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MMDT3904V

NPN Dual Small Signal Surface Mount Transistor

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Features

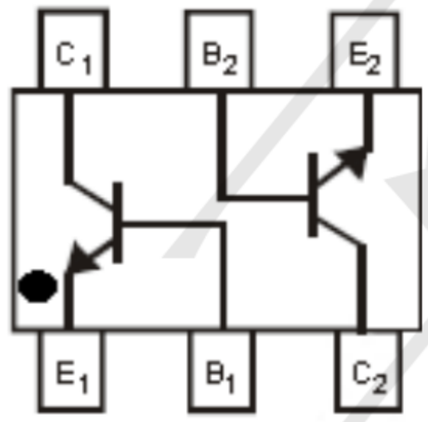
- Epitaxial planar die construction
- Ideal for low power amplification and switching
- Ultra-small surface mount package

Ordering Information

- Case: SOT563
- Shipping Qty:3000/7inch Tape& Reel

Top View

SOT563



Marking:KAP

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	60	V
Collector-Emitter Breakdown Voltage	V_{CEO}	40	V
Emitter-Base Breakdown Voltage	V_{EBO}	6	V
Collector Current (Continuous)	I_C	0.2	A

Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Power Dissipation (Collector) *1	P_C	150	mW
Thermal Resistance (Junction-to-Ambient) *1	$R_{\theta JA}$	833	°C/W
Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CEX}	V_{CE} = 30V, $V_{EB(OFF)}$ = 3.0V	-	-	50	nA
Base Cut-off Current	I_{BL}	V_{CE} = 30V, $V_{EB(OFF)}$ = 3.0V	-	-	50	nA
DC Current Gain	h_{FE}	V_{CE} = 1V, I_C = 0.1mA	40	-	-	-
		V_{CE} = 1V, I_C = 1mA	70	-	-	-
		V_{CE} = 1V, I_C = 10mA	100	-	300	-
		V_{CE} = 1V, I_C = 50mA	60	-	-	-
		V_{CE} = 1V, I_C = 100mA	30	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1 mA	-	-	0.2	V
		I_C = 50mA, I_B = 5 mA	-	-	0.3	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1 mA	0.65	-	0.85	V
		I_C = 50mA, I_B = 5 mA	-	-	0.95	V
Output Capacitance	C_{OBO}	V_{CB} = 5V, I_E = 0A, f = 1MHz	-	-	4	pF
Input Capacitance	C_{IBO}	I_C = 0, V_{EB} = 0.5V, f =1MHz	-	-	8	pF
Transition Frequency	f_T	I_C = 10mA, V_{CE} = 20V f = 100MHz	300	-	-	MHZ
Noise Figure	NF	I_C = 0.1mA, V_{CE} = 5V R_S = 1kΩ, f = 1kHz	-	-	5	dB
Delay Time	t_d	V_{CC} = 3V,$V_{BE(off)}$ = -0.5V I_C = 10mA, I_{B1} = 1mA	-	-	35	ns
Rise Time	t_r		-	-	35	ns
Storage Time	t_s	V_{CC} = 3V, I_C = 10mA I_{B1} = I_{B2} = 1mA	-	-	200	ns
Fall Time	t_f		-	-	50	ns

