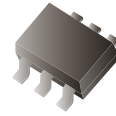


MMDT3906D-HF (PNP+PNP)

RoHS Device
Halogen Free



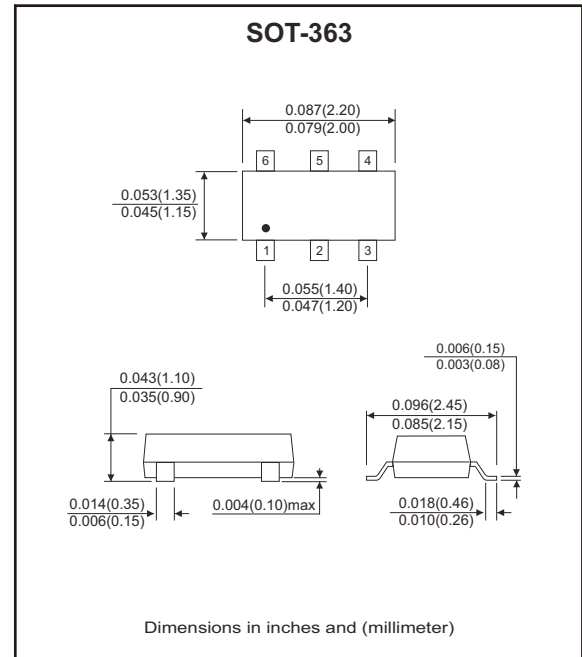
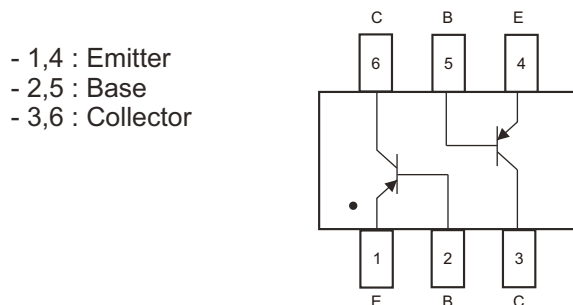
Features

- Epitaxial planar die construction.
- Dual Transistor.
- Ideal for low power amplification and switching.
- Ultra small surface mount package.

Mechanical data

- Case: SOT-363 standard package, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	-40	V
Collector-emitter voltage	V_{CEO}	-40	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current-continuous	I_C	-0.2	A
Collector power dissipation	P_C	0.2	W
Thermal resistance (Junction to ambient air)	$R_{\theta JA}$	625	°C/W
Junction temperature range	T_J	150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-Base breakdown voltage	$I_C=-10\mu\text{A}$, $I_E=0$	$V_{(BR)CBO}$	-40		V
Collector-Emitter breakdown voltage	$I_C=-1\text{mA}$, $I_B=0$	$V_{(BR)CEO}$	-40		V
Emitter-Base breakdown voltage	$I_E=-10\mu\text{A}$, $I_C=0$	$V_{(BR)EBO}$	-5		V
Collector cut-off current	$V_{CE}=-30\text{V}$, $V_{EB(OFF)}=-3\text{V}$	I_{CEX}		-50	nA
Base cut-off current	$V_{EB}=-5\text{V}$, $I_C=0$	I_{EBO}		-50	nA
DC current gain	$V_{CE}=-1\text{V}$, $I_C=-0.1\text{mA}$	$h_{FE(1)}$	60		
	$V_{CE}=-1\text{V}$, $I_C=-1\text{mA}$	$h_{FE(2)}$	80		
	$V_{CE}=-1\text{V}$, $I_C=-10\text{mA}$	$h_{FE(3)}$	100	300	
	$V_{CE}=-1\text{V}$, $I_C=-50\text{mA}$	$h_{FE(4)}$	60		
	$V_{CE}=-1\text{V}$, $I_C=-100\text{mA}$	$h_{FE(5)}$	30		
Collector-emitter saturation voltage	$I_C=-10\text{mA}$, $I_B=-1\text{mA}$	$V_{CE(sat)1}$		-0.25	V
	$I_C=-50\text{mA}$, $I_B=-5\text{mA}$	$V_{CE(sat)2}$		-0.40	V
Base-emitter saturation voltage	$I_C=-10\text{mA}$, $I_B=-1\text{mA}$	$V_{BE(sat)1}$	-0.65	-0.85	V
	$I_C=-50\text{mA}$, $I_B=-5\text{mA}$	$V_{BE(sat)2}$		-0.95	V
Transition frequency	$V_{CE}=-20\text{V}$, $I_C=-10\text{mA}$, $f=100\text{MHz}$	f_T	250		MHz
Collector output capacitance	$V_{CB}=-5\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{ob}		4.5	pF
Noise figure	$V_{CE}=-5\text{V}$, $I_C=-0.1\text{mA}$, $f=1\text{KHz}$, $R_g=1\text{K}\Omega$	NF		4	dB
Delay time	$V_{CC}=-3\text{V}$, $V_{BE(off)}=0.5\text{V}$ $I_C=-10\text{mA}$, $I_{B1}=-I_{B2}=-1\text{mA}$	t_d		35	nS
Rise time		t_r		35	nS
Storage time	$V_{CC}=-3\text{V}$, $I_C=-10\text{mA}$ $I_{B1}=-I_{B2}=-1\text{mA}$	t_s		225	nS
Fall time		t_f		75	nS

