



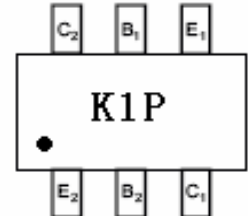
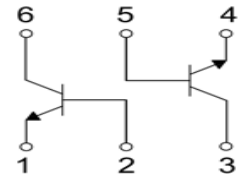
### MMDT2222AV Plastic-Encapsulate Transistors

DUAL TRANSISTOR (NPN+NPN)

#### FEATURE

Complementary PNP Type available MMDT2907AV

#### MARKING: K1P



SOT-563

#### MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	75	V
$V_{CEO}$	Collector-Emitter Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current -Continuous	600	mA
$P_C$	Collector Power Dissipation	200	mW
$T_J$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}\text{C}$

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

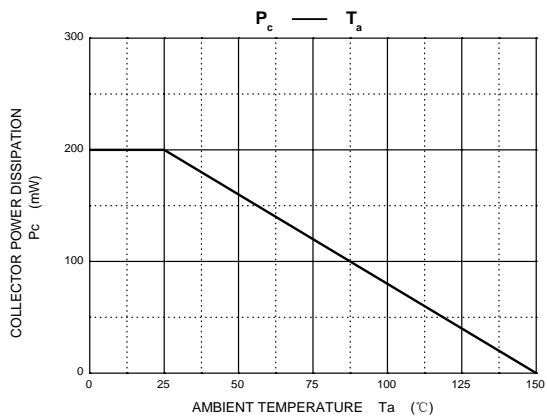
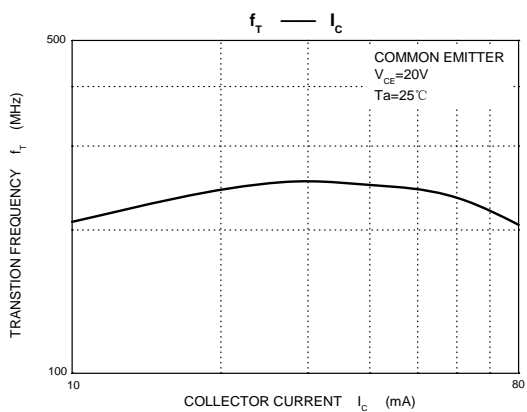
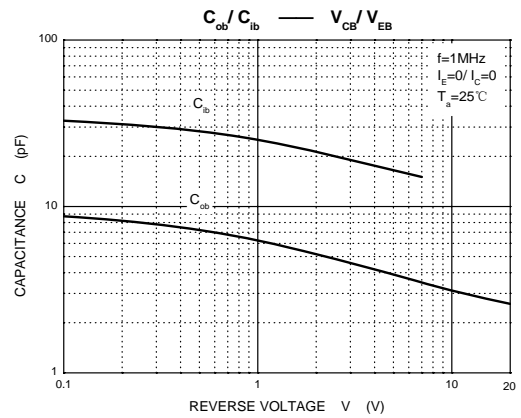
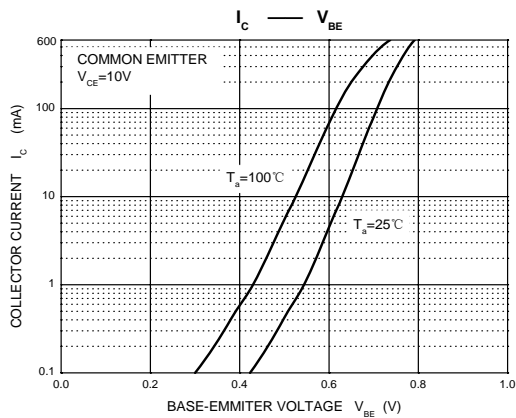
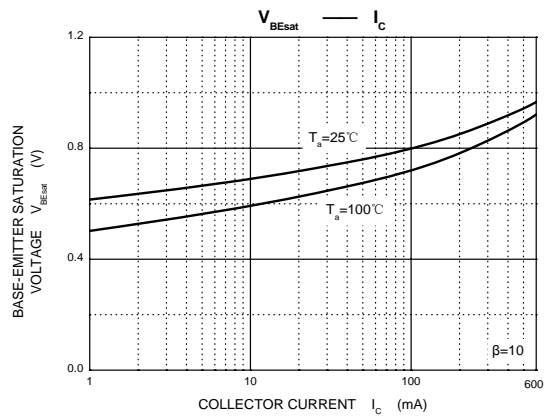
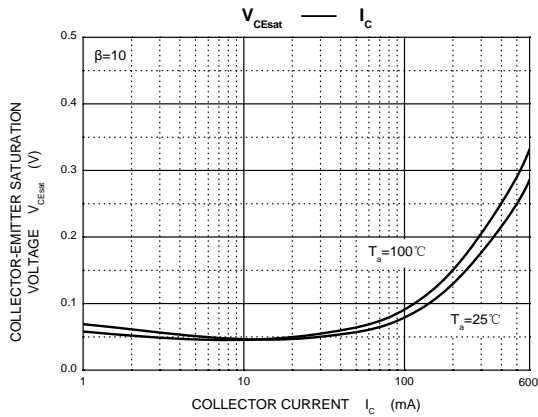
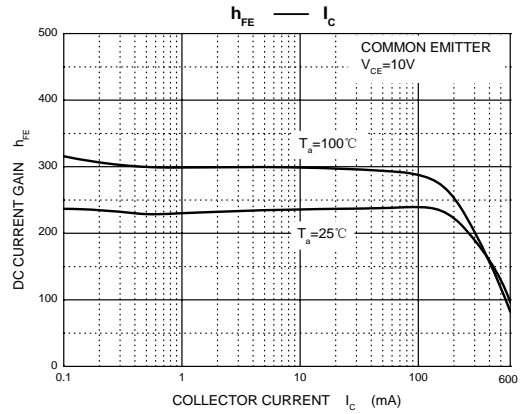
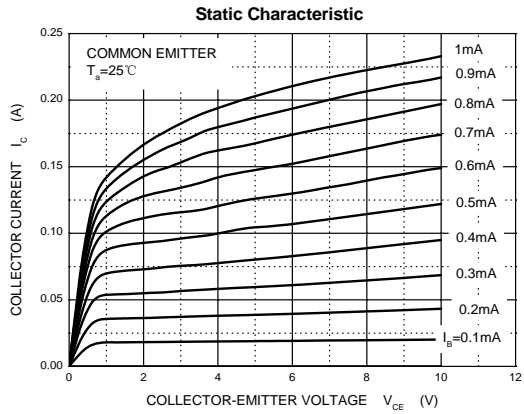
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	75		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6		V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60\text{V}, I_E=0$		10	nA
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
