



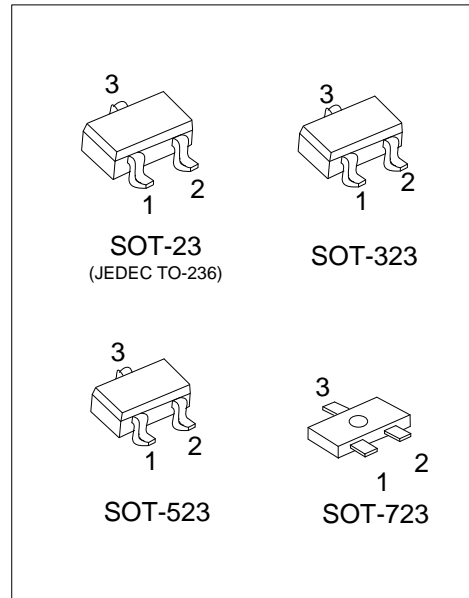
MMBT3904

NPN EPITAXIAL SILICON TRANSISTOR

GENERAL PURPOSE APPLICATION

FEATURES

- * Collector-Emitter Voltage: $V_{CE0}=40V$
- * Complementary to UTC MMBT3906



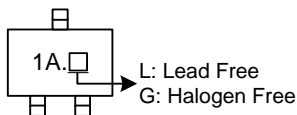
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT3904L-AE3-R	MMBT3904G-AE3-R	SOT-23	B	E	C	Tape Reel
MMBT3904L-AL3-R	MMBT3904G-AL3-R	SOT-323	B	E	C	Tape Reel
MMBT3904L-AN3-R	MMBT3904G-AN3-R	SOT-523	B	E	C	Tape Reel
MMBT3904L-AQ3-R	MMBT3904G-AQ3-R	SOT-723	B	E	C	Tape Reel

Note: Pin Assignment: B: Base E: Emitter C: Collector

<p>MMBT3904G-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523 AQ3: SOT-723 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



MMBT3904

NPN EPITAXIAL SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V _{CBO}	60	V
Collector-Emitter Voltage		V _{CEO}	40	V
Emitter-Base Voltage		V _{EBO}	6	V
Collector Current		I _C	200	mA
Collector Dissipation	SOT-23	P _C	0.35	W
	SOT-323		0.3	W
	SOT-523		0.27	W
	SOT-723		0.13	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23	θ _{JA}	360	°C/W
	SOT-323		420	°C/W
	SOT-523		450	°C/W
	SOT-723		470	°C/W

