



**MMBTA44/45**

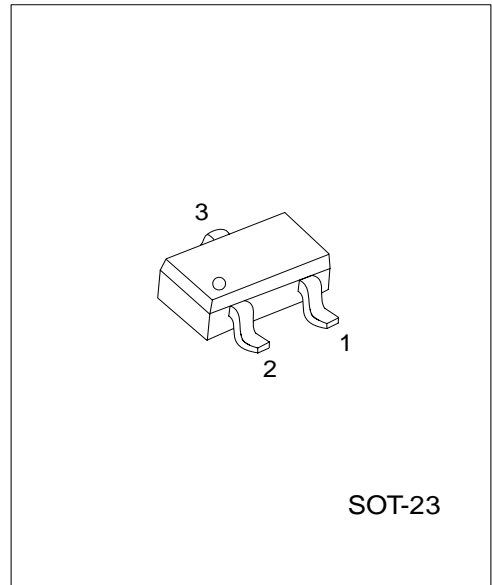
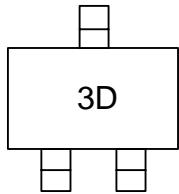
**NPN EPITAXIAL SILICON TRANSISTOR**

**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	$^{\circ}C$

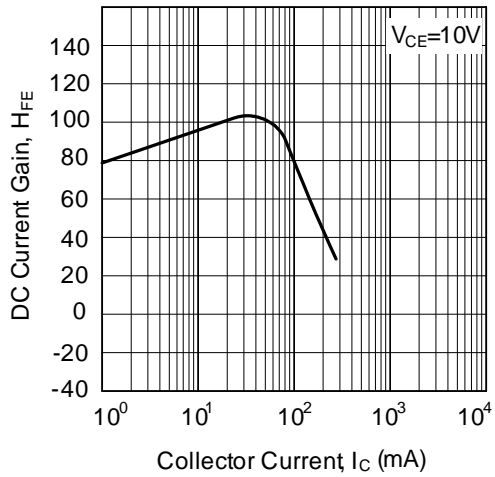
■ ELECTRICAL CHARACTERISTICS ( $T_j = 25^{\circ}C$ , unless otherwise specified)

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	$\mu A$
	MMBTA45		$V_{CB}=320V, I_E=0$			0.1	
Collector Cut-off Current	MMBTA44	$I_{CES}$	$V_{CE}=400V, I_B=0$			0.5	$\mu A$
	MMBTA45		$V_{CE}=320V, I_B=0$			0.5	
Emitter Cut-off Current		$I_{EBO}$	$V_{EB}=4V, I_C=0$			0.1	$\mu A$
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

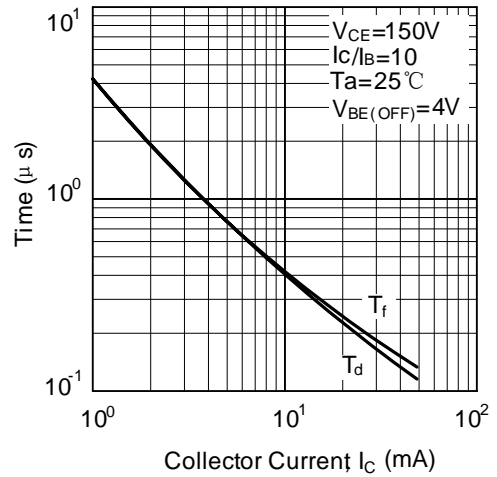
Note: Pulse test:  $P_W < 300\mu s$ , Duty Cycle  $< 2\%$

