



MMBTA44/45

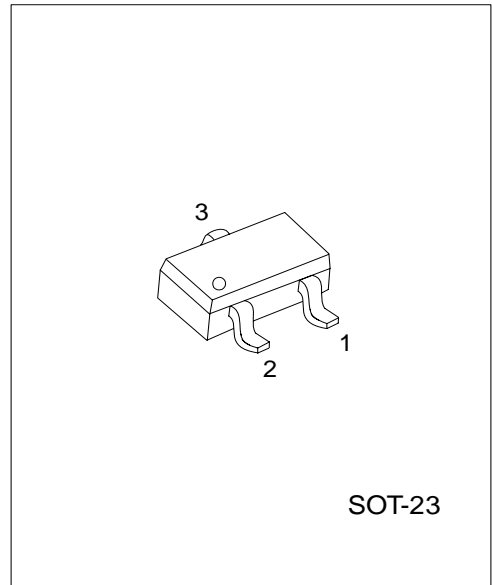
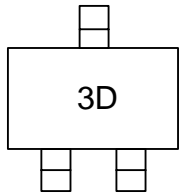
NPN EPITAXIAL SILICON TRANSISTOR

HIGH VOLTAGE TRANSISTOR

■ **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: $P_D(max)=350mW$

■ **MARKING (MMBTA44)**



* Pb-free plating product number:
MMBTA44L/MMBTA45L

■ **PIN CONFIGURATION**

PIN NO.	PIN NAME
1	Emitter
2	Base
3	Collector

■ **ORDERING INFORMATION**

Order Number		Package	Packing
Normal	Lead free		
MMBTA44-AE3-R	MMBTA44L-AE3-R	SOT-23	Tape Reel
MMBTA45-AE3-R	MMBTA45L-AE3-R	SOT-23	Tape Reel

■ ABSOLUTE MAXIMUM RATINGS

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

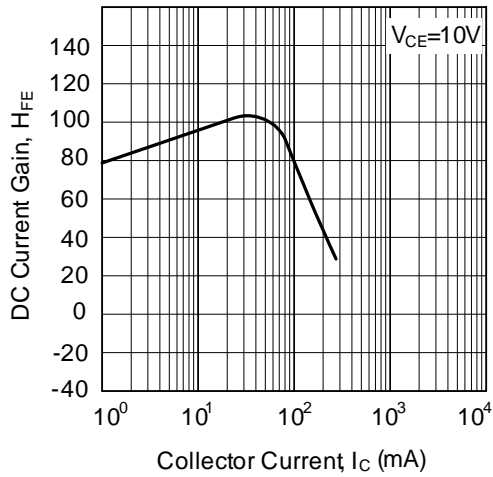
■ ELECTRICAL CHARACTERISTICS ($T_j = 25^{\circ}C$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	MMBTA44	BV_{CBO}	$I_C=100\mu A, I_B=0$	500			V
	MMBTA45			400			
Collector-Emitter Breakdown Voltage	MMBTA44	BV_{CEO}	$I_C=1mA, I_B=0$	400			V
	MMBTA45			350			
Emitter-Base Breakdown Voltage		BV_{EBO}	$I_E=100\mu A, I_C=0$	6			V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C=1mA, I_B=0.1mA$ $I_C=10mA, I_B=1mA$ $I_C=50mA, I_B=5mA$			0.4 0.5 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			$V_{CB}=320V, I_E=0$			
Collector Cut-off Current	MMBTA44	I_{CES}	$V_{CE}=400V, I_B=0$			0.5	μA
	MMBTA45			$V_{CE}=320V, I_B=0$			
Emitter Cut-off Current		I_{EBO}	$V_{EB}=4V, I_C=0$			0.1	μA
DC Current Gain(Note)		h_{FE}	$V_{CE}=10V, I_C=1mA$ $V_{CE}=10V, I_C=10mA$ $V_{CE}=10V, I_C=50mA$ $V_{CE}=10V, I_C=100mA$	40 50 45 40		240	
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

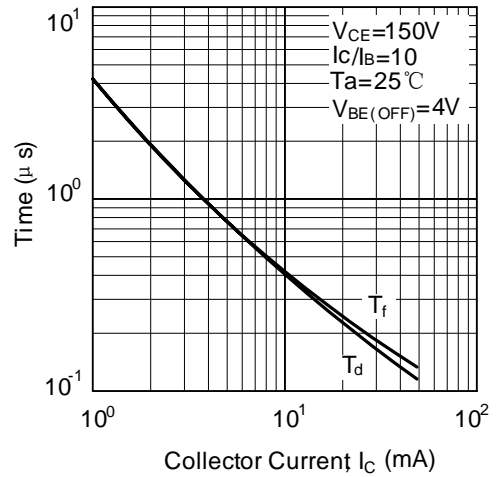
Note: Pulse test: $P_W < 300\mu s$, Duty Cycle $< 2\%$

