

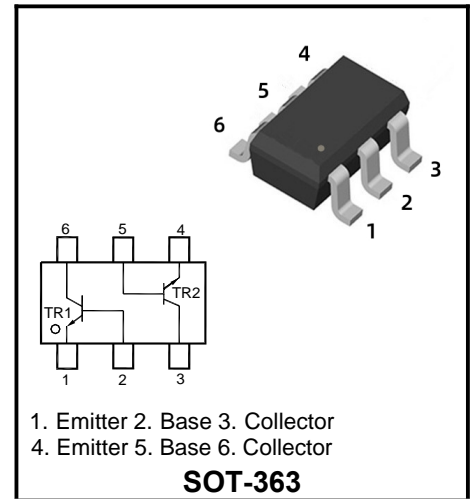
## Plastic-Encapsulate Transistors

DUAL TRANSISTOR (NPN+NPN)

### FEATURES

Complementary PNP Type available MMDT2907ADW

Marking Code	
MMDT2222ADW	K1P



### MAXIMUM RATINGS ( Ta=25°C unless otherwise noted )

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>c</sub>	Collector Current -Continuous	600	mA
P <sub>c</sub>	Collector Power Dissipation	200	mW
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

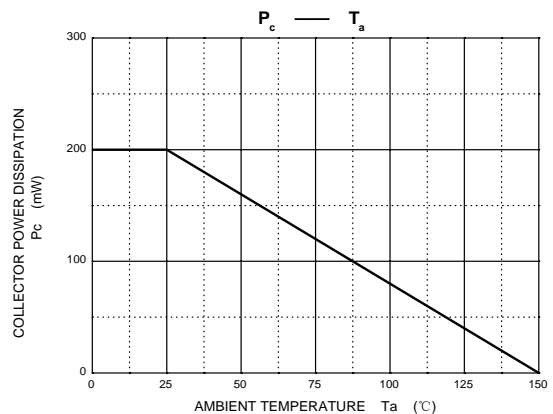
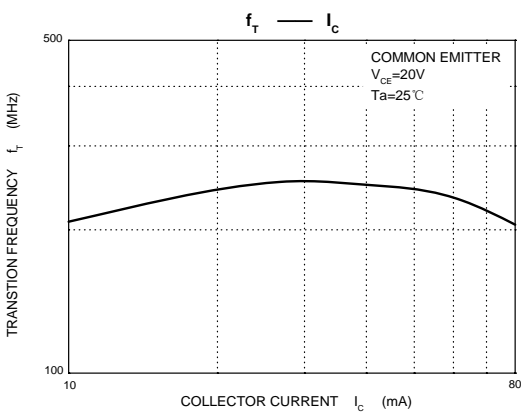
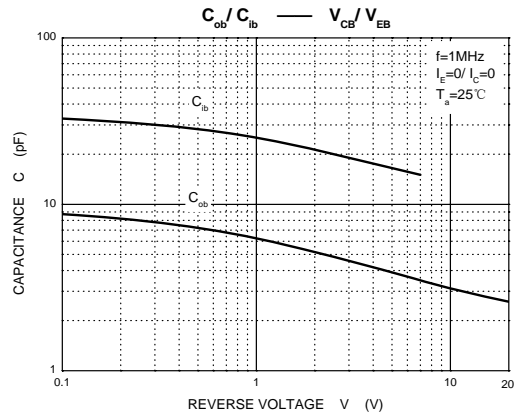
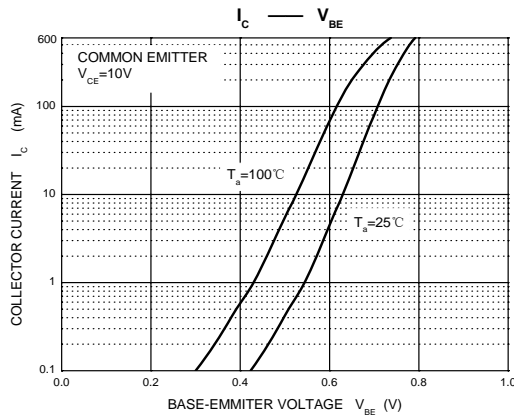
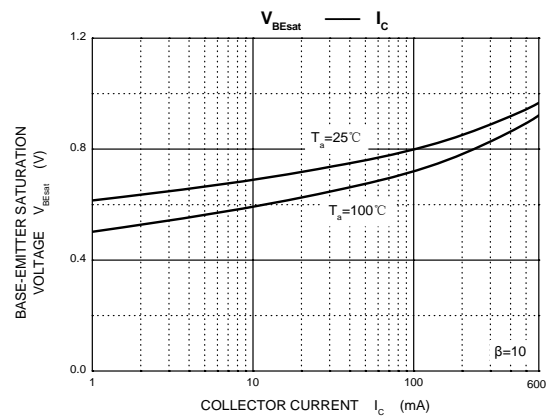
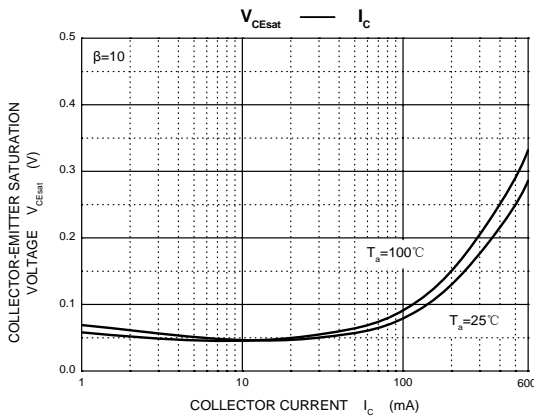
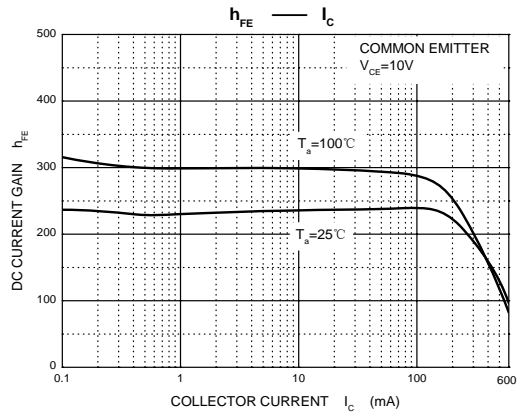
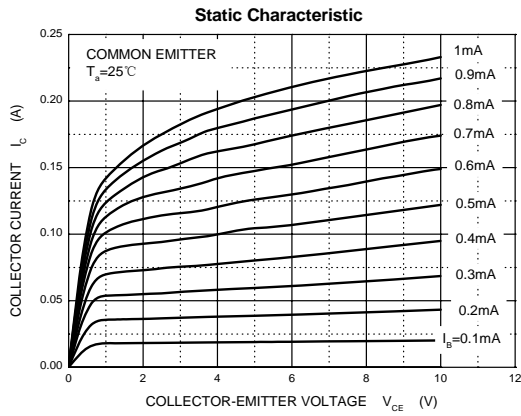
### ELECTRICAL CHARACTERISTICS (Ta=25 °C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> =0	75		V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> =0	40		V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6		V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 60V, I <sub>E</sub> =0		10	nA
Collector cut-off current	I <sub>CEx</sub>	V <sub>CE</sub> = 60V, V <sub>EB(off)</sub> =3V		10	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 3 V, I <sub>C</sub> =0		10	nA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 0.1mA	35		
	h <sub>FE(2)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 1mA	50		
	h <sub>FE(3)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 10mA	75		
	h <sub>FE(4)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 150mA	100	300	
