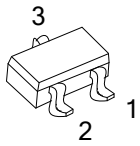
MMBTA44/45

NPN SILICON TRANSISTOR

HIGH VOLTAGE TRANSISTORS



SOT-23
(JEDEC TO-236)

■ FEATURES

*Collector-Emitter voltage: V_{CEO}=400V (UTC **MMBTA44**)
V_{CEO}=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
		1	2	3	
MMBTA44G-AE3-R	SOT-23	E	B	C	Tape Reel
MMBTA45G-AE3-R	SOT-23	E	B	C	Tape Reel

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

MMBTA44G-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free

■ MARKINGS

MMBTA44	MMBTA45
3DG	35G

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■ 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°C	P_D	350	mW
	T_C=25°C		1.5	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-40 ~ +150	°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.

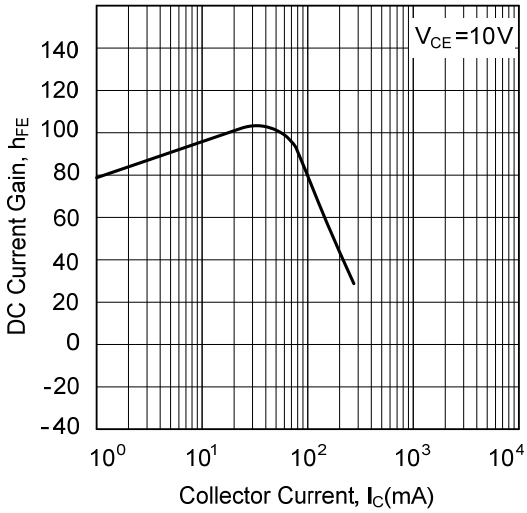
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

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

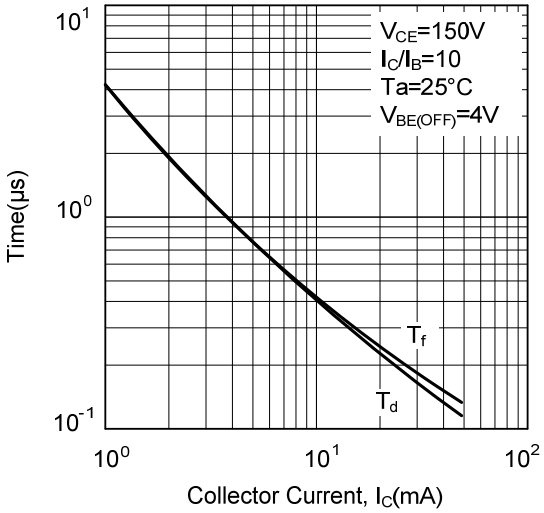
Note: Pulse test: P_W < 300μs, Duty Cycle < 2%

