



MMBTA44/45

NPN SILICON TRANSISTOR

HIGH VOLTAGE TRANSISTORS

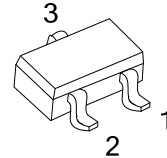
FEATURES

*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: $P_D(\max)=350mW$

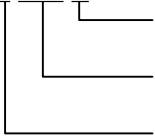


SOT-23

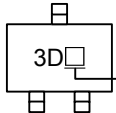
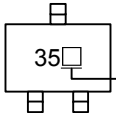
Lead-free: MMBTA44L/MMBTA45L
Halogen-free: MMBTA44G/MMBTA45G

ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free Plating	Halogen Free		1	2	3	
MMBTA44-AE3-R	MMBTA44L-AE3-R	MMBTA44G-AE3-R	SOT-23	E	B	C	Tape Reel
MMBTA45-AE3-R	MMBTA45L-AE3-R	MMBTA45G-AE3-R	SOT-23	E	B	C	Tape Reel

<p>MMBTA44L-AE3-R</p>  <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>		<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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MARKINGS

MMBTA44	MMBTA45
 <p>L: Lead Free G: Halogen Free</p>	 <p>L: Lead Free G: Halogen Free</p>

■ 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.

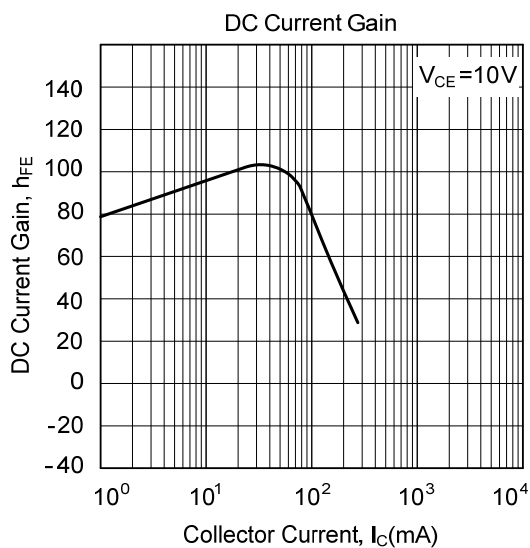
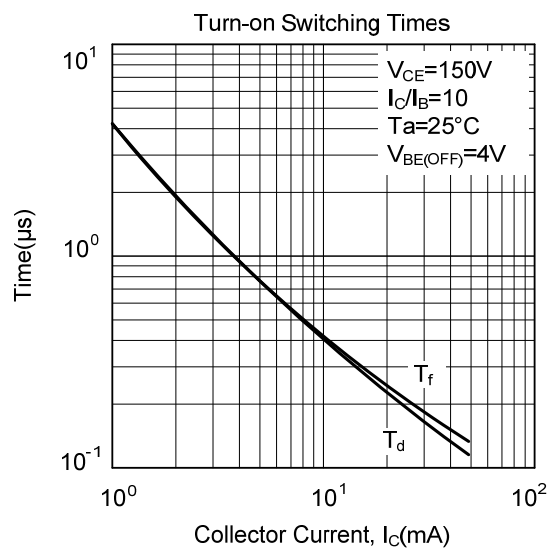
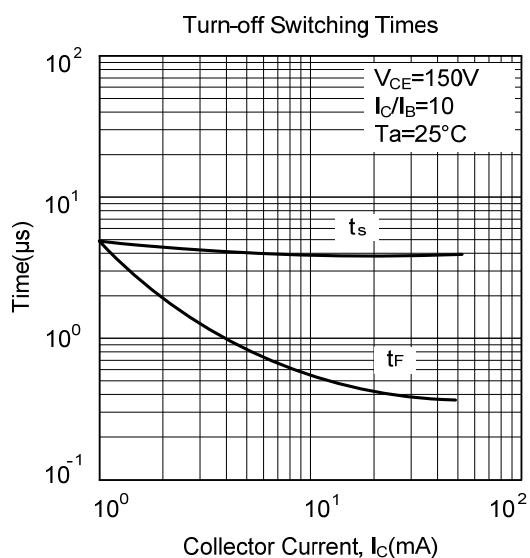
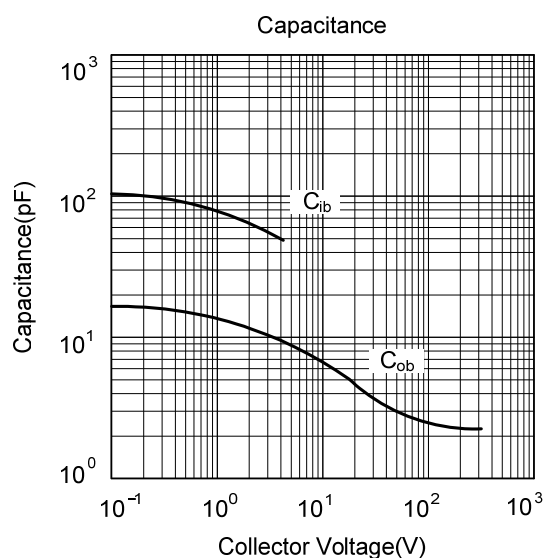
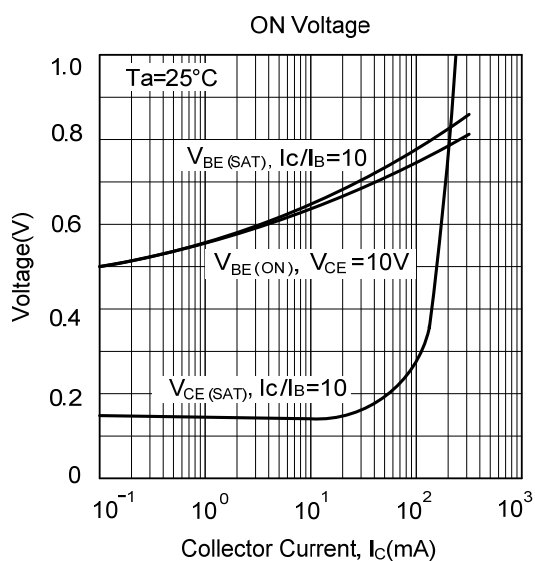
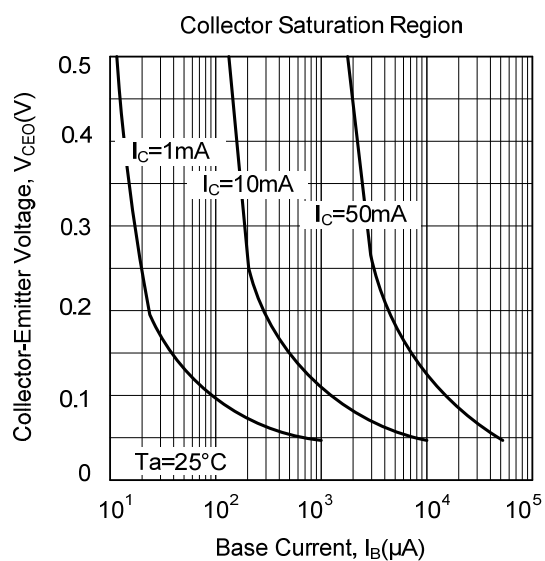
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