Rating and Characteristic Curves (MMDT3906D-HF)

Fig.1 - Static Characteristic

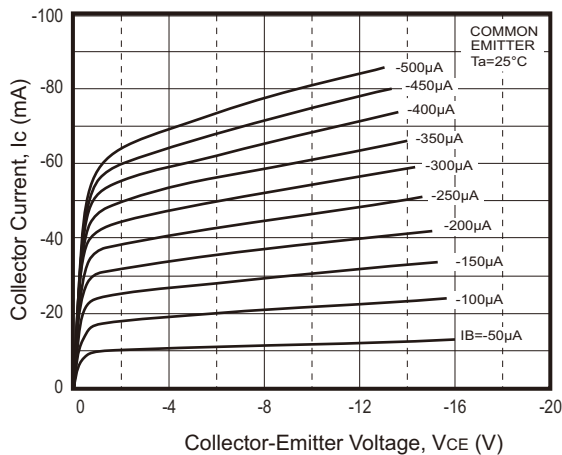
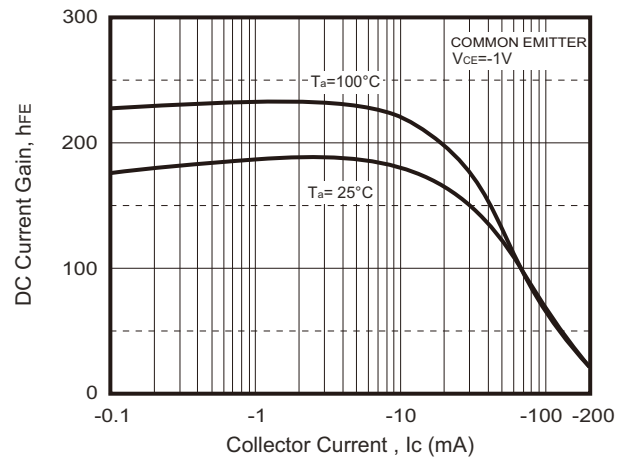


Fig.2 - $h_{FE}-I_C$



Rating and Characteristic Curves (MMDT3906D-HF)

