



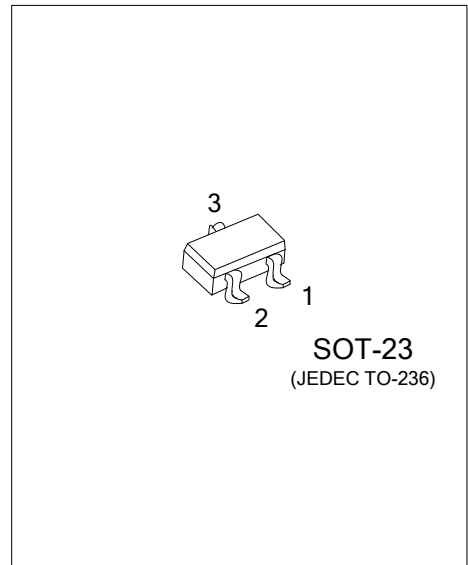
# MMBT1616/A

## NPN EPITAXIAL SILICON TRANSISTOR

### NPN EPITAXIAL SILICON TRANSISTOR

#### DESCRIPTION

- \* Audio frequency power amplifier
- \* Medium speed switching



#### ORDERING INFORMATION

Order Number	Package	Pin Assignment			Packing
		1	2	3	
MMBT1616G-x-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT1616AG-x-AE3-R	SOT-23	E	B	C	Tape Reel

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

<p>MMBT1616G-x-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of <math>h_{FE1}</math> (4) L: Lead Free, G: Halogen Free and Lead Free</p>
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#### MARKING

UTC MMBT1616	UTC MMBT1616A

# MMBT1616/A

## NPN EPITAXIAL SILICON TRANSISTOR

### ■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Collector to Base Voltage	MMBT1616	60	V	
	MMBT1616A	120		
Collector to Emitter Voltage	MMBT1616	50	V	
	MMBT1616A	60		
Emitter to Base Voltage	V <sub>EBO</sub>	6	V	
Collector Current	DC	I <sub>C</sub>	1	A
Collector Current	Pulse	I <sub>C</sub>	2	A
Total Power Dissipation (T <sub>A</sub> =25°C)	P <sub>D</sub>	350	mW	
Junction Temperature	T <sub>J</sub>	+150	°C	
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C	

Note (\*) Pulse width ≤ 10ms, Duty cycle < 50%

1. 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.

