

# MMDT3904

## MMDT3904 SOT-363 Plastic-Encapsulate Transistors

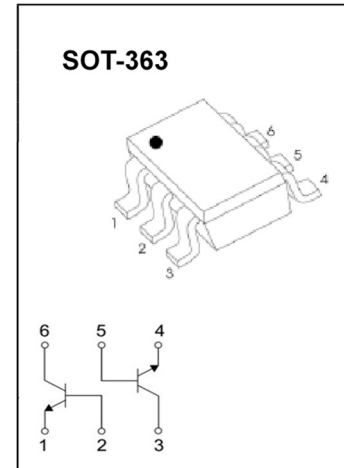
### General description

SOT-363 Plastic-Encapsulate Transistors

### FEATURES

- DUAL TRANSISTOR (NPN+NPN)
- Epitaxial planar die construction
- Ideal for low power amplification and switching

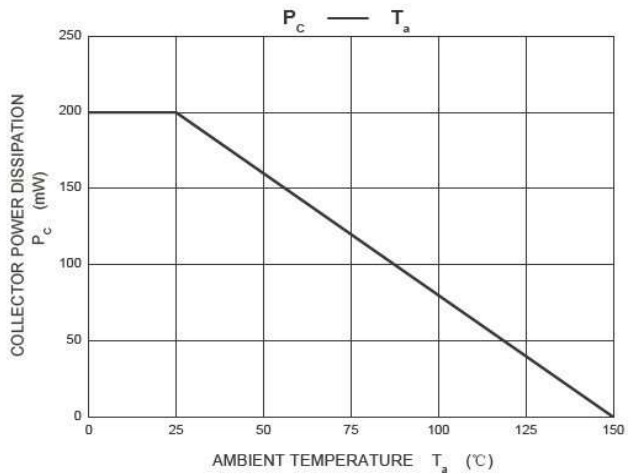
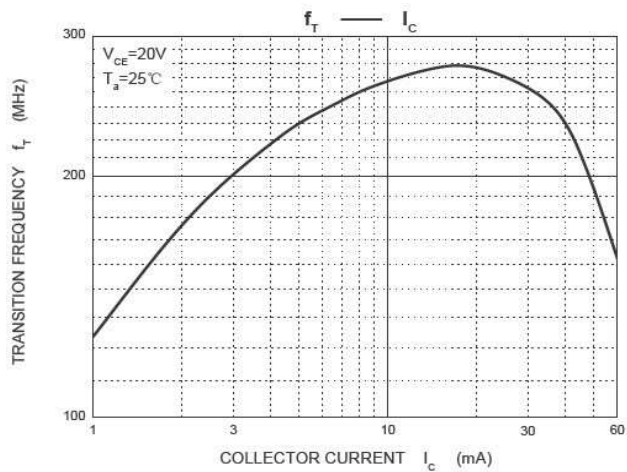
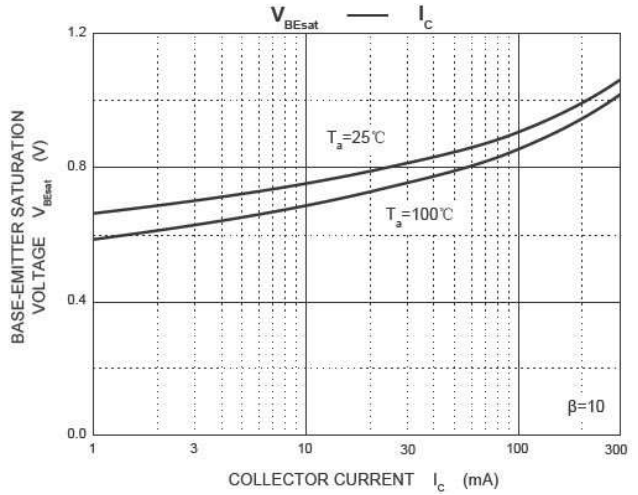
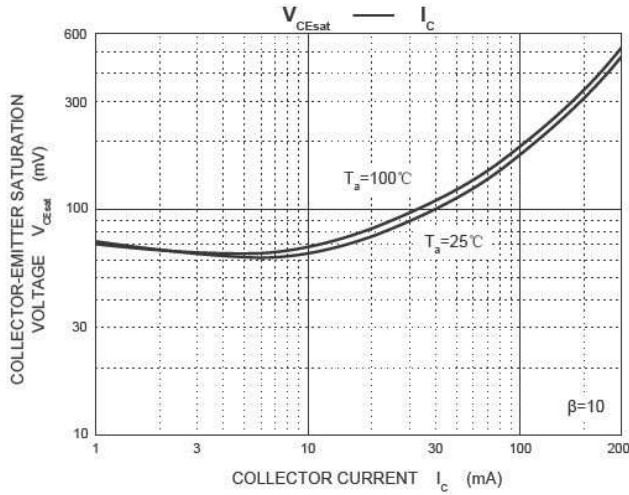
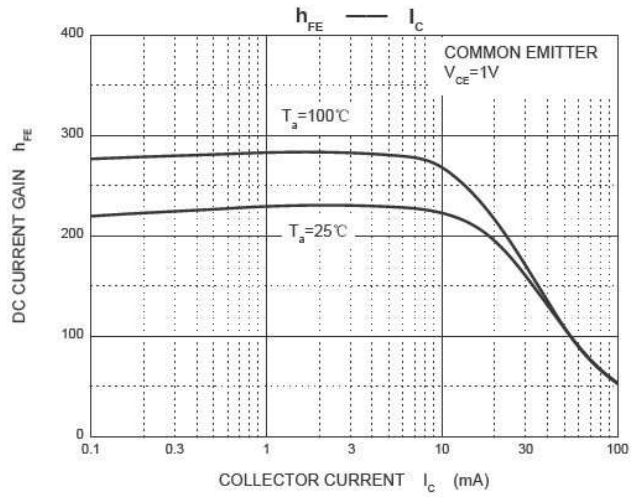
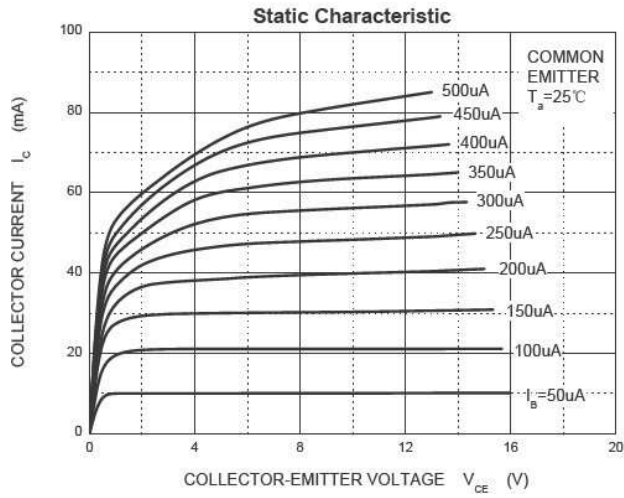
Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	60	V
V <sub>CE0</sub>	Collector-Emitter Voltage	40	V
V <sub>EB0</sub>	Emitter-Base Voltage	5	V
I <sub>c</sub>	Collector Current -Continuous	0.2	A
P <sub>c</sub>	Collector Power Dissipation	0.2	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C



