MMDT2222A

Surface-Mount Dual NPN Transistor

FEATURES AND BENEFITS

Product Summary		
I_C	600mA	@25 °C
BV_{CBO}	75V	@I_C=10μA
BV_{CEO}	40V	@I_C=10mA
BV_{EBO}	6V	@I_E=10μA

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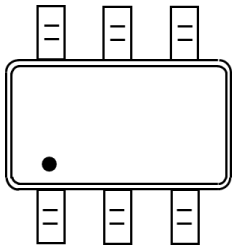
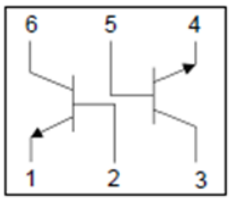


- For General Purpose NPN Amplifier
- RoHS Compliant / Green EMC UL Flammability Classification Rating 94V-0
- Matte Tin (Sn) Lead finish Solderable per MIL-STD-202, Method 208
- Moisture Sensitivity: Level 1 per J-STD-020

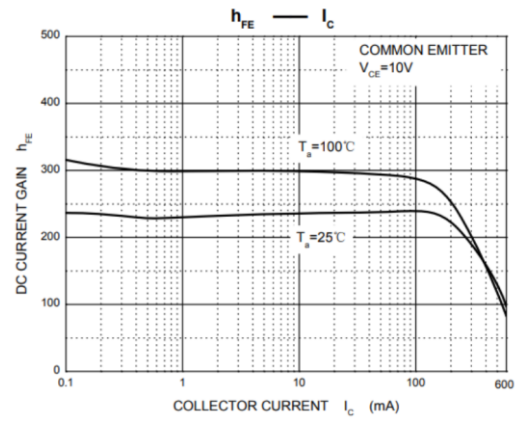
Equivalent Circuit



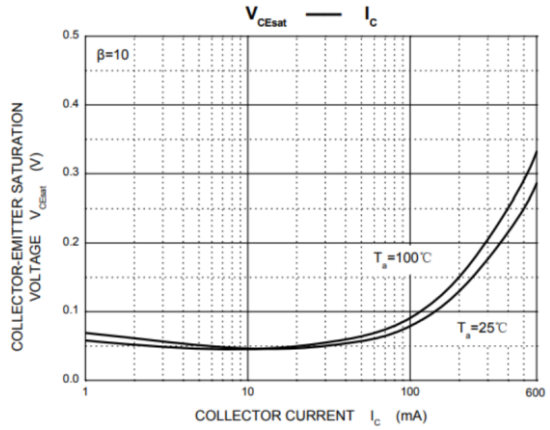
Maximum Ratings (TA = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Collector Power Dissipation	P_T	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B=0	40			V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E=0	75			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C=0	6			V
Collector Cutoff Current	I_{CBO}	V_{CB}=60V, I_E=0			10	nA
Collector cut-off current	I_{CEX}	V_{CE}= 60V, $V_{EB(off)}$=3V			10	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			10	nA
DC Current Gain	h_{FE}	I_C=0.1mA, V_{CE}=10V	35			
		I_C=1mA, V_{CE}=10V	50			
		I_C=10mA, V_{CE}=10V	75			
		I_C=150mA, V_{CE}=10V	100		300	
		I_C=500mA, V_{CE}=10V	40			
		I_C=150mA, V_{CE}=1V	35			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=150mA, I_B=15mA			0.3	V
		I_C=500mA, I_B=50mA			1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=150mA, I_B=15mA	0.6		1.2	V
		I_C=500mA, I_B=50mA			2	
Transition Frequency	f_T	V_{CE}=20V, I_C=20mA, f=100MHz	300			MHz
Output Capacitance	C_{obo}	V_{CB}=10V, I_E=0, f=1MHz			8	pF
Input Capacitance	C_{ib}	V_{EB}=0.5V, I_C= 0, f=1MHz			25	pF
Noise figure	NF	V_{CE}=10V, Ic=0.1mA f=1kHz, RS=1KΩ			4	dB
Delay time	t_d	V_{CC}=30V, $V_{BE(off)}$=0.5V			10	nS
Rise time	t_r	I_C=150mA, I_{B1}=15mA			25	nS
Storage time	t_s	V_{CC}=30V, I_C=150mA			225	nS
Fall time	t_f	I_{B1}=-I_{B2}=15mA			60	nS