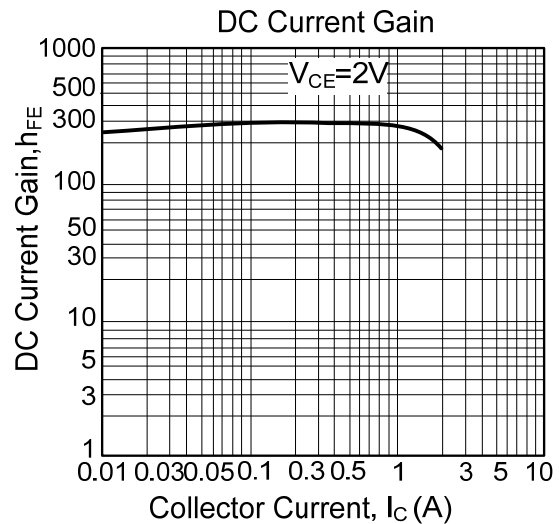
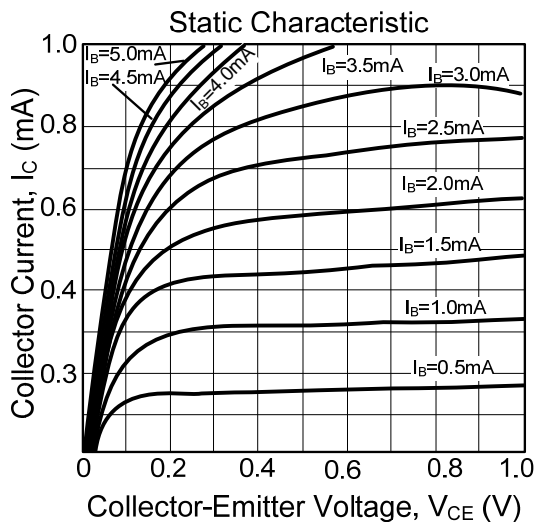
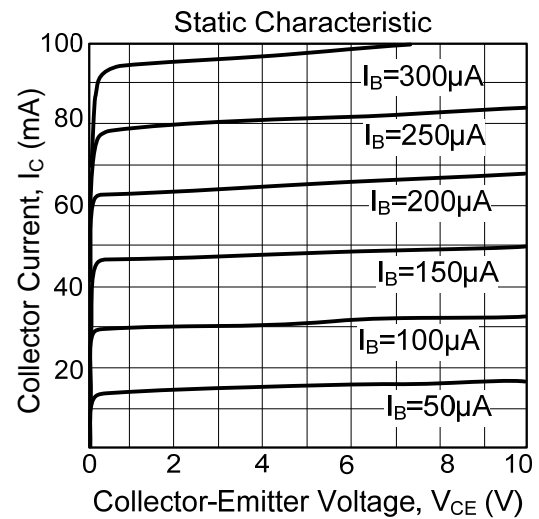
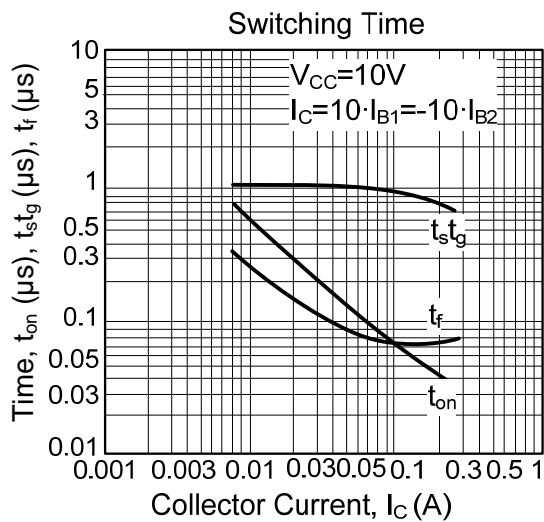
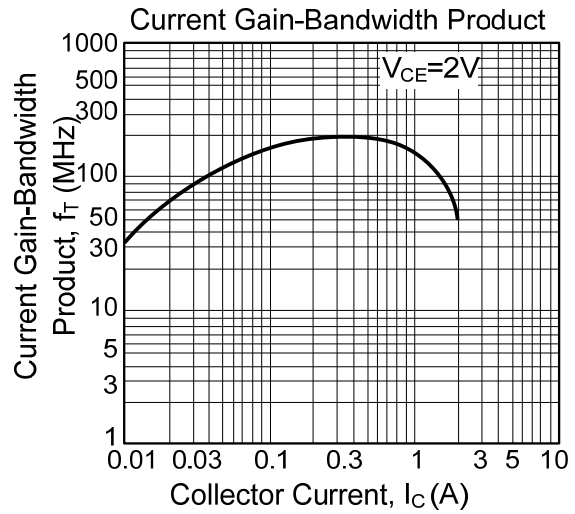
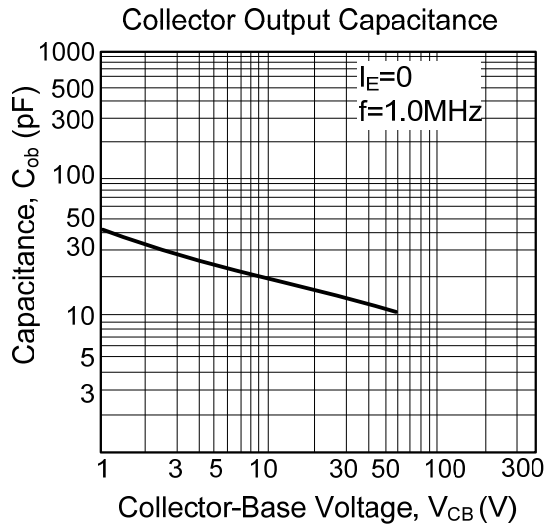
### ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =60V			100	nA
Emitter Cut-Off Current	I <sub>EBO</sub>	V <sub>EB</sub> =6V			100	nA
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =50mA		0.15	0.3	V
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =50mA		0.9	1.2	V
Base Emitter On Voltage	V <sub>BE(ON)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =50mA	600	640	700	mV
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA	135		600	
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =1A	81			
Current Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA	100	160		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz			19	pF
Turn On Time	t <sub>on</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =100mA		0.07		us
Storage Time	t <sub>s</sub>	I <sub>B1</sub> =-I <sub>B2</sub> =10mA		0.95		us
Fall Time	t <sub>f</sub>	V <sub>BE(off)</sub> =-2~-3V		0.07		us

