

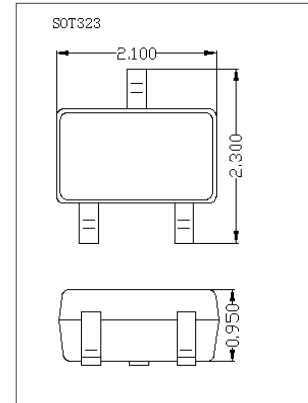
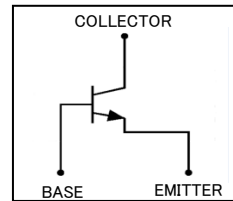
## DATA SHEET

### MMBT3904W

- ◇Epoxy Meets UL 94 V-0 Flammability Rating
- ◇Small Outline Surface Mount Package

Device Marking Code	
<b>MMBT3904W</b>	<b>K2N</b>

Equivalent Circuit



#### Maximum Ratings (Ta = 25 °C)

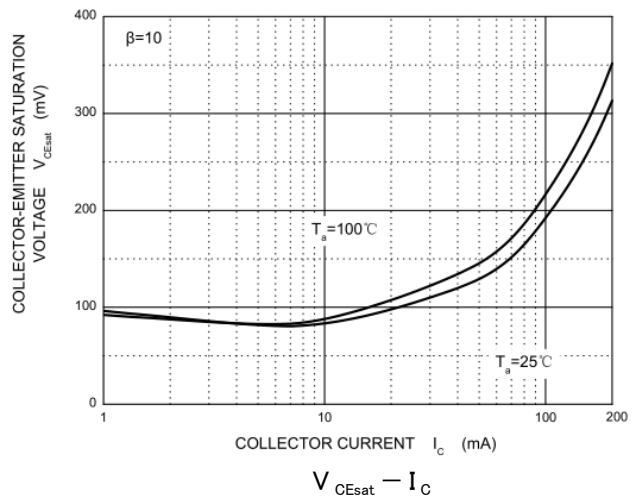
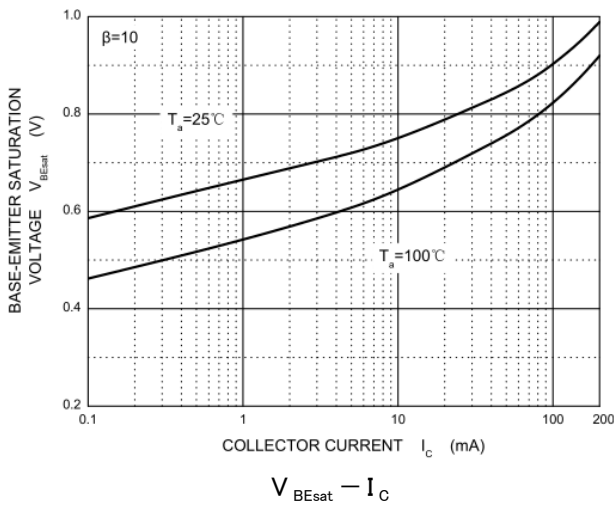
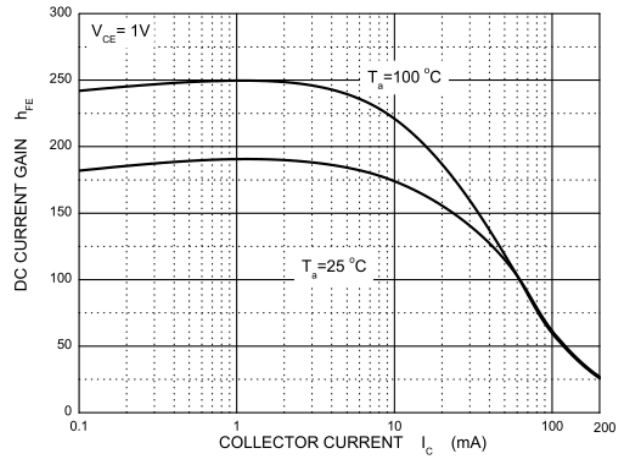
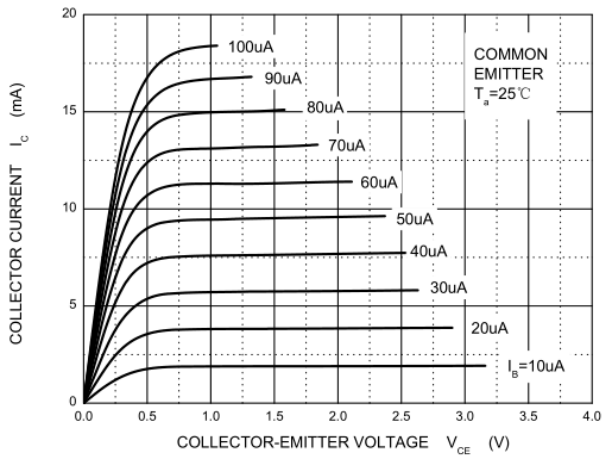
Symbol	Parameter	Value	Units
V <sub>CBO</sub>	Collector-Base Voltage	60	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	5	V
I <sub>C</sub>	Collector Current	200	mA
P <sub>C</sub>	Collector Power Dissipation	200	mW
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	625	°C/W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55 ~ +150	°C

