



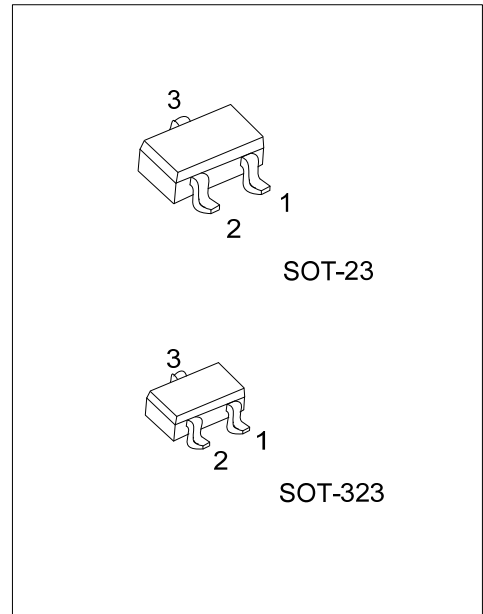
MMBT3904

NPN SILICON TRANSISTOR

GENERAL PURPOSE APPLICATION

FEATURES

- * Collector-Emitter Voltage: $V_{CE0}=40V$
- * Collector Dissipation: $P_D(MAX)=350mW$
- * Complementary to UTC MMBT3906



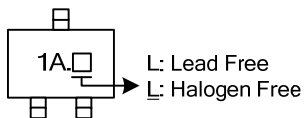
Lead-free: MMBT3904L
Halogen-free: MMBT3904G

ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free Plating	Halogen Free		1	2	3	
MMBT3904-AE3-R	MMBT3904L-AE3-R	MMBT3904G-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT3904-AL3-R	MMBT3904L-AL3-R	MMBT3904G-AL3-R	SOT-323	E	B	C	Tape Reel

<p>MMBT3904L-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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MARKING



■ ABSOLUTE MAXIMUM RATING (Ta=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	P _C	350	mW
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

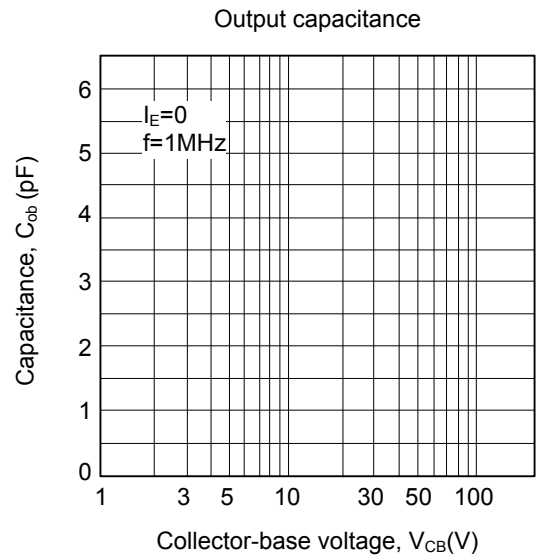
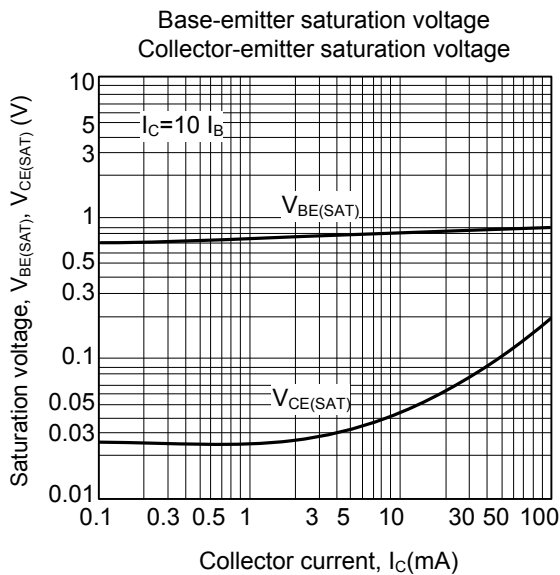
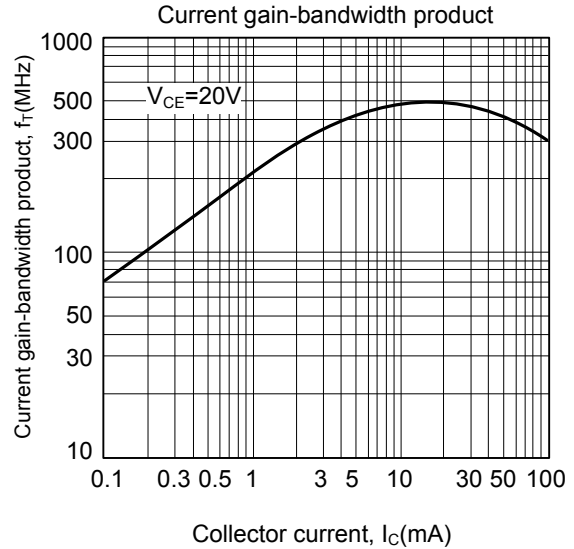
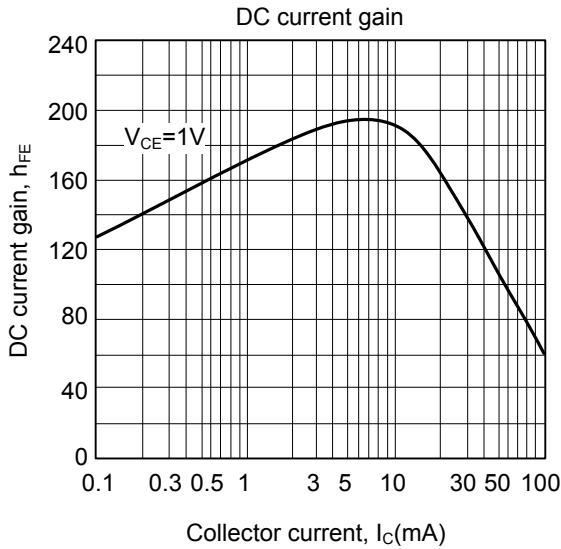
Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (Ta=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 (note)	V _{CEO}	I _C =1mA, I _B =0	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: PW<=300μs, Duty Cycle<=2%

TYPICAL CHARACTERISTICS



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