■ TYPICAL CHARACTERISTICS

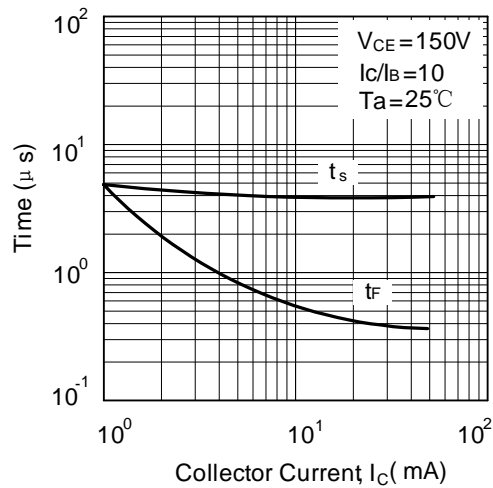
DC current gain



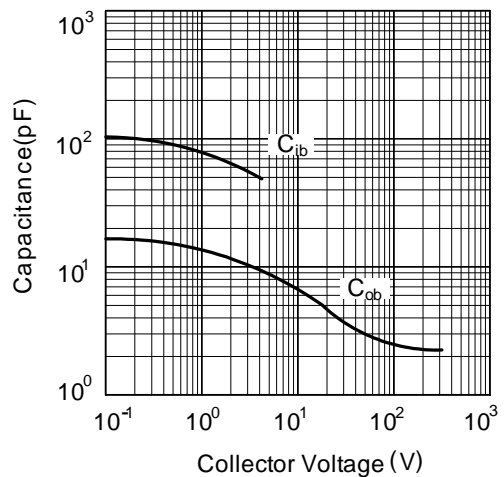
Turn-on switching times



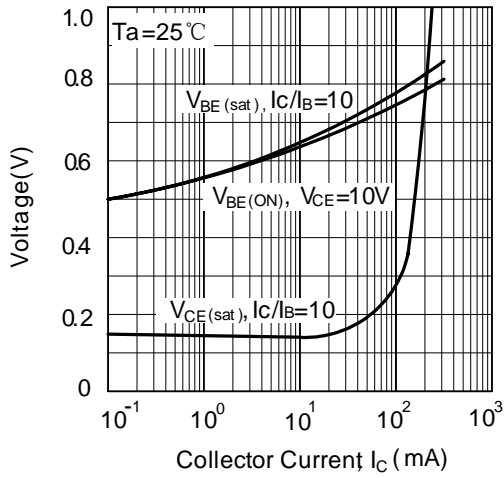
Turn - off switching times



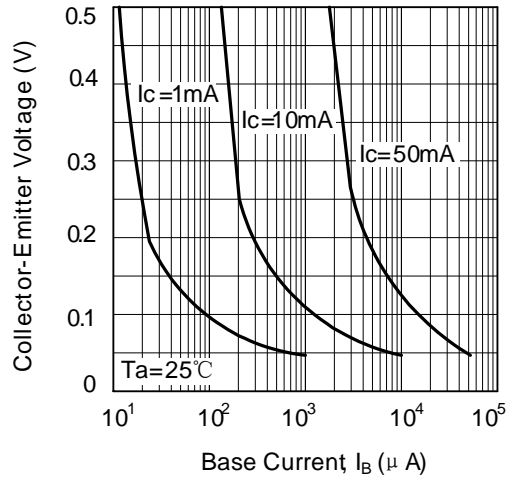
Capacitance



ON voltage

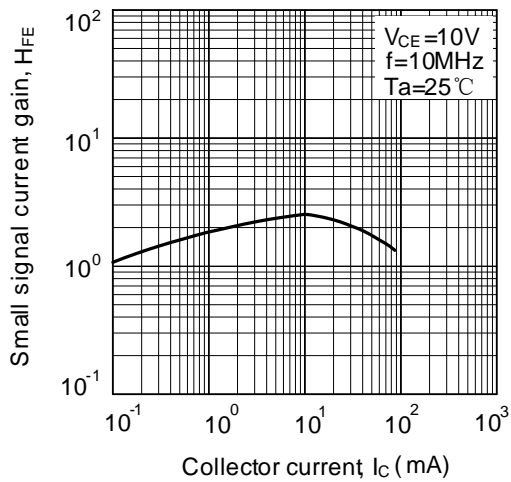


Collector saturation region

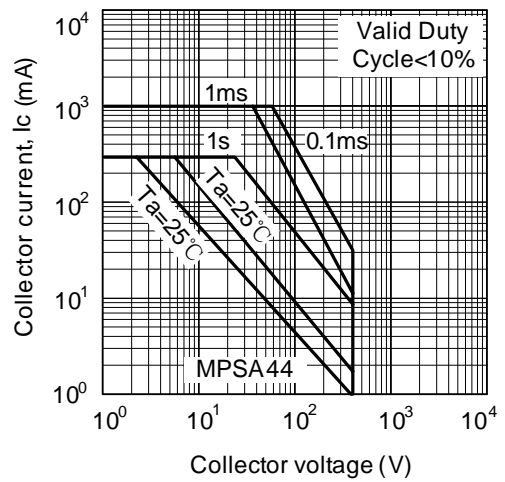


■ TYPICAL CHARACTERISTICS(cont.)

High frequency current gain



Safe operating area



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