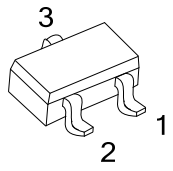
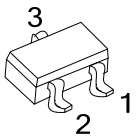
MMBT3904

NPN EPITAXIAL SILICON TRANSISTOR

GENERAL PURPOSE APPLIATION



SOT-23



SOT-323

■ FEATURES

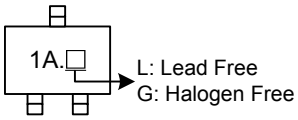
* Collector-Emitter Voltage: V_{CEO}=40V
* Collector Dissipation: $P_{D(MAX)}$=350mW
* Complementary to UTC MMBT3906

■ ORDERING INFORMATION

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

MMBT3904L-AE3-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) G: Halogen Free, L: Lead Free

■ 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.

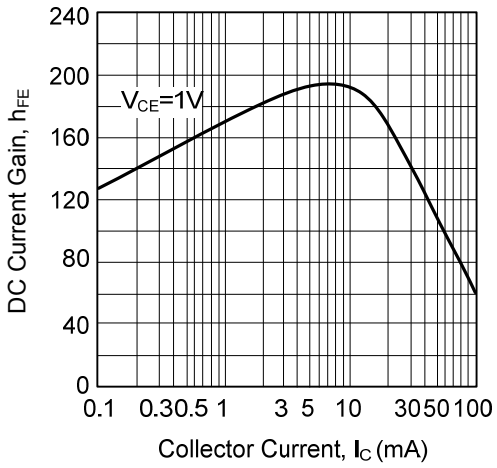
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

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)	$h_{FE}1$	V_{CE}=1V, I_C=0.1mA	40			
	$h_{FE}2$	V_{CE}=1V, I_C=1mA	70			
	$h_{FE}3$	V_{CE}=1V, I_C=10mA	100		300	
	$h_{FE}4$	V_{CE}=1V, I_C=50mA	60			
	$h_{FE}5$	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=1_B2=1mA			250	ns

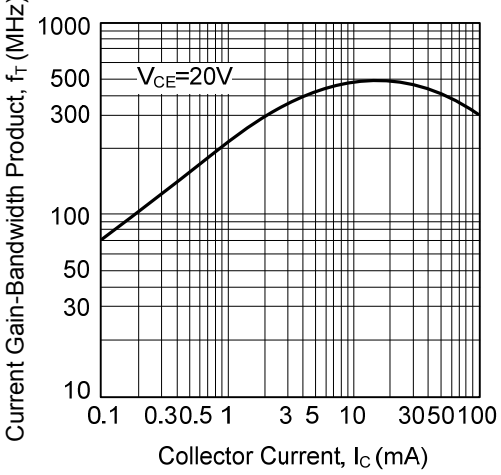
Note: Pulse test: PW<=300μs, Duty Cycle<=2%

■ TYPICAL CHARACTERISTICS

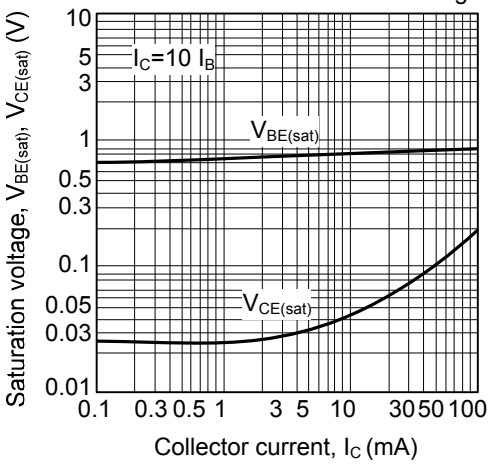
DC Current Gain



Current Gain-Bandwidth Product



Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage



Output Capacitance