



MMBTA44/45

NPN EPITAXIAL SILICON TRANSISTOR

HIGH VOLTAGE TRANSISTOR

■ FEATURES

*Collector-Emitter voltage: $V_{CE0}=400V$ (UTC **MMBTA44**)

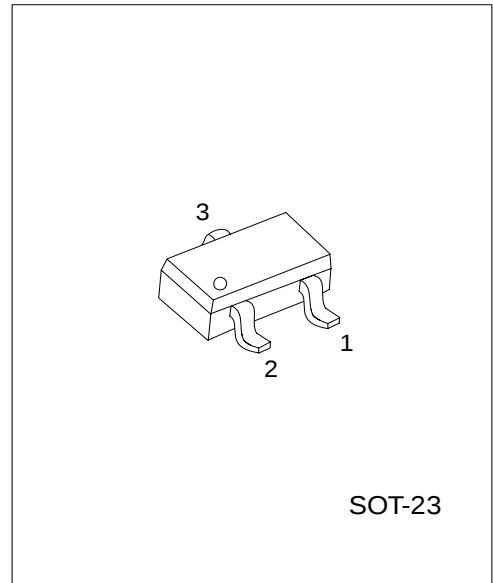
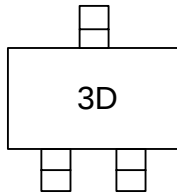
$V_{CE0}=350V$ (UTC **MMBTA45**)

*Collector current up to 300mA

*Complement to UTC **MMBTA94/93**

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

■ MARKING (MMBTA44)



SOT-23

* 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	$T_a=25^{\circ}\text{C}$	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	$^{\circ}\text{C}$

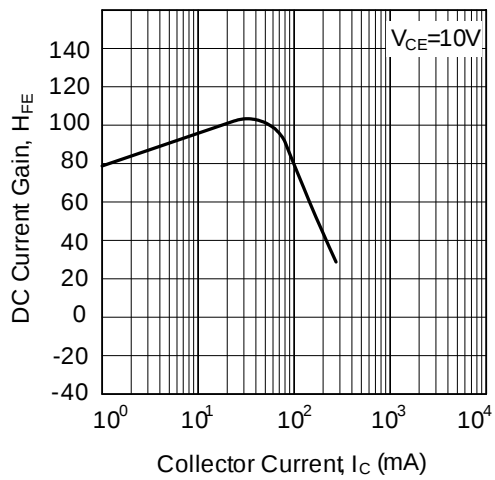
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

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

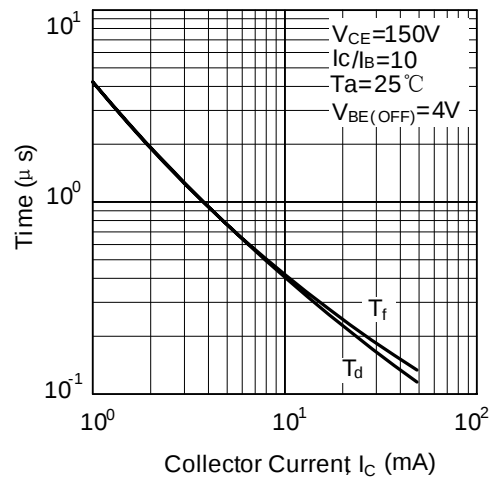
Note: Pulse test: $P_W<300\mu\text{s}$, Duty Cycle<2%

