



UNISONIC TECHNOLOGIES CO., LTD

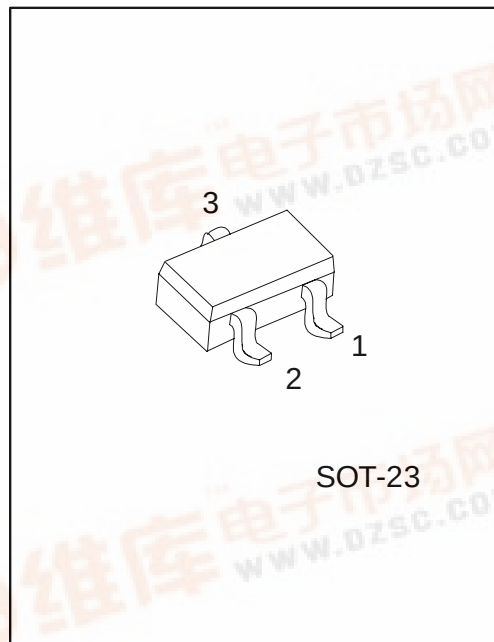
MMBT1616/A

NPN SILICON TRANSISTOR

NPN EPITAXIAL SILICON TRANSISTOR

DESCRIPTION

- * Audio frequency power amplifier
- * Medium speed switching



*Pb-free plating product number:
MMBT1616L/MMBT16AL

ORDERING INFORMATION

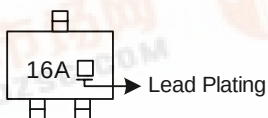
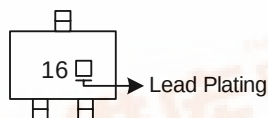
Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
MMBT1616-x-AE3-R	MMBT1616L-x-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT1616A-x-AE3-R	MMBT1616AL-x-AE3-R	SOT-23	E	B	C	Tape Reel

MMBT1616L-x-AE3-R (1)Packing Type (2)Package Type (3)Rank (4)Lead Plating	(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of h_{FE1} (4) L: Lead Free Plating, Blank: Pb/Sn
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MARKING

UTC MMBT1616

UTC MMBT1616A



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage	1616	V_{CBO}	60	V
	1616A		120	V
Collector-Emitter Voltage	1616	V_{CEO}	50	V
	1616A		60	V
Emitter to Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	1	A
	Pulse*	I_C	2	A
Total Power Dissipation ($T_a=25^\circ\text{C}$)		P_C	350	mW
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note (*) Pulse width $\leq$ 10ms, Duty cycle $\leq$ 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.