Typical Electrical Characteristic Curves

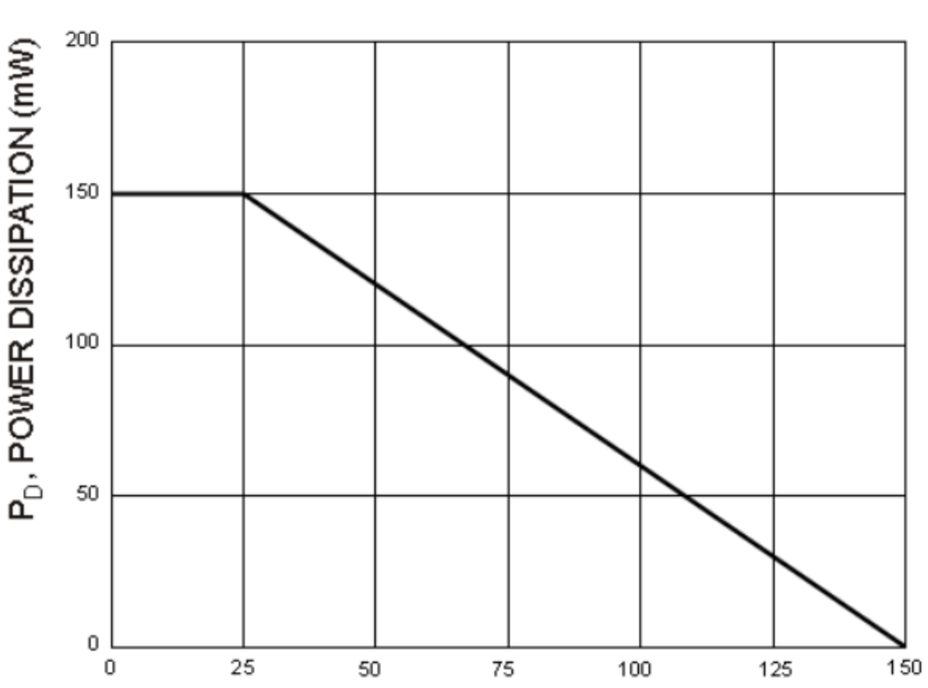


Fig. 1 Power Dissipation vs. Ambient Temperature

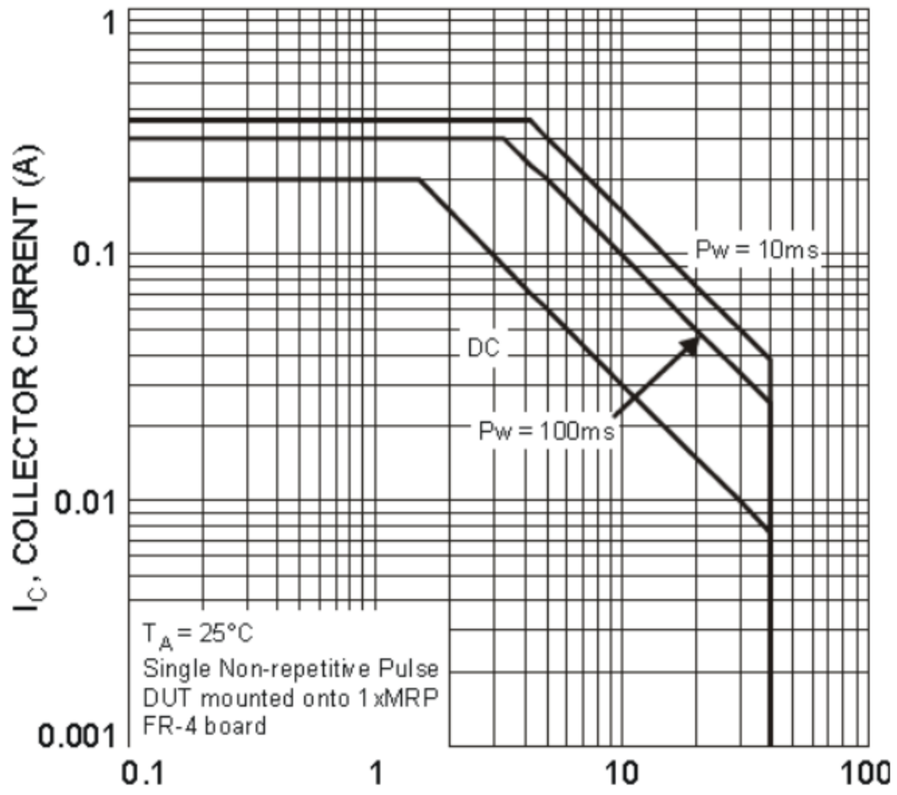


