MMBT1616/A

NPN EPITAXIAL SILICON TRANSISTOR

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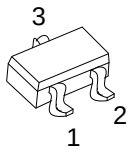


SOT-23
(JEDEC TO-236)

■ DESCRIPTION

* Audio frequency power amplifier
* Medium speed switching

■ ORDERING INFORMATION

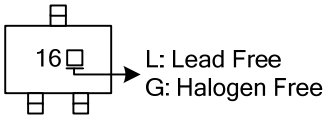
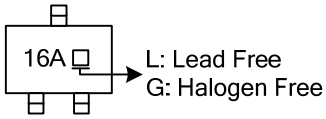
Order Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT1616L-x-AE3-R	MMBT1616G-x-AE3-R	SOT-23	B	E	C	Tape Reel
MMBT1616AL-x-AE3-R	MMBT1616AG-x-AE3-R	SOT-23	B	E	C	Tape Reel

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

MMBT1616G-x-AE3-R

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

■ MARKING

UTC MMBT1616	UTC MMBT1616A
	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector to Base Voltage	MMBT1616	V_{CBO}	60	V
	MMBT1616A		120	
Collector to Emitter Voltage	MMBT1616	V_{CEO}	50	V
	MMBT1616A		60	
Emitter to Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	1	A
Collector Current	Pulse	I_C	2	A
Total Collector Dissipation		P_D	350	mW
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 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.
2. Pulse width ≤ 10ms, Duty cycle < 50%.

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

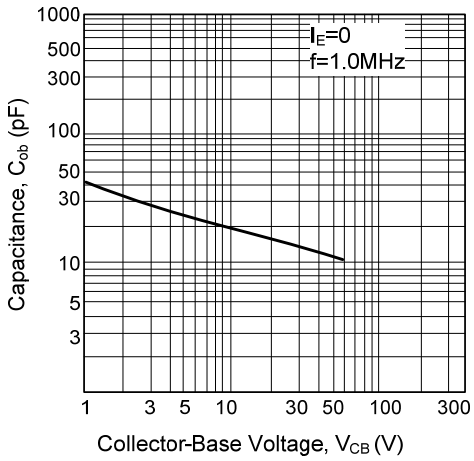
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-Off Current	I_{CBO}	V_{CB}=60V			100	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB}= 6V			100	nA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=1A, I_B=50mA		0.15	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=1A, I_B=50mA		0.9	1.2	V
Base Emitter On Voltage	$V_{BE(ON)}$	V_{CE}=2V, I_C=50mA	600	640	700	mV
DC Current Gain	h_{FE1}	V_{CE}=2V, I_C=100mA	135		600	
	h_{FE2}	V_CE=2V, I_C=1A	81			
Current Gain Bandwidth Product	f_T	V_{CE}=2V, I_C=100mA	100	160		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz			19	pF
Turn On Time	t_{on}	V_{CE}=10V, I_C=100mA		0.07		us
Storage Time	t_s	I_{B1}=-I_{B2}=10mA		0.95		us
Fall Time	t_f	$V_{BE(off)}$=-2～-3V		0.07		us

■ CLASSIFICATION OF h_{FE1}

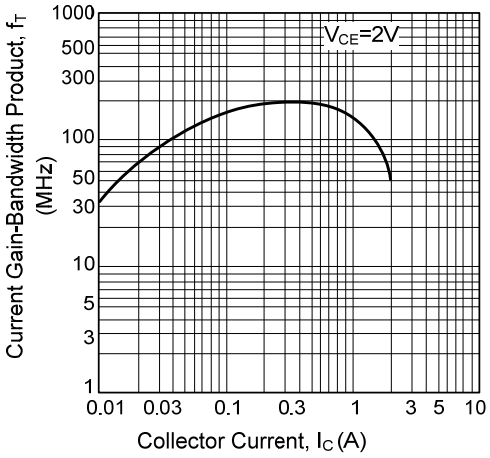
RANK	Y	G	L
h_{FE1}	135-270	200-400	300-600

■ TYPICAL CHARACTERISTICS

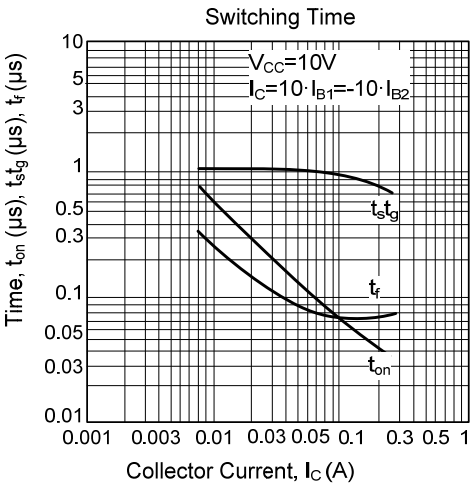
Collector Output Capacitance



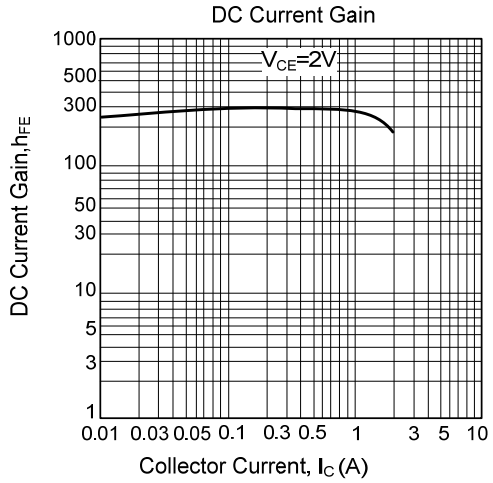
Current Gain-Bandwidth Product



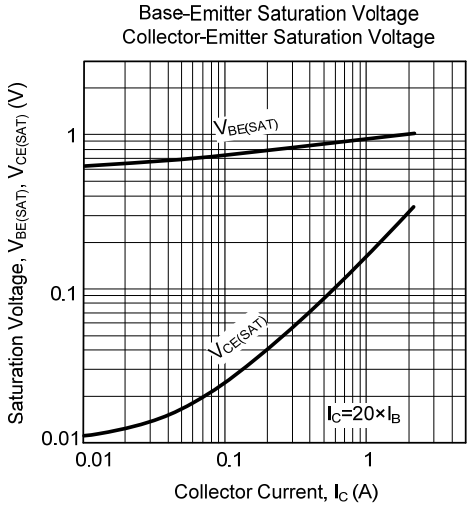
Switching Time



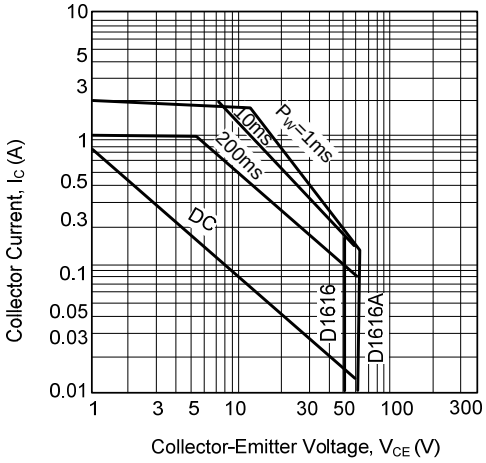
DC Current Gain



Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage



Safe Operating Area



■ TYPICAL CHARACTERISTICS