■ TYPICAL CHARACTERISTICS

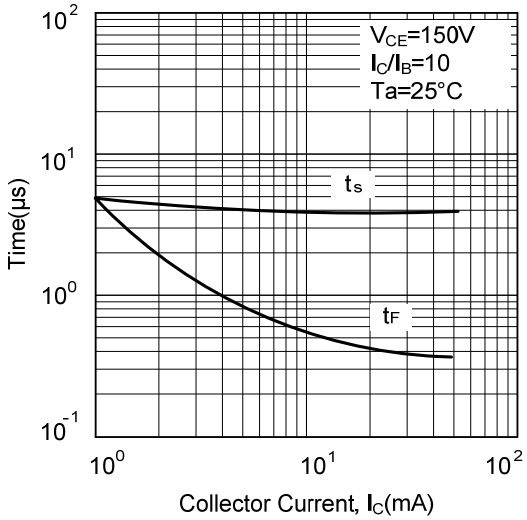
DC Current Gain



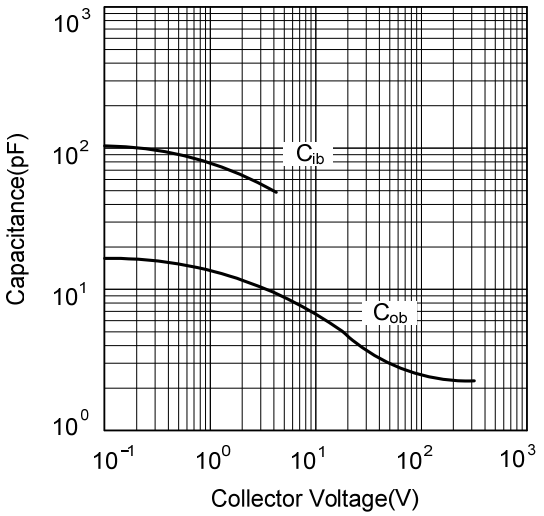
Turn-on Switching Times



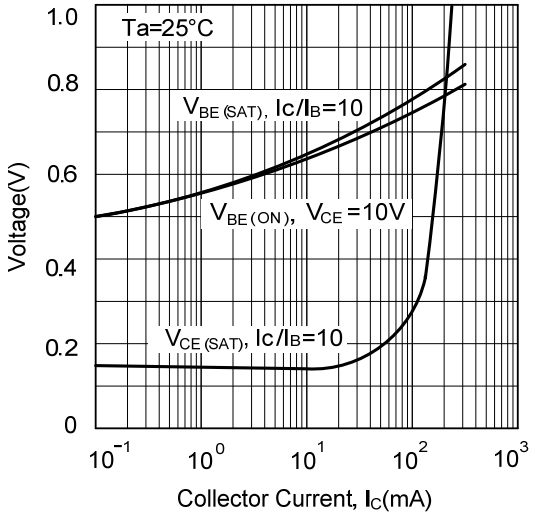
Turn-off Switching Times



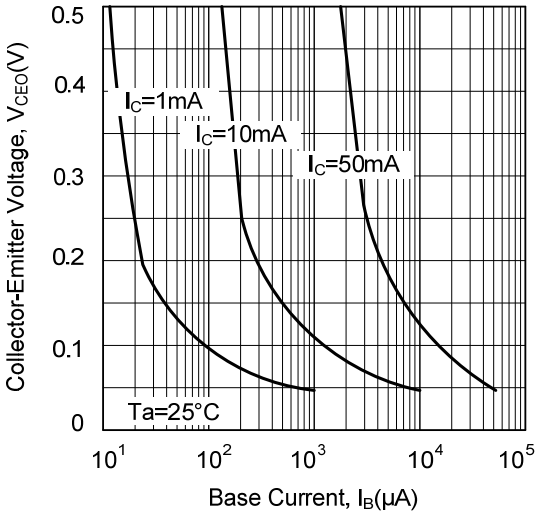
Capacitance



ON Voltage

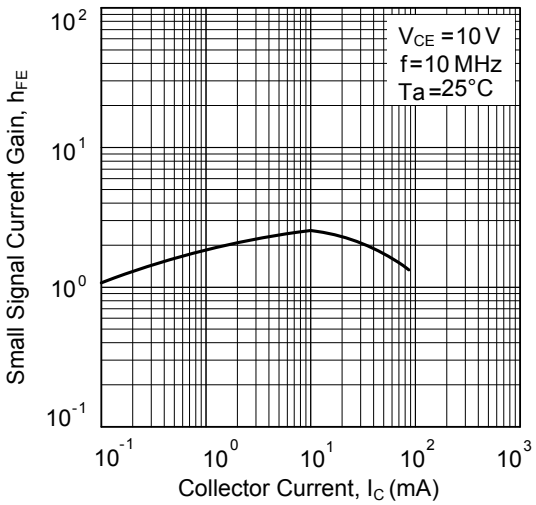


Collector Saturation Region

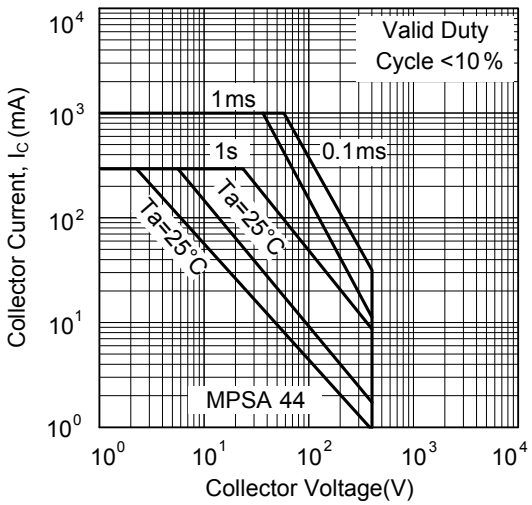


■ TYPICAL CHARACTERISTICS(cont.)

High Frequency Current Gain



Safe Operating Area



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