

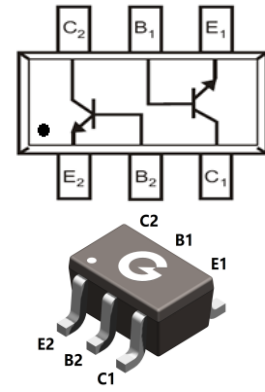
Features

- Epitaxial planar die construction
- Complementary PNP type available MMDT2907A
- Ultra-small surface mount package

HF

Mechanical Data

- Case: SOT-363
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-363

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
MMDT2222A	SOT-363	3000 pcs / Tape & Reel	K1P

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	75	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current (Continuous)	I _C	0.6	A
Collector Current (Peak)	I _{CM}	1.2	A
Continuous Base Current	I _B	0.15	A
Peak Base Current	I _{BM}	0.2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P _D	0.2	W
Thermal Resistance Junction-to-Air *1	R _{θJA}	625	°C/W
Thermal Resistance Junction-to-Air *2	R _{θJA}	260	°C/W
Thermal Resistance Junction-to-Case *2	R _{θJC}	200	°C/W
Thermal Resistance Junction-to-Lead *2	R _{θJL}	220	°C/W
Ambient Temperature	T _A	-55 ~ +150	°C
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	75	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	6	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$	-	-	10	nA
		$V_{CB} = 60\text{V}, I_E = 0, T_J = 150^\circ\text{C}$	-	-	10	μA
Collector Cut-off Current	I_{CEX}	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3\text{V}$	-	-	10	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$	-	-	10	nA
Base Cut-off Current	I_{BL}	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3\text{V}$	-	-	20	nA
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	35	-	-	-
		$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	50	-	-	-
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	75	-	-	-
		$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100	-	300	-
		$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	40	-	-	-
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}, T_J = -55^\circ\text{C}$	50	-	-	-
		$V_{CE} = 1\text{V}, I_C = 150\text{mA}$	35	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	-	-	0.3	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	1.0	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	0.6	-	1.2	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	2.0	V
Base-Emitter Voltage	$V_{BE(on)}$	$I_C = 200\text{mA}, V_{CE} = 10\text{V}$	-	-	1	V
Transition Frequency	f_T	$I_C = 20\text{mA}, V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	300	-	-	MHz
Collector Output Capacitance	C_{OBO}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	8	pF
Noise Figure	N_F	$V_{CE} = 10\text{V}, f = 1.0\text{kHz}$ $I_C = 100\text{mA}, R_S = 1.0\text{k}\Omega$	-	-	4.0	dB
Delay Time	t_d	$V_{CC} = 30\text{V}, V_{BE(OFF)} = 0.5\text{V}$	-	-	10	ns
Rise Time	t_r	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	-	-	25	ns
Storage Time	t_s	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$	-	-	225	ns
Fall Time	t_f	$I_{B1} = I_{B2} = 15\text{mA}$	-	-	60	ns

Notes:

- Device mounted on a minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state.
- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