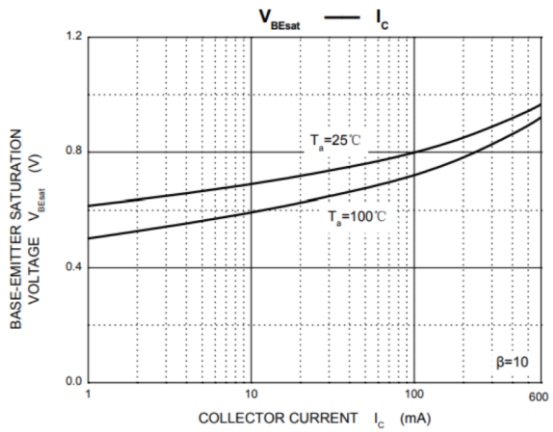
RATING AND CHARACTERISTICS CURVES



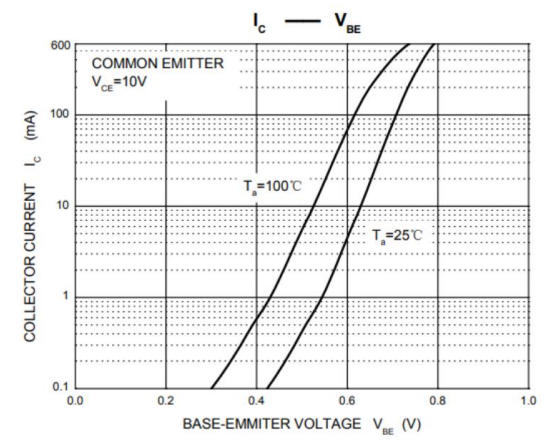
DC Current Gain (h_{FE}) vs Collector Current (I_C)



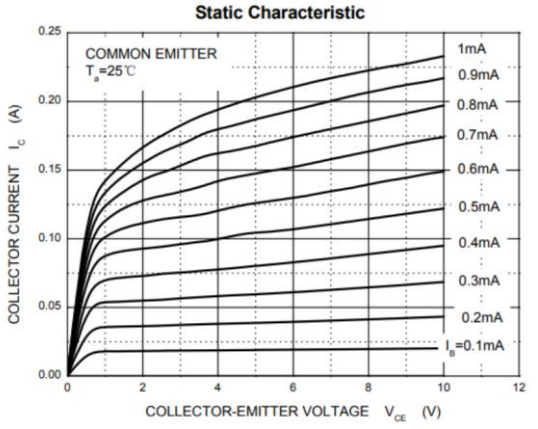
Collector-Emitter Saturation Voltage vs. Collector Current (I_C)



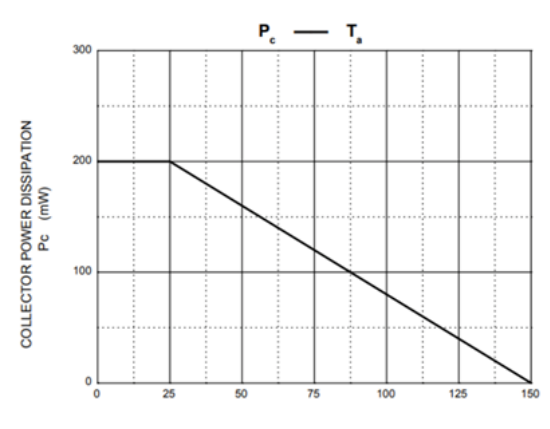
Base-Emitter Saturation Voltage vs. Collector Current (I_C)