DC current gain	$h_{FE(1)}$	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	35		
	$h_{FE(2)}$	$V_{CE}=10\text{V}, I_C=1\text{mA}$	50		
	$h_{FE(3)}$	$V_{CE}=10\text{V}, I_C=10\text{mA}$	75		
	$h_{FE(4)}$	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100	300	
	$h_{FE(5)}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$	40		
	$h_{FE(6)}$	$V_{CE}=1\text{V}, I_C=150\text{mA}$	35		
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.3	V
	$V_{CE(sat)2}$	$I_C=500\text{mA}, I_B=50\text{mA}$		1	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.6	1.2	V
	$V_{BE(sat)2}$	$I_C=500\text{mA}, I_B=50\text{mA}$		2	V
Transition frequency	$f_T$	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	300		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		8	pF
Input Capacitance	$C_{ib}$	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$		25	pF
Noise Figure	NF	$V_{CE}=10\text{V}, I_C=100\mu\text{A}, f=1\text{KHz}, R_s=1\text{K}\Omega$		4	dB

#### Switching characteristics

Parameter	Symbol	Test conditions	Min	Max	Unit
Delay time	$t_d$	$V_{CC}=30\text{V}, I_C=150\text{mA}$		10	nS
Rise time	$t_r$	$V_{BE(off)}=0.5\text{V}, I_{B1}=15\text{mA}$		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