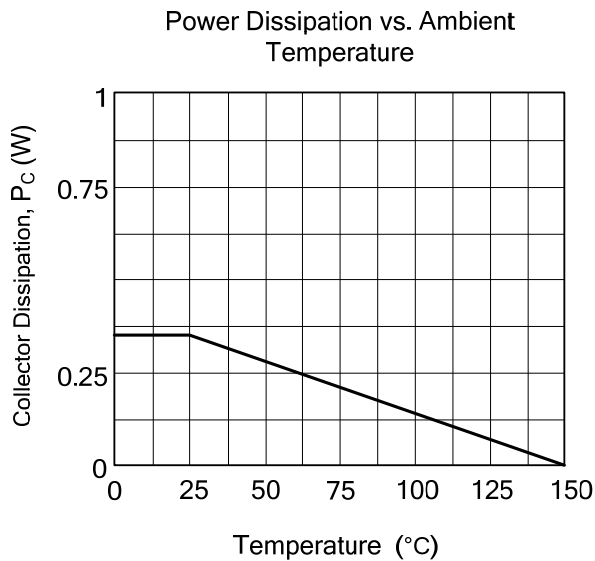
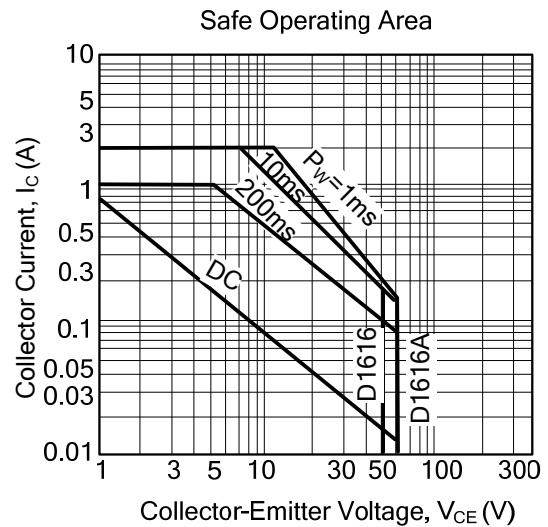
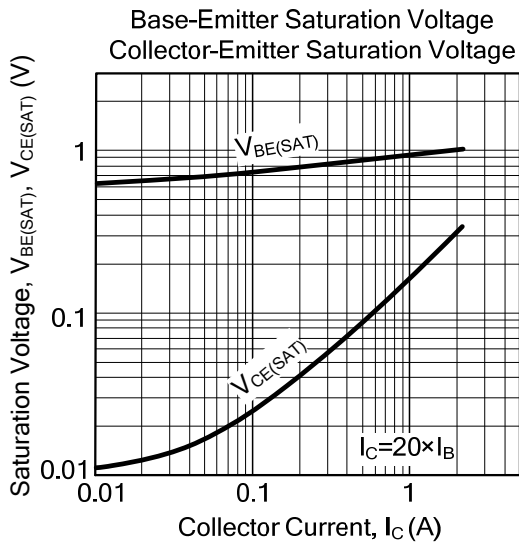
### ■ CLASSIFICATION OF h<sub>FE1</sub>

RANK	Y	G	L
h <sub>FE1</sub>	135-270	200-400	300-600

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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