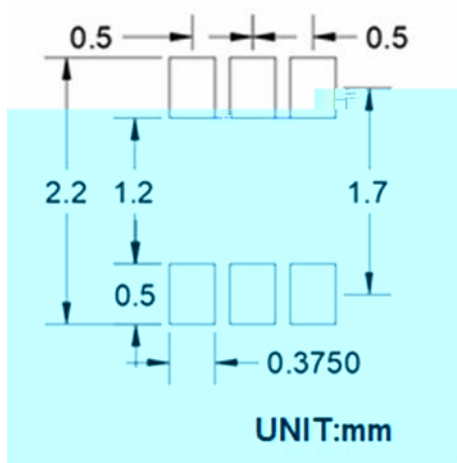
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
MMDT3906V	F2	Approximate 0.0035	3000	30000	120000	70 reel

Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.006	0.011	0.150	0.300
B	0.043	0.051	1.100	1.300
C	0.059	0.067	1.500	1.700
D	0.016	0.024	0.400	0.600
G	0.035	0.042	0.900	1.100
H	0.039	0.067	1.000	1.700
K	0.020	0.026	0.500	0.650
L	0.034	0.061	0.900	1.550
M	0.004	0.007	0.100	0.180

Suggested Pad Layout





Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function, or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.