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage

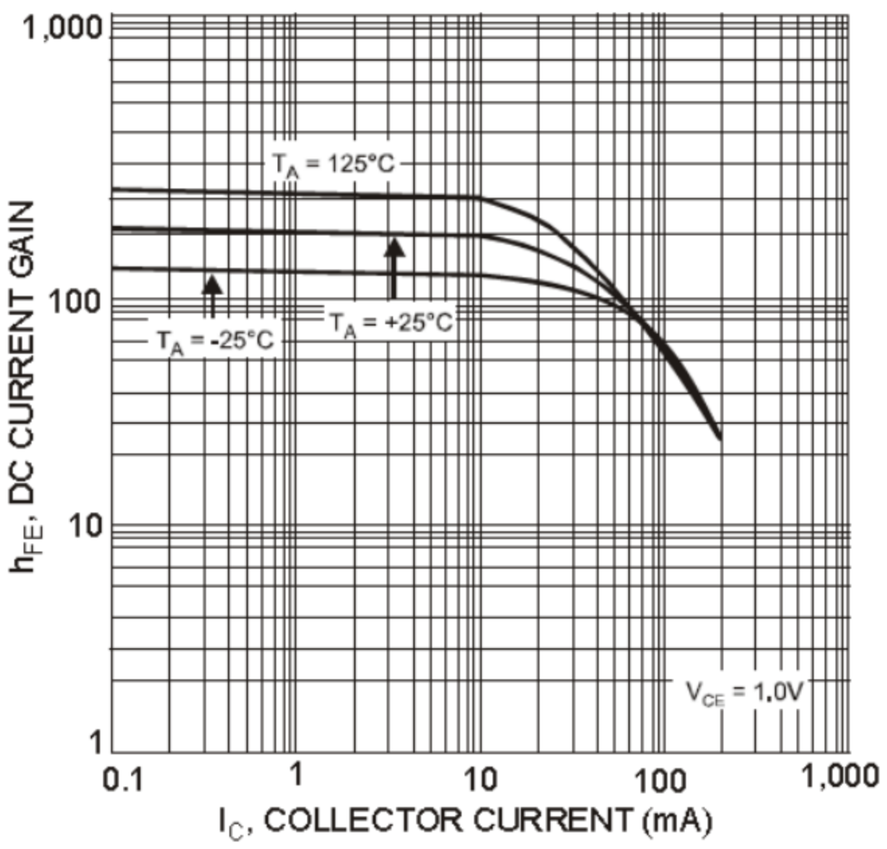


Fig. 3 Typical DC Current Gain vs. Collector Current