Fig.3 - $V_{CEsat} - I_c$

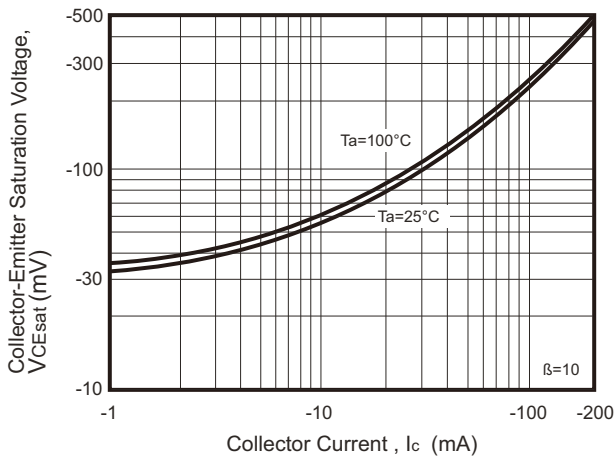


Fig.4 - $V_{BEsat} - I_c$

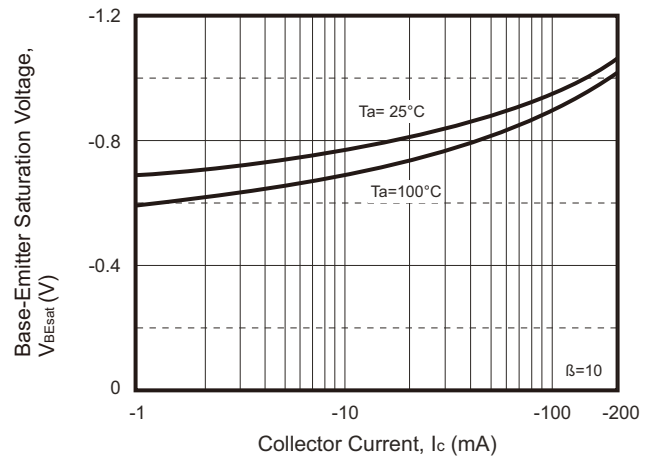


Fig.5 - $I_c - V_{BE}$

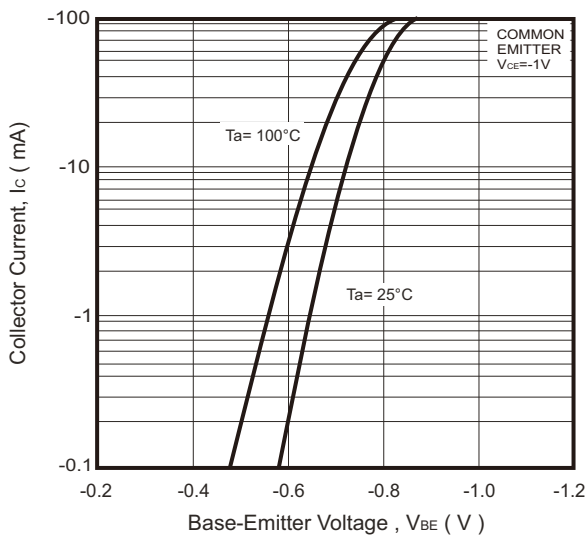