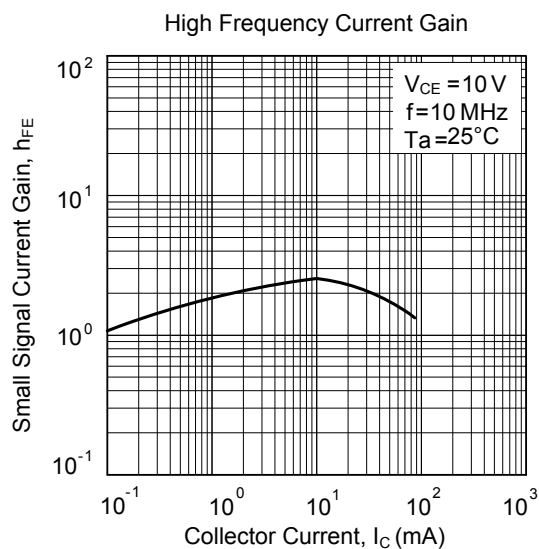
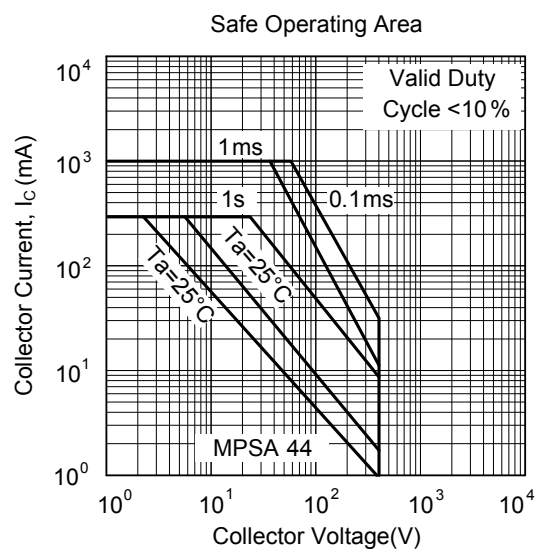
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	MMBTA44	BV _{CBO}	I _C =100μA, I _B =0	500			V
	MMBTA45			400			V
Collector-Emitter Breakdown Voltage	MMBTA44	BV _{CEO}	I _C =1mA, I _B =0	400			V
	MMBTA45			350			V
Emitter-Base Breakdown Voltage		BV _{EBO}	I _E =100μA, I _C =0	6			V
Collector-Emitter Saturation Voltage		V _{CE(SAT)}	I _C =1mA, I _B =0.1mA			0.4	V
			I _C =10mA, I _B =1mA			0.5	V
			I _C =50mA, I _B =5mA			0.75	V
Base-Emitter Saturation Voltage		V _{BE(SAT)}	I _C 10mA, I _B =1mA			0.75	V
Collector Cut-off Current	MMBTA44	I _{CBO}	V _{CB} =400V, I _E =0			0.1	μA
	MMBTA45		V _{CB} =320V, I _E =0			0.1	μA
Collector Cut-off Current	MMBTA44	I _{CES}	V _{CE} =400V, I _B =0			0.5	μA
	MMBTA45		V _{CE} =320V, I _B =0			0.5	μA
Emitter Cut-off Current		I _{EBO}	V _{EB} =4V, I _C =0			0.1	μA
DC Current Gain (Note)		h _{FE1}	V _{CE} =10V, I _C =1mA	40			
		h _{FE2}	V _{CE} =10V, I _C =10mA	50		240	
		h _{FE3}	V _{CE} =10V, I _C =50mA	45			
		h _{FE4}	V _{CE} =10V, I _C =100mA	40			
Current Gain Bandwidth Product		f _T	V _{CE} =20V, I _C =10mA f=100MHz	50			MHz
Output Capacitance		C _{ob}	V _{CB} =20V, I _E =0, f=1MHz			7	pF

Note: Pulse test: $P_W < 300\mu\text{s}$, Duty Cycle $< 2\%$

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(cont.)



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