■ TYPICAL CHARACTERISTICS

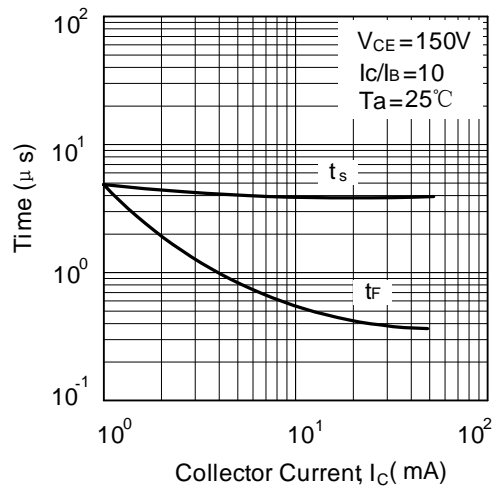
DC current gain



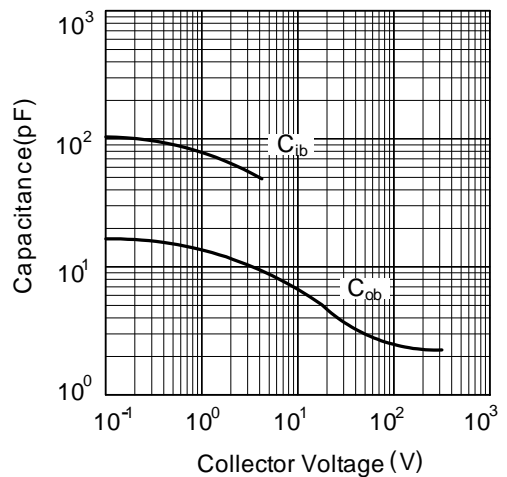
Turn-on switching times



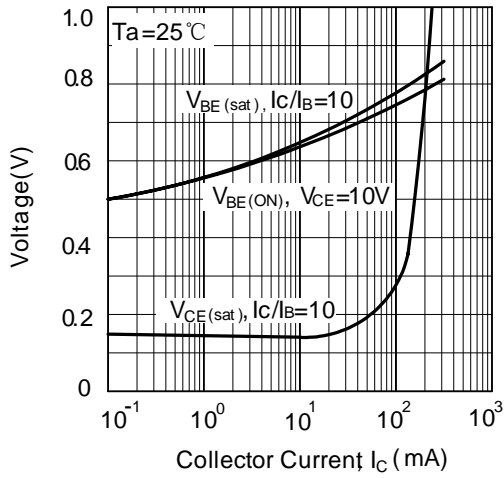
Turn - off switching times



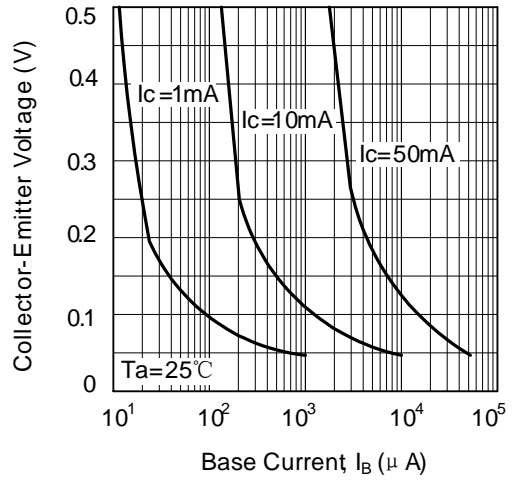
Capacitance



ON voltage

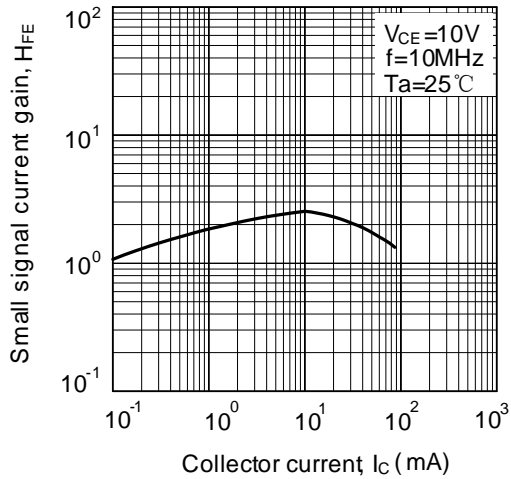


Collector saturation region

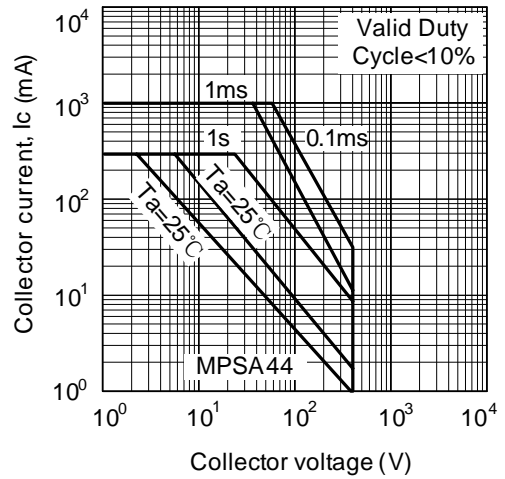


■ TYPICAL CHARACTERISTICS(cont.)

High frequency current gain



Safe operating area



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