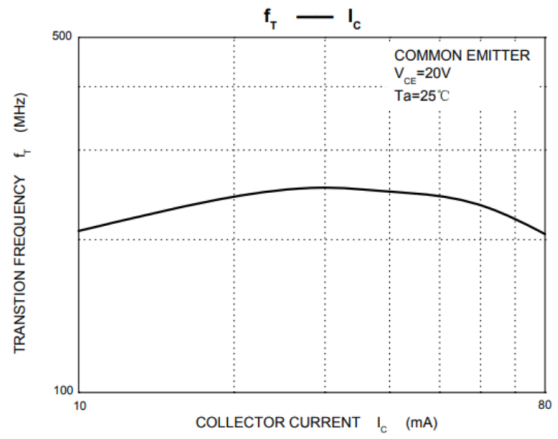
Base-Emitter Voltage Characteristics



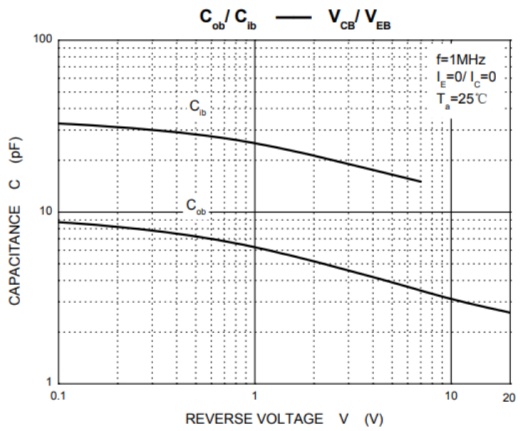
Static Characteristics



Power Derating Curve



Transition frequency(f_T) vs Collector Current (I_C)



Capacitance(pF)vs. Reverse Voltage (V)

PACKAGE OUTLINE DIMENSIONS

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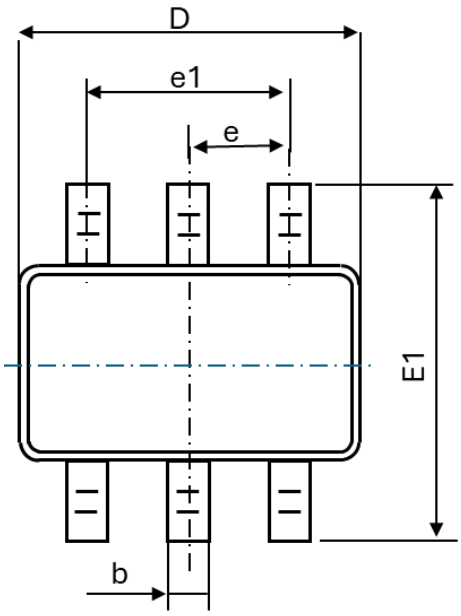
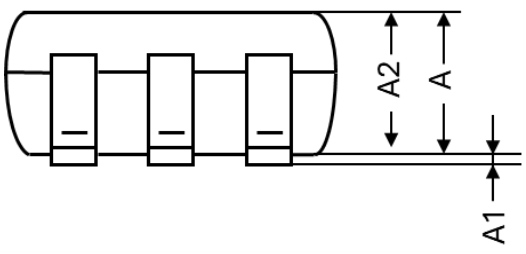
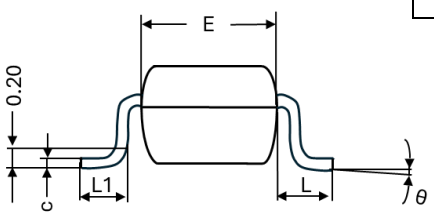
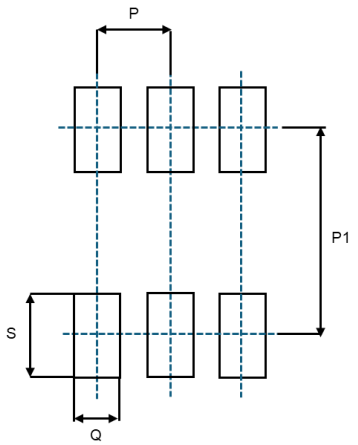






Symbol	MIN	MAX
A	0.90	1.00
A1	0.00	0.10
A2	0.90	1.00
b	0.15	0.35
c	0.10	0.15
D	2.00	2.20
E	1.15	1.35
E1	2.15	2.40
e	0.650TYP.	
e1	1.20	1.40
L	0.525REF.	
L1	0.26	0.46
θ	0°	8°
Unit: mm		

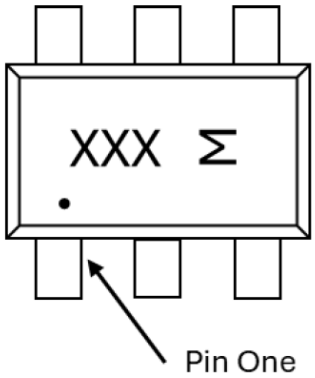
SUGGESTED PAD LAYOUT



Symbol	Type
P	0.65
P1	1.94
Q	0.40
S	0.816
	Unit: mm

DEVICE MARKING AND ORDERING INFORMATION

DEVICE	Marking	Quantity	Packing
MMDT2222A	K1P	3000/7”Reel	Tape & Reel



XXX: Product Marking Code

Σ : Date Code (Rotate 90° counterclockwise)

Odd Year	Even Year
1	E
2	F
3	H
4	J
5	K
6	L
7	N
8	P
9	U
T	X
V	Y
C	Z