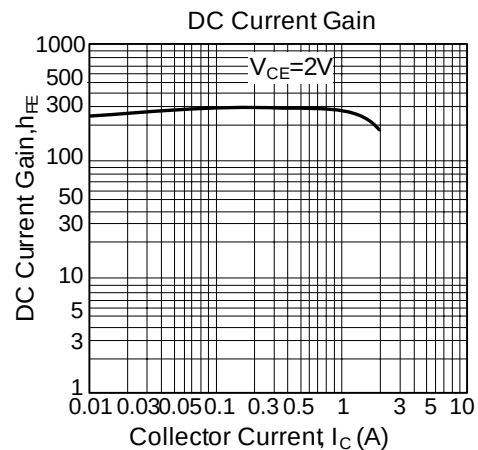
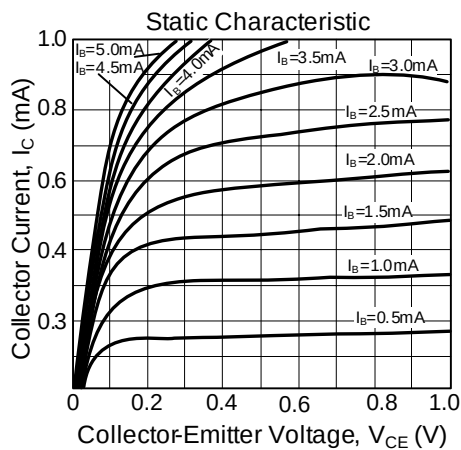
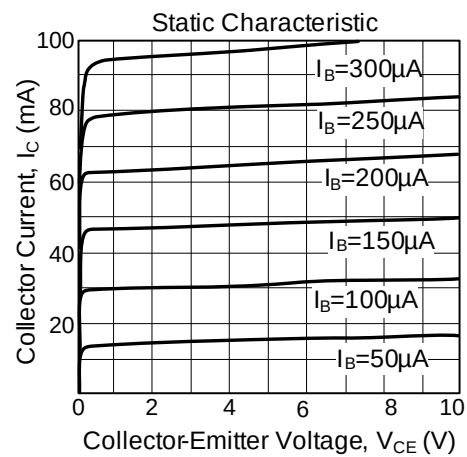
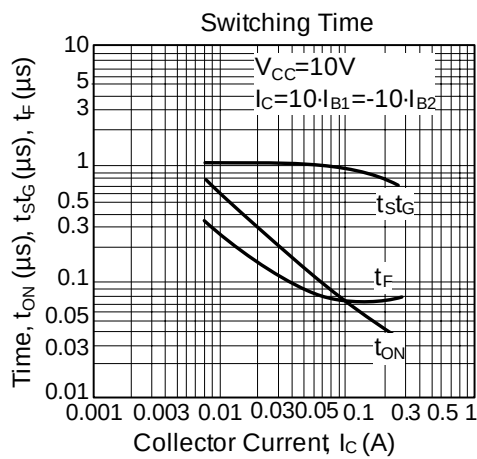
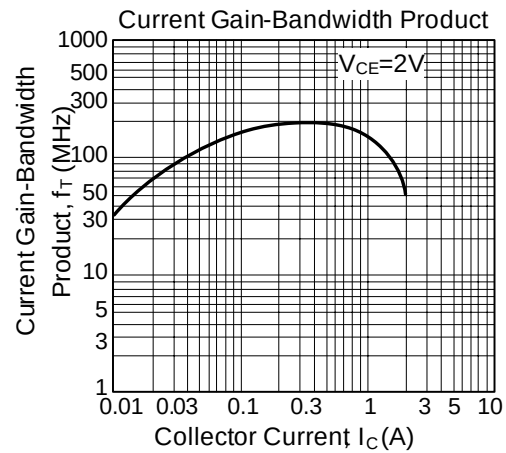
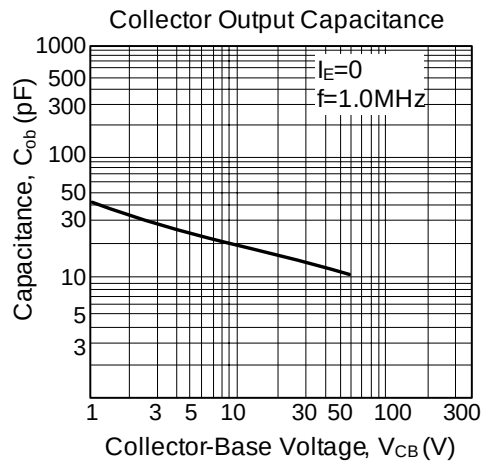
■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60\text{V}$			100	nA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=6\text{V}$			100	nA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1\text{A}$, $I_B=50\text{mA}$		0.15	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=1\text{A}$, $I_B=50\text{mA}$		0.9	1.2	V
Base Emitter On Voltage	$V_{BE(ON)}$	$V_{CE}=2\text{V}$, $I_C=50\text{mA}$	600	640	700	mV
DC Current Gain	h_{FE1}	$V_{CE}=2\text{V}$, $I_C=100\text{mA}$	135		600	
	h_{FE2}	$V_{CE}=2\text{V}$, $I_C=1\text{A}$	81		400	
Current Gain Bandwidth Product	f_T	$V_{CE}=2\text{V}$, $I_C=100\text{mA}$	100	160		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}$, $f=1\text{MHz}$			19	pF
Turn On Time	t_{ON}	$V_{CE}=10\text{V}$, $I_C=100\text{mA}$		0.07		us
Storage Time	t_S	$I_{B1}=-I_{B2}=10\text{mA}$		0.95		us
Fall Time	t_F	$V_{BE(OFF)}=-2 \sim -3\text{V}$		0.07		us

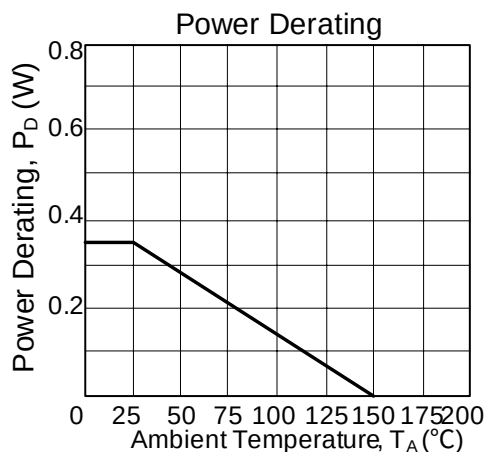
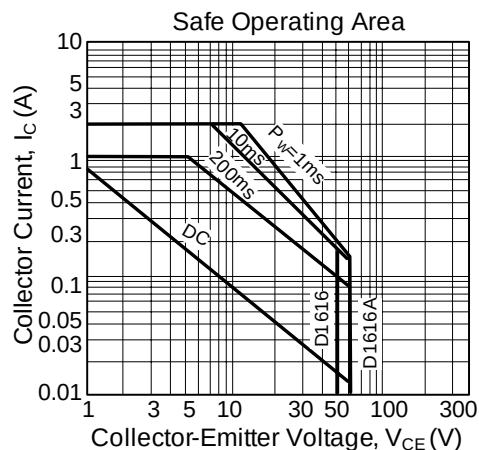
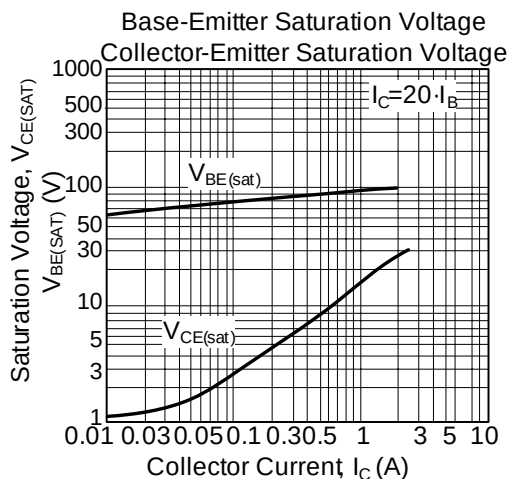
■ CLASSIFICATION OF h_{FE1}

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

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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