Fig.6 - $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

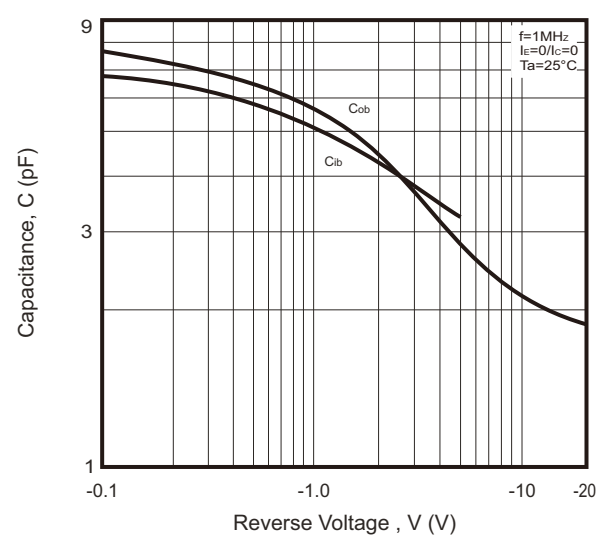


Fig.7 - $f_T - I_c$

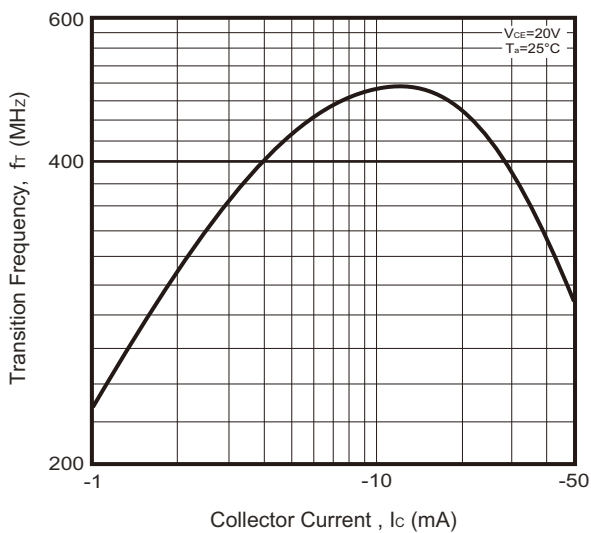
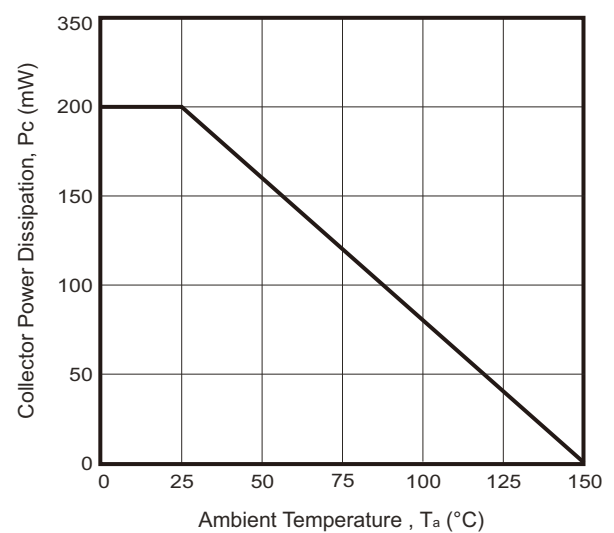
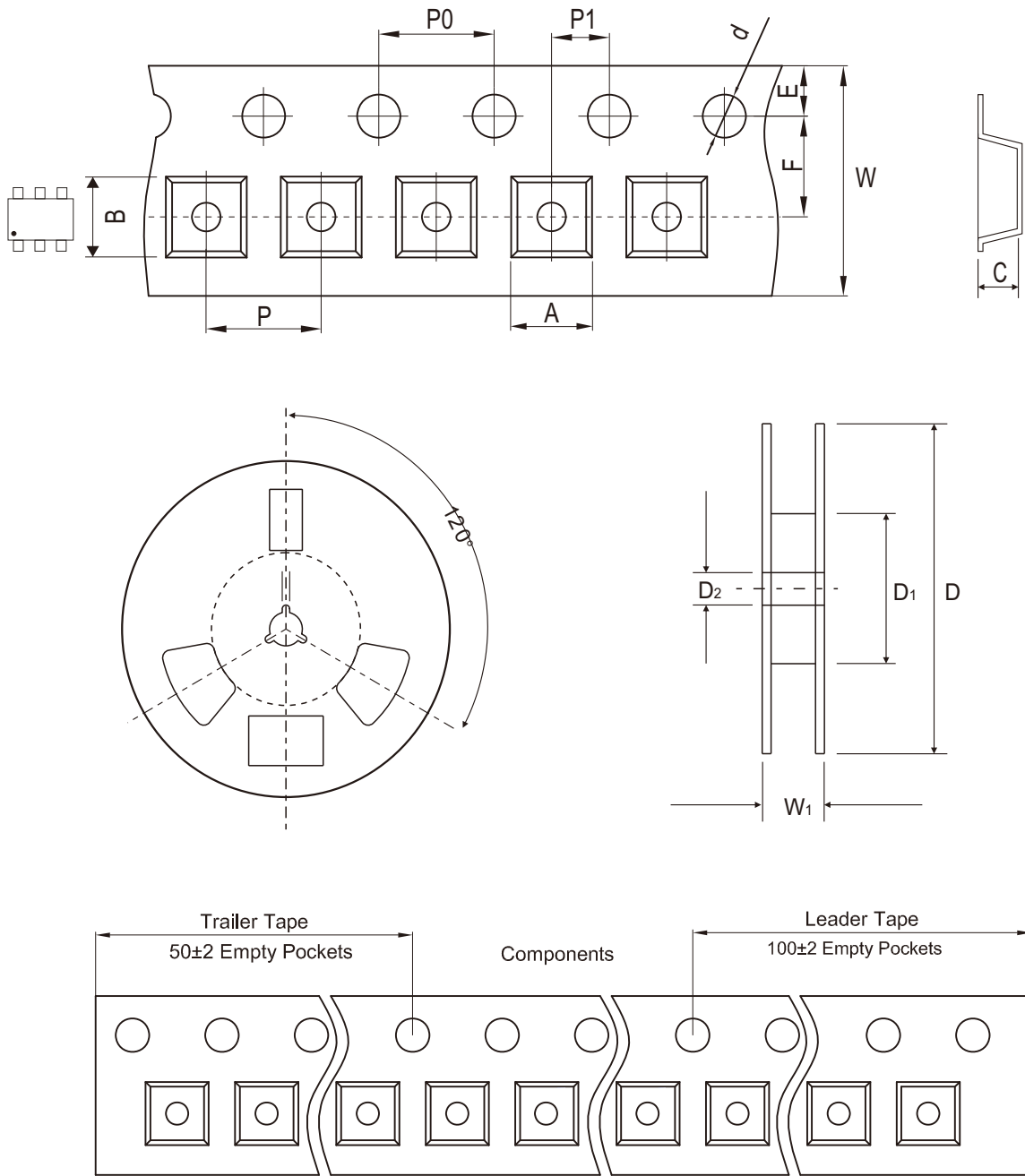