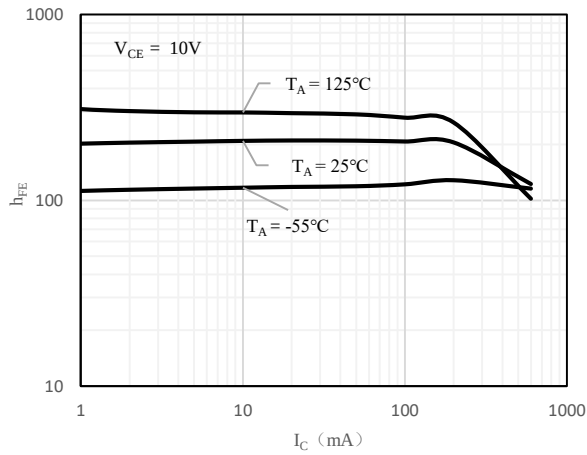


Fig 1 h_{FE} vs. I_C

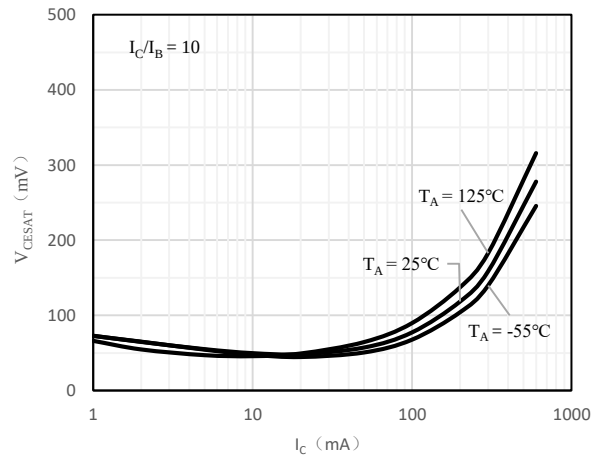


Fig 2 $V_{CE(sat)}$ vs. I_C

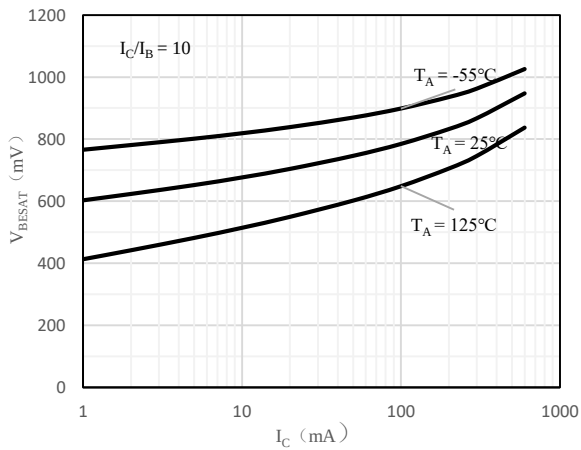


Fig 3 $V_{BE(sat)}$ vs. I_C

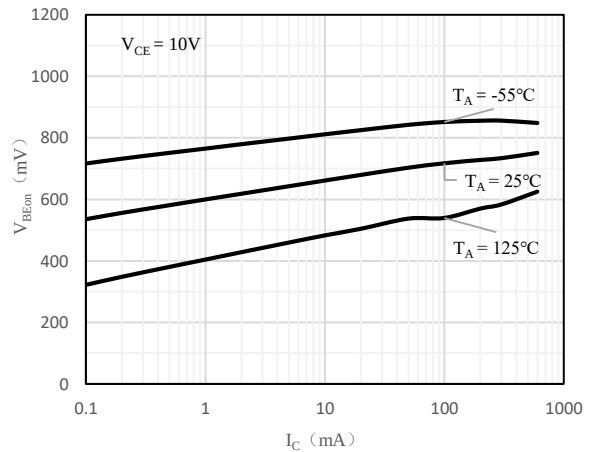


Fig 4 $V_{BE(on)}$ vs. I_C

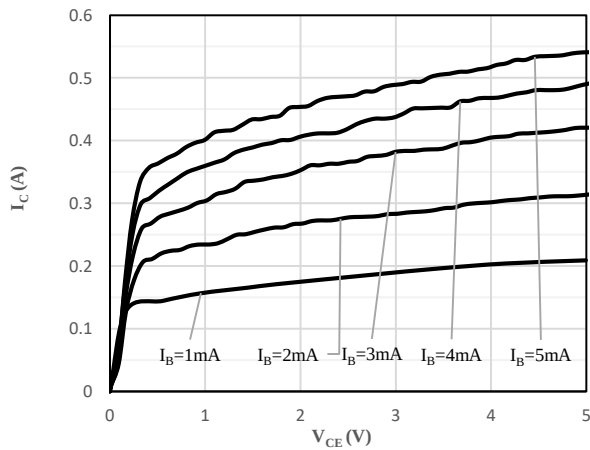


Fig 5 I_C vs. V_{CE}

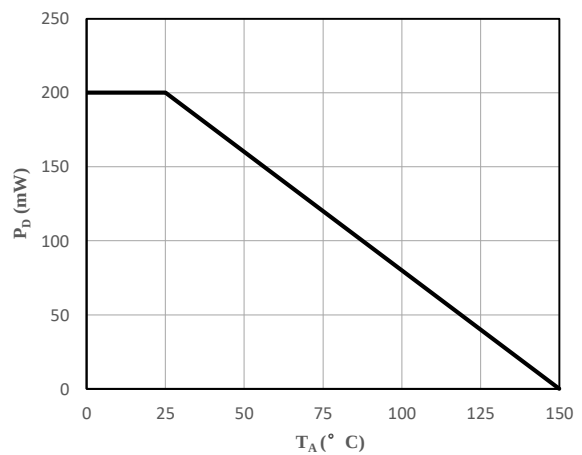