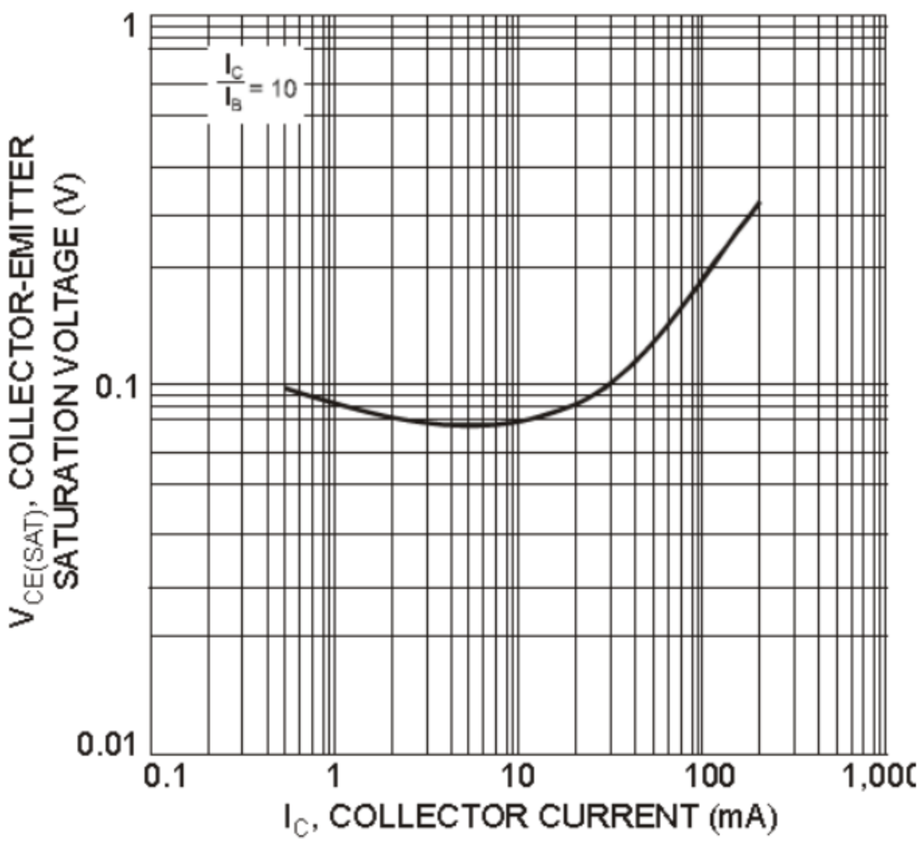


Fig. 4 Typical Collector-Emitter Saturation Voltage
vs. Collector Current

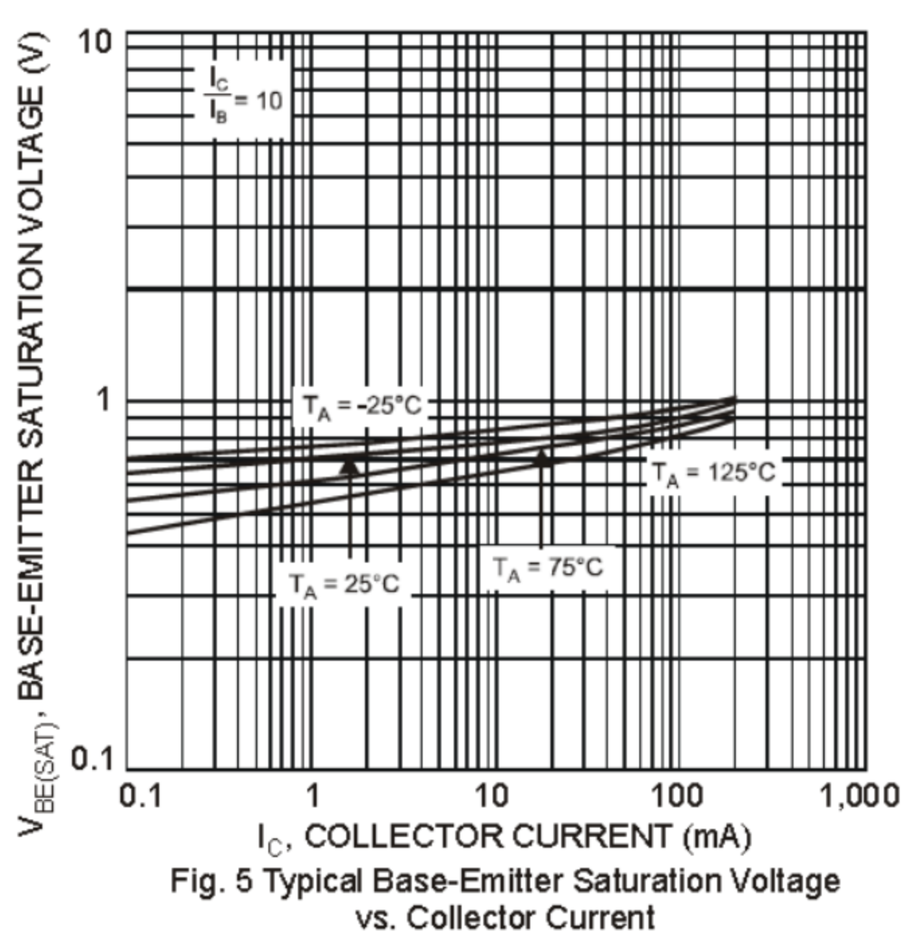


