



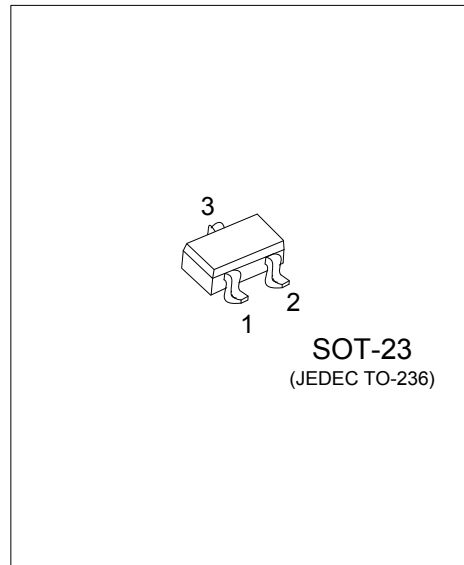
MMBTA44/45

NPN SILICON TRANSISTOR

HIGH VOLTAGE TRANSISTORS

■ **FEATURES**

- *Collector-Emitter voltage: $V_{CE0}=400V$ (UTC **MMBTA44**)
 $V_{CE0}=350V$ (UTC **MMBTA45**)
- *Collector current up to 300mA
- *Complement to UTC **MMBTA94/93**
- *Power Dissipation: $P_D(\max)=350mW$



■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBTA44L-AE3-R	MMBTA44G-AE3-R	SOT-23	B	E	C	Tape Reel
MMBTA45L-AE3-R	MMBTA45G-AE3-R	SOT-23	B	E	C	Tape Reel

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

<p>MMBTA44G-AE3-R</p>	<p>(1)Packing Type (1) R: Tape Reel</p> <p>(2)Package Type (2) AE3: SOT-23</p> <p>(3)Green Package (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ **MARKINGS**

MMBTA44	MMBTA45

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage	MMBTA44	V_{CBO}	500	V
	MMBTA45		400	V
Collector-Emitter Voltage	MMBTA44	V_{CEO}	400	V
	MMBTA45		350	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current		I_C	300	mA
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	350	mW
	$T_C=25^\circ\text{C}$		1.5	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-40 ~ +150	$^\circ\text{C}$