Fig 6 P_D vs. T_A

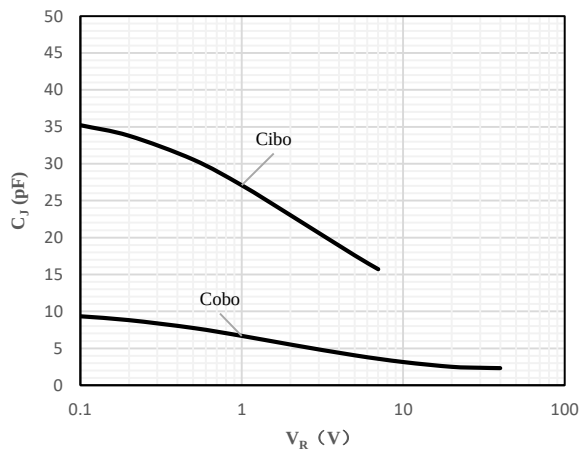
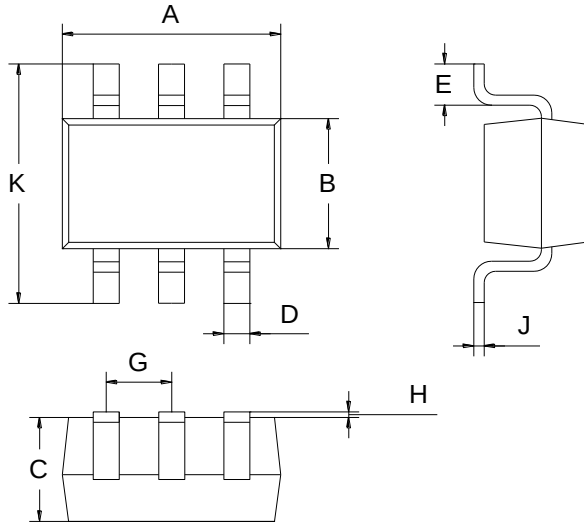


Fig 7 C_J vs. V_R

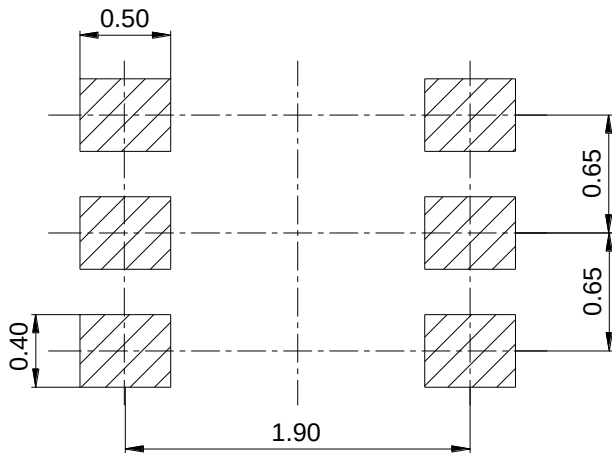
Package Outline Dimensions (Unit: mm)



SOT-363		
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout (Unit: mm)

SOT-363



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