Fig. 5 Typical Base-Emitter Saturation Voltage
vs. Collector Current

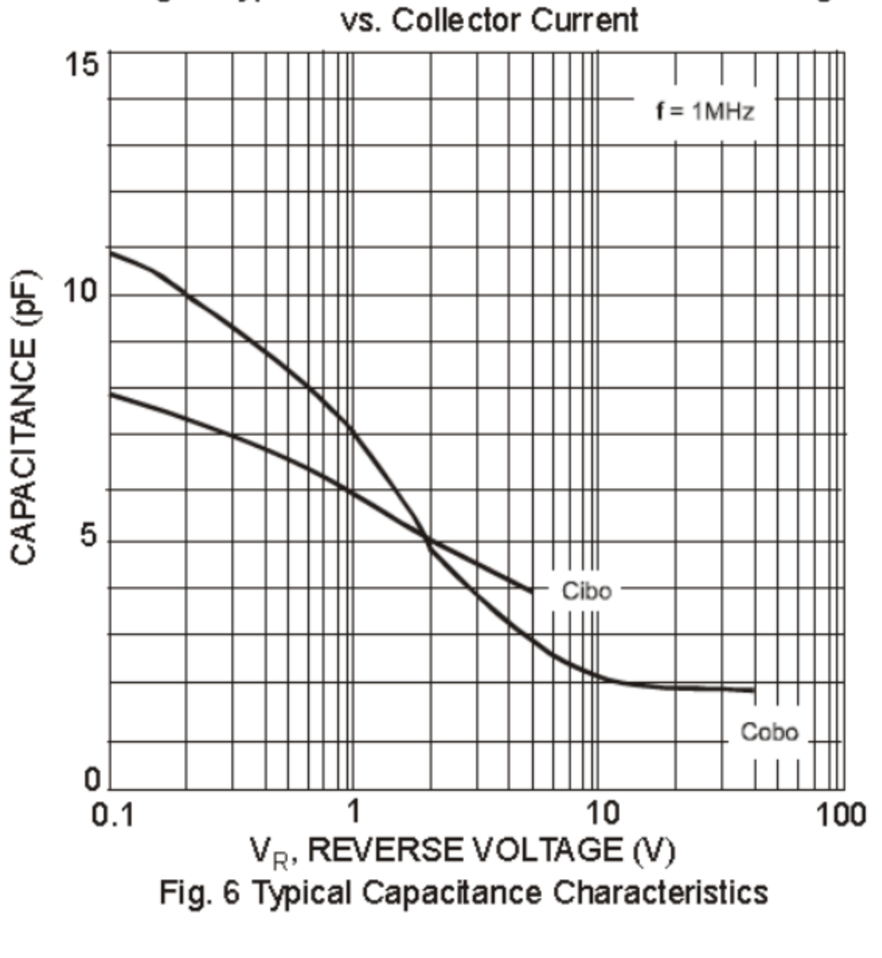
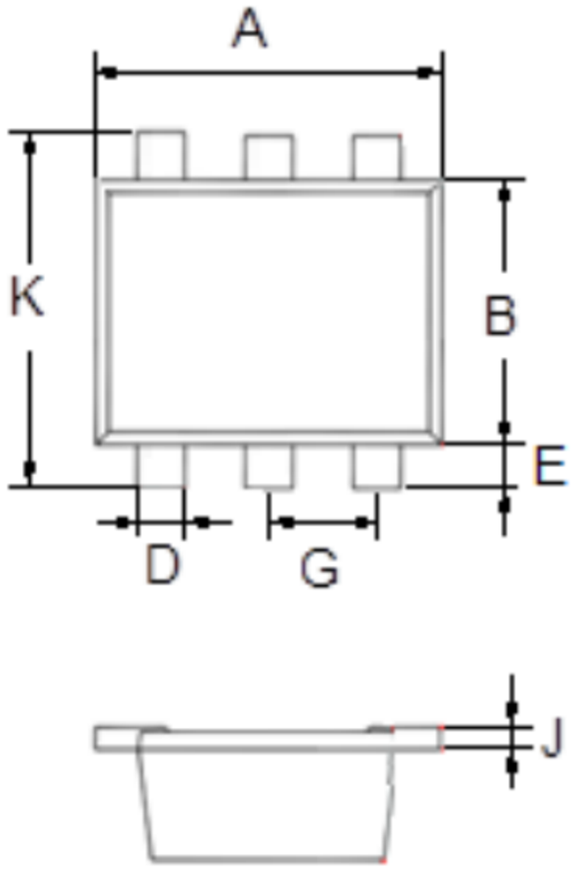