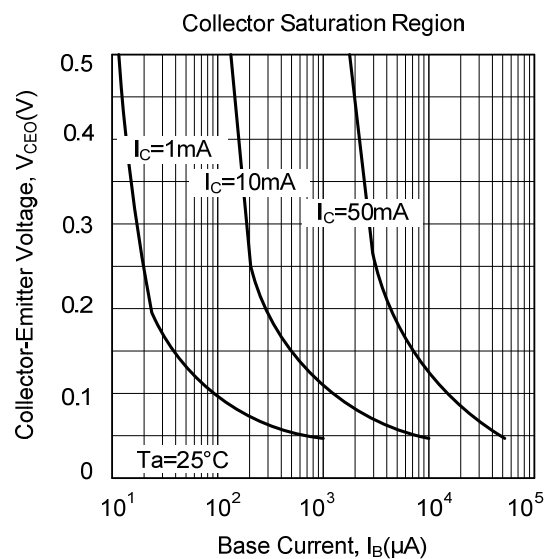
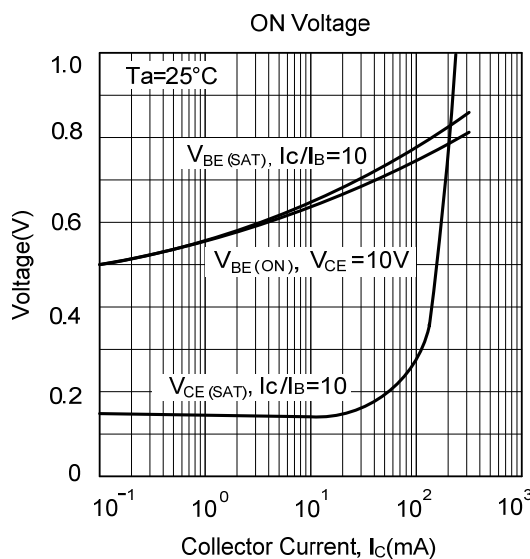
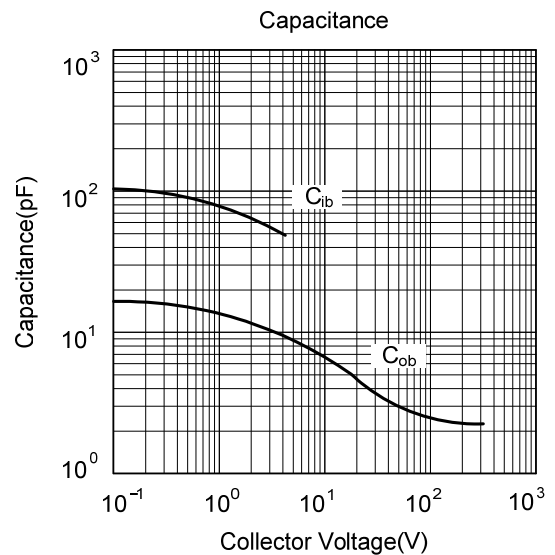
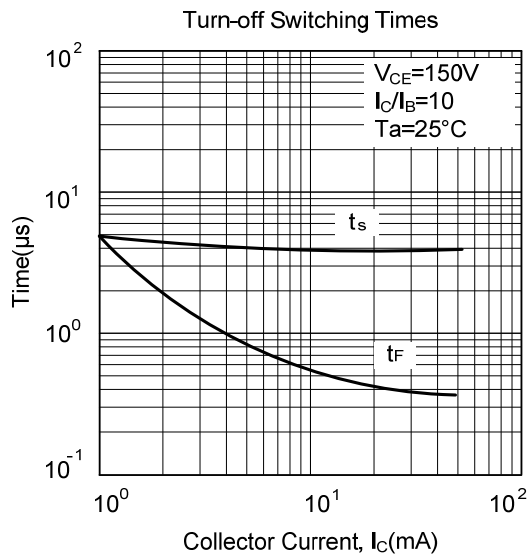
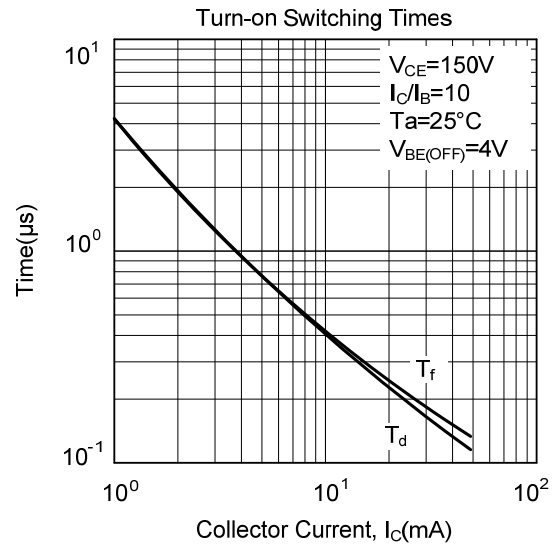
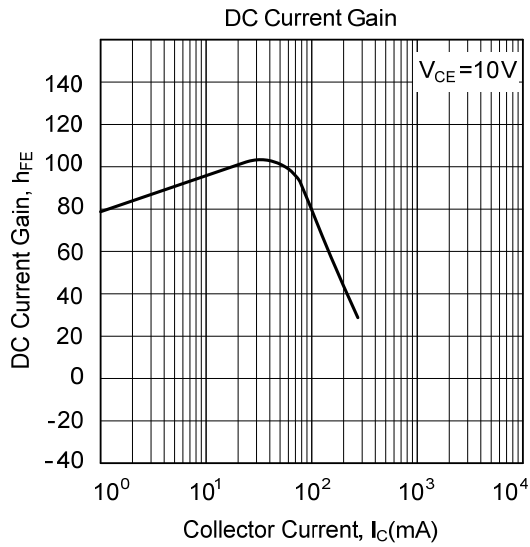
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