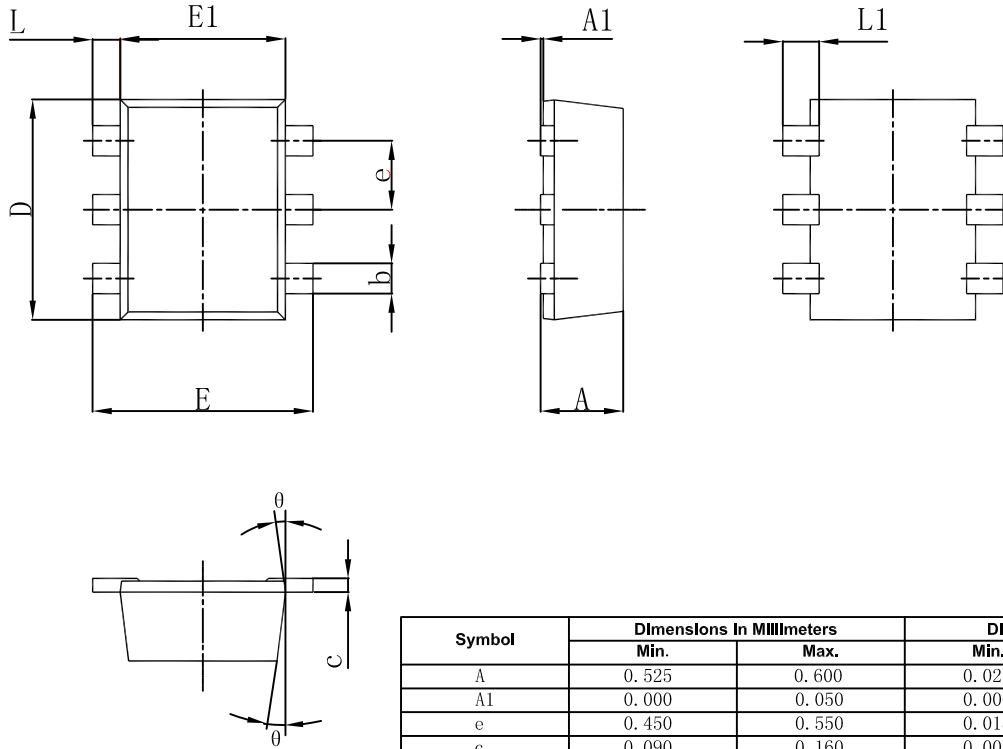


### Typical Characteristics



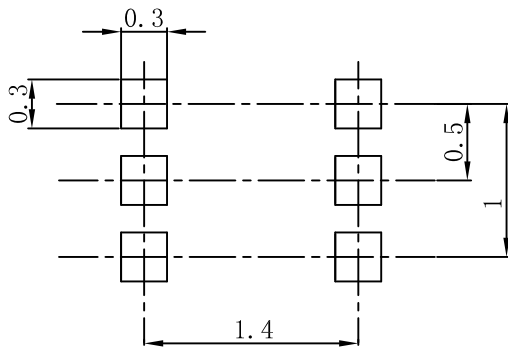


## SOT-563 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
c	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
$\theta$	7 <sup>0</sup> REF.		7 <sup>0</sup> REF.	

## SOT-563 Suggested Pad Layout

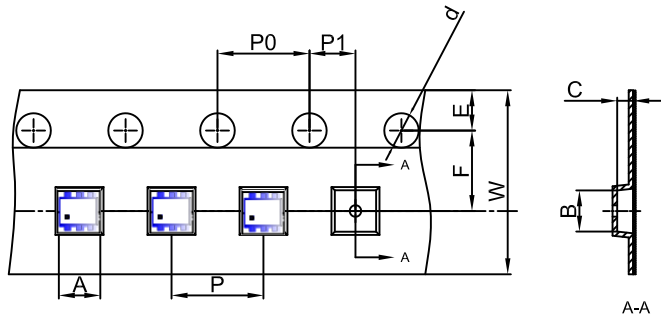


Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purposes only.



### SOT-563 Embossed Carrier Tape



#### Packaging Description:

SOT-563 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter											
Pkg type	A	B	C	d	E	F	P0	P	P1	W	
SOT-563	1.78	1.78	0.69	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00	

### SOT-563 Tape Leader and Trailer