	h <sub>FE(5)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 500mA	40		
	h <sub>FE(6)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> = 150mA	35		
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> = 15mA		0.3	V
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> = 50mA		1	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.6	1.2	V
	V <sub>BE(sat)2</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> = 50mA		2	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> = 20mA, f=100MHz	300		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz		8	pF
Input Capacitance	C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> = 0, f=1MHz		25	pF
Noise Figure	NF	V <sub>CE</sub> =10V, I <sub>C</sub> =100μA, f=1KHz, R <sub>s</sub> =1KΩ		4	dB

### Switching characteristics

Parameter	Symbol	Test conditions	Min	Max	Unit
Delay time	t <sub>d</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA,		10	nS
Rise time	t <sub>r</sub>	V <sub>BE(off)</sub> =0.5V, I <sub>B1</sub> =15mA		25	nS
Storage time	t <sub>s</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA,		225	nS
Fall time	t <sub>f</sub>	I <sub>B1</sub> = -I <sub>B2</sub> = 15mA		60	nS

Typical Characteristics



**Ordering information**

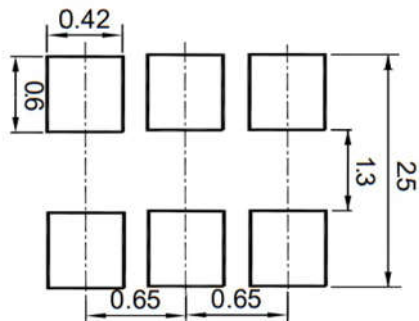
Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

**Package Dimensions**

**SOT-363**

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

**The recommended mounting pad size**



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