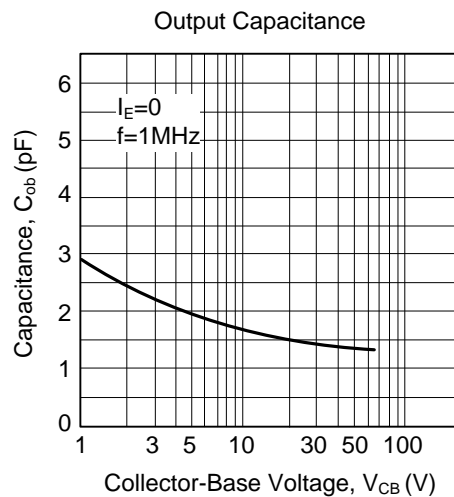
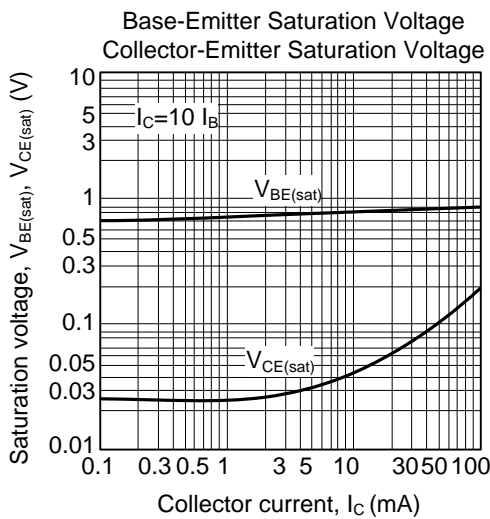
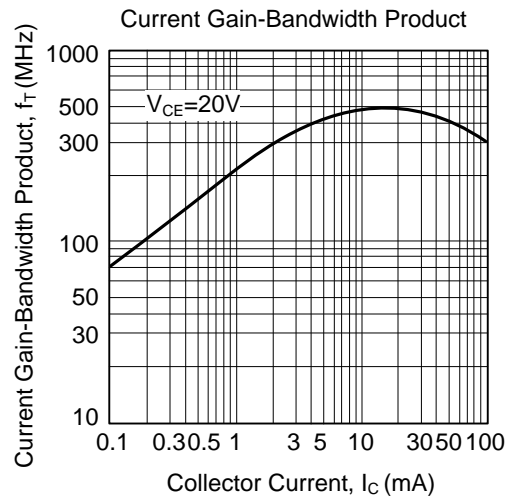
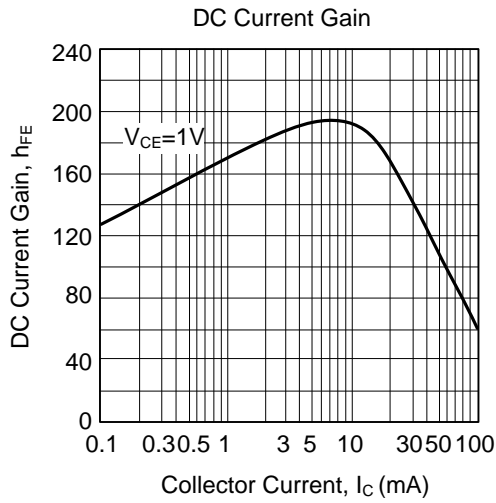
Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V _{CBO}	I _C =10μA, I _E =0	60			V
Collector-Emitter Breakdown Voltage	V _{CEO}	I _C =1mA, I _B =0 (Note)	40			V
Emitter-Base Breakdown Voltage	V _{EBO}	I _E =10μA, I _C =0	6			V
Collector-Emitter Saturation Voltage (Note)	V _{CE(SAT)1}	I _C =10mA, I _B =1mA			0.2	V
	V _{CE(SAT)2}	I _C =50mA, I _B =5mA			0.3	V
Base-Emitter Saturation Voltage (Note)	V _{BE(SAT)1}	I _C =10mA, I _B =1mA	0.65		0.85	V
	V _{BE(SAT)2}	I _C =50mA, I _B =5mA			0.95	V
Collector Cut-Off Current	I _{CEX}	V _{CE} =30V, V _{EB} =3V			50	nA
Base Cut-Off Current	I _{BL}	V _{CE} =30V, V _{EB} =3V			50	nA
DC Current Gain (Note)	h _{FE1}	V _{CE} =1V, I _C =0.1mA	40			
	h _{FE2}	V _{CE} =1V, I _C =1mA	70			
	h _{FE3}	V _{CE} =1V, I _C =10mA	100		300	
	h _{FE4}	V _{CE} =1V, I _C =50mA	60			
	h _{FE5}	V _{CE} =1V, I _C =100mA	30			
Current Gain Bandwidth Product	f _T	V _{CE} =20V, I _C =10mA, f=100MHz	300			MHz
Output Capacitance	C _{OB}	V _{CB} =5V, I _E =0, f=1MHz			4	pF
Turn On Time	t _{ON}	V _{CC} =3V, V _{BE} =0.5V, I _C =10mA, I _{B1} =1mA			70	ns
Turn Off Time	t _{OFF}	I _{B1} =I _{B2} =1mA			250	ns

Note: Pulse test: P_W ≤ 300μs, Duty Cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS



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