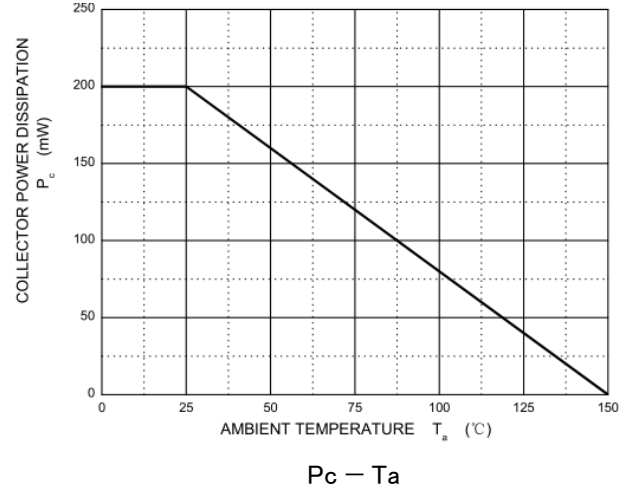
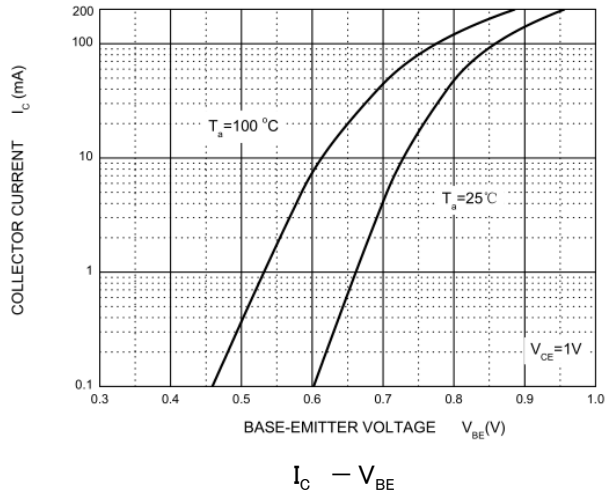
#### Electrical Characteristics (Ta = 25 °C)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> =10 μA, I <sub>E</sub> =0	60			V
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> =1mA, I <sub>B</sub> =0	40			V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> =10 μA, I <sub>C</sub> =0	5			V
I <sub>CBO</sub>	Collector Cut-Off Current	V <sub>CB</sub> =60V, I <sub>E</sub> =0			60	nA
I <sub>CEX</sub>	Collector Cut-Off Current	V <sub>CE</sub> =30V, I <sub>BE(off)</sub> =3V			50	nA
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> =1V, I <sub>C</sub> =100 μA	40			
		V <sub>CE</sub> =1V, I <sub>C</sub> =1mA	70			
		V <sub>CE</sub> =1V, I <sub>C</sub> =10mA	100		300	
		V <sub>CE</sub> =1V, I <sub>C</sub> =50mA	60			
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA			0.25	V
		I <sub>C</sub> =50mA, I <sub>B</sub> =5mA			0.3	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA			0.85	V
		I <sub>C</sub> =50mA, I <sub>B</sub> =5mA			0.95	V
f <sub>T</sub>	Transition Frequency	V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz	300			MHz

$C_{ob}$	Collector Output Capacitance	$V_{OB}=5V, I_E=0,$ $f=1MHz$			4	pF
$C_{ib}$	Collector Output Capacitance	$V_{EB}=0.5V, I_E=0,$ $f=1MHz$			8	pF
$t_d$	Delay time	$V_{CC}=3V, V_{BE(off)}=0.5V,$			35	nS
$t_r$	Delay time	$I_C=10mA, I_{B1}=1mA$			35	nS
$t_s$	Storage time	$V_{CC}=3V, I_C=10mA,$			225	nS
$t_f$	Fall time	$I_{B1}=I_{B2}=1mA$			75	nS

Typical Characteristics





ORDERING INFORMATION

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT3904W	SOT323	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

PACKAGE DIMENSIONS

Package outline : SOT323

TOP VIEW

SIDE VIEW

SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.900	1.000
A1	0.00	0.100
A2	0.900	1.000
b	0.200	0.400
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.400
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 REF.	
L1	0.260	0.450
$\theta$	0°	8°

FRONT VIEW

SOLDERING PATTERN

Notice:

- Lead plating: Pb free solder
- Lead thickness includes solder plating
- Other Tolerance:  $\pm 0.008$
- Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
- Unit: mm

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