Fig.8 - $P_C - T_a$



Reel Taping Specification

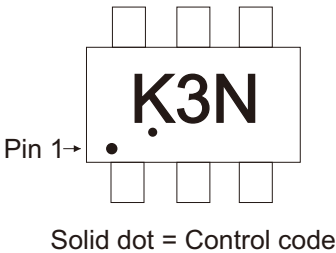


SOT-363	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	2.25 ± 0.10	2.55 ± 0.10	1.20 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 1.00	54.40 ± 0.40	13.00 ± 1.00
	(inch)	0.089 ± 0.004	0.100 ± 0.004	0.047 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.142 ± 0.016	0.512 ± 0.039

SOT-363	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 - 0.004	0.484 ± 0.039

Marking Code

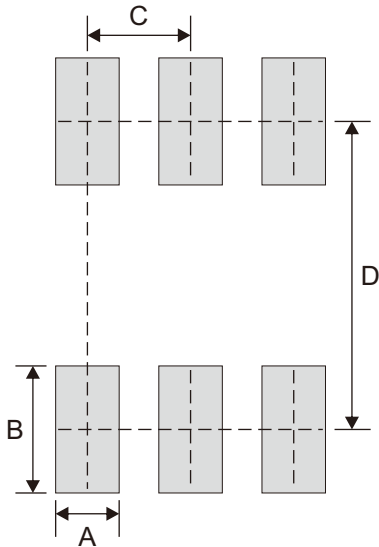
Part Number	Marking Code
MMDT3906D-HF	K3N



Suggested P.C.B. PAD Layout

SIZE	SOT-363	
	(mm)	(inch)
A	0.40	0.016
B	0.80	0.031
C	0.65	0.026
D	1.94	0.076

Note: 1.The pad layout is for reference purposes only.



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-363	3,000	7