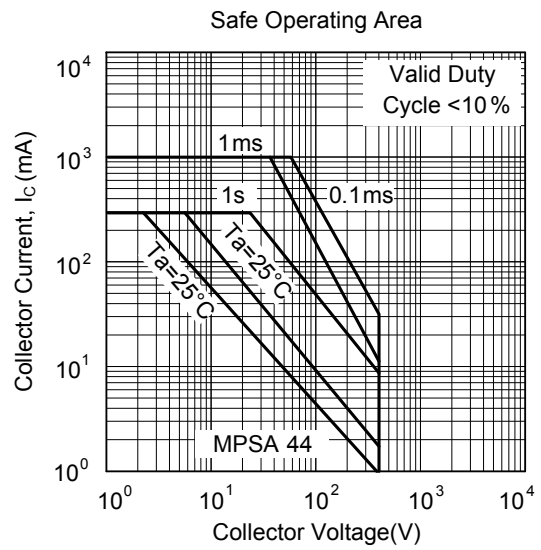
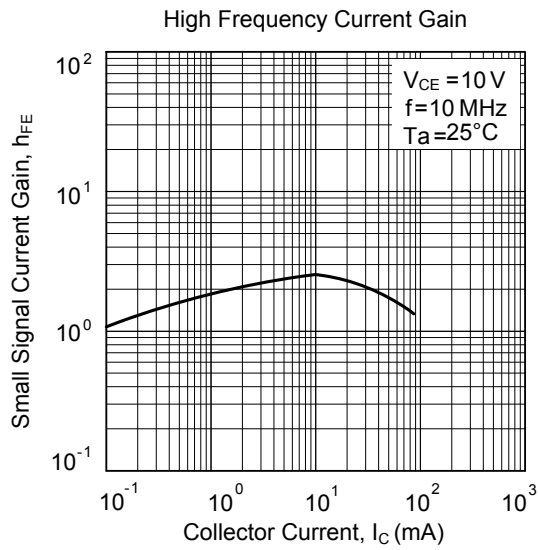
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	MMBTA44	BV_{CBO}	$I_C=100\mu\text{A}, I_B=0$	500			V
	MMBTA45			400			V
Collector-Emitter Breakdown Voltage	MMBTA44	BV_{CEO}	$I_C=1\text{mA}, I_B=0$	400			V
	MMBTA45			350			V
Emitter-Base Breakdown Voltage		BV_{EBO}	$I_E=100\mu\text{A}, I_C=0$	6			V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	$I_C=1\text{mA}, I_B=0.1\text{mA}$			0.4	V
			$I_C=10\text{mA}, I_B=1\text{mA}$			0.5	V
			$I_C=50\text{mA}, I_B=5\text{mA}$			0.75	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			0.75	V
Collector Cut-off Current	MMBTA44	I_{CBO}	$V_{CB}=400\text{V}, I_E=0$			0.1	μA
	MMBTA45		$V_{CB}=320\text{V}, I_E=0$			0.1	μA
Collector Cut-off Current	MMBTA44	I_{CES}	$V_{CE}=400\text{V}, I_B=0$			0.5	μA
	MMBTA45		$V_{CE}=320\text{V}, I_B=0$			0.5	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			0.1	μA
DC Current Gain (Note)		h_{FE1}	$V_{CE}=10\text{V}, I_C=1\text{mA}$	40			
			$V_{CE}=10\text{V}, I_C=10\text{mA}$	50		240	
			$V_{CE}=10\text{V}, I_C=50\text{mA}$	45			
			$V_{CE}=10\text{V}, I_C=100\text{mA}$	40			
Current Gain Bandwidth Product		f_T	$V_{CE}=20\text{V}, I_C=10\text{mA}$ $f=100\text{MHz}$	50			MHz
Output Capacitance		C_{ob}	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$			7	pF

Note: Pulse test: Pulse Width < 300 μs , Duty Cycle < 2%.

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(cont.)



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