MARKING : K6N

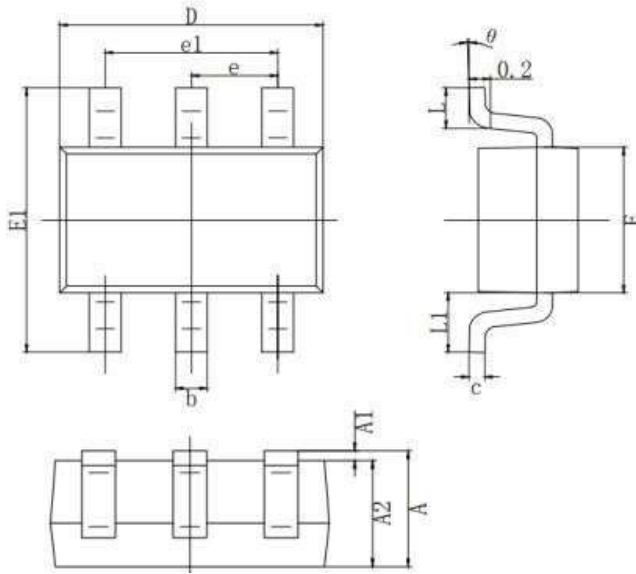
### Absolute Maximum Ratings(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>c</sub> =10μA, I <sub>E</sub> =0	60			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>c</sub> =1mA, 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	5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =30V, I <sub>E</sub> =0			0.05	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>c</sub> =0			0.05	μA
Collector cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> =30V, V <sub>BE(off)</sub> =3V			0.05	μA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> =0.1mA	40			
	h <sub>FE(2)</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> =1mA	70			
	h <sub>FE(3)</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> =10mA	100		300	
	h <sub>FE(4)</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> =50mA	60			
	h <sub>FE(5)</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> =100mA	30			
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub>	I <sub>c</sub> =10mA, I <sub>B</sub> =1mA			0.2	V
	V <sub>CE(sat)2</sub>	I <sub>c</sub> =50mA, I <sub>B</sub> =5mA			0.3	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub>	I <sub>c</sub> =10mA, I <sub>B</sub> =1mA	0.65		0.85	V
	V <sub>BE(sat)2</sub>	I <sub>c</sub> =50mA, I <sub>B</sub> =5mA			0.95	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>c</sub> =10mA, f=100MHz	300			MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =5V, I <sub>E</sub> =0, f=1MHz			4	pF
Noise figure	NF	V <sub>CE</sub> =5V, I <sub>c</sub> =0.1mA, f=1kHz, R <sub>S</sub> =1KΩ			5	dB
Delay time	t <sub>d</sub>	V <sub>CC</sub> =3V, V <sub>BE(off)</sub> =-0.5V			35	nS
Rise time	t <sub>r</sub>	I <sub>c</sub> =10mA, I <sub>B1</sub> =-I <sub>B2</sub> =1mA			35	nS
Storage time	t <sub>s</sub>	V <sub>CC</sub> =3V, I <sub>c</sub> =10mA I <sub>B1</sub> =-			200	nS
Fall time	t <sub>f</sub>	I <sub>B2</sub> =1mA			50	nS



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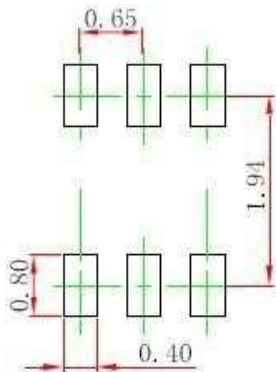
## SOT-363 PACKAGE OUTLINE Plastic surface mounted package



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
e	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 REF.	
L1	0.260	0.460
theta	0°	8°

### Precautions: PCB Design

Recommended land dimensions for SOT-363. Electrode patterns for PCBs



### Note:

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

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