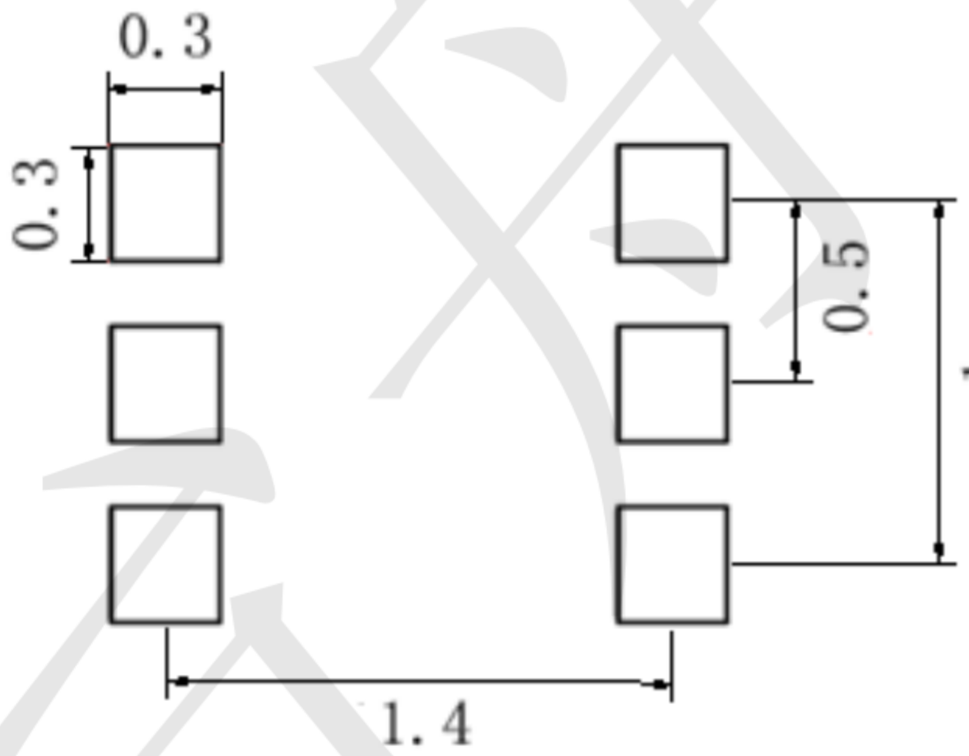
Fig. 6 Typical Capacitance Characteristics

Outline Drawing - SOT563 (unit: mm)



SOT-563		
Dimension	**Min.**	**Max.**
A	1.500	1.700
B	1.100	1.300
C	0.525	0.600
D	0.170	0.270
E	0.100	0.300
G	0.450	0.550
H	0.000	0.050
J	0.090	0.160
K	1.500	1.700

Mounting Pad Layout-SOT563 (unit: mm)



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