■ TYPICAL CHARACTERISTICS

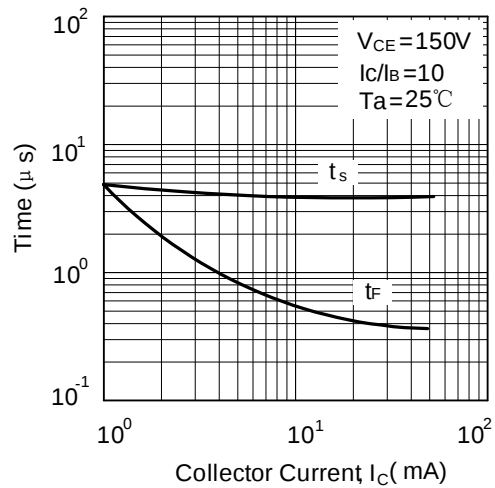
DC current gain



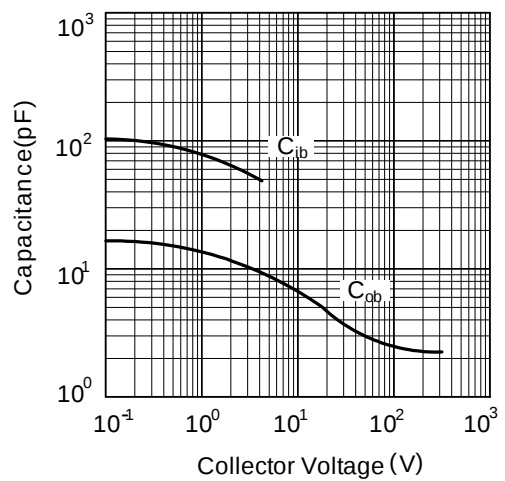
Turn-on switching times



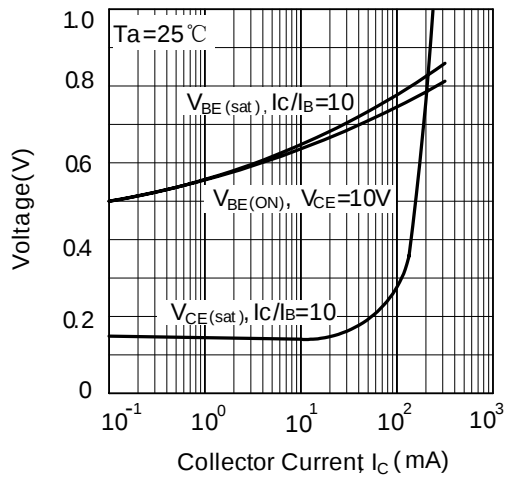
Turn - off switching times



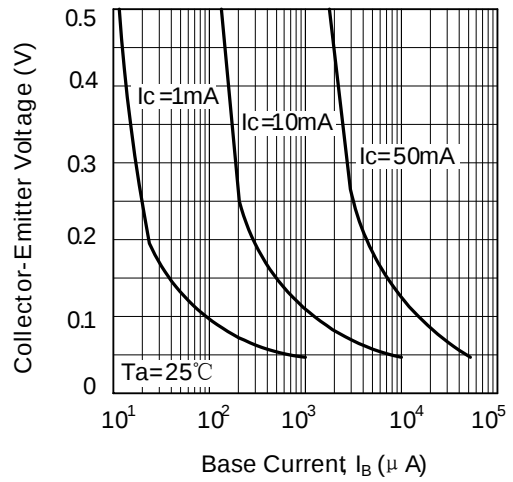
Capacitance



ON voltage

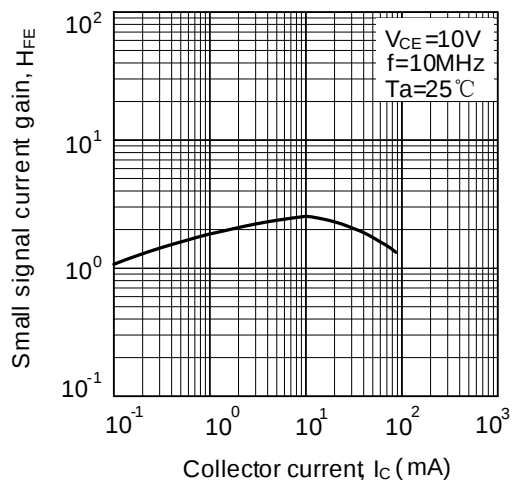


Collector saturation region

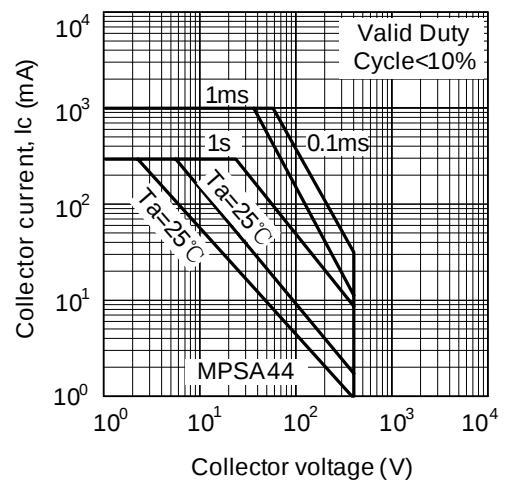


■ TYPICAL CHARACTERISTICS(cont.)

High frequency current gain



Safe operating area



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