

# UTCMPSA44/45 NPN EPITAXIAL SILICON TRANSISTOR

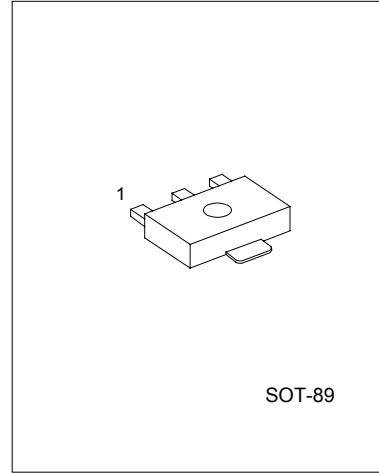
## HIGH VOLTAGE TRANSISTOR

### FEATURES

- \*Collector-Emitter voltage:  
V<sub>CEO</sub>=400V(MPSA44)  
V<sub>CEO</sub>=350V(MPSA45)
- \*Collector current up to 300mA
- \*Complement to MPSA94/93
- \*Collector Dissipation:  
P<sub>c</sub>(max)=625mW

### APPLICATION

- \*Telephone switching
- \*High voltage switch



1:EMITTER 2: COLLECTOR 3: BASE

### ABSOLUTE MAXIMUM RATINGS ( Operating temperature range applies unless otherwise specified )

PARAMETER	SYMBOL	RATING	UNIT
Collector-base voltage MPSA44 MPSA45	V <sub>CB0</sub>	500 400	V
Collector-emitter voltage MPSA44 MPSA45	V <sub>CEO</sub>	400 350	V
Emitter-base voltage	V <sub>EB0</sub>	6	V
Collector dissipation(T <sub>a</sub> =25°C)	P <sub>c</sub>	625	mW
Collector dissipation(T <sub>c</sub> =25°C)	P <sub>c</sub>	1.5	W
Collector current	I <sub>c</sub>	300	mA
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### ELECTRICAL CHARACTERISTICS (T<sub>j</sub>=25°C,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage MPSA44 MPSA45	BV <sub>CB0</sub>	I <sub>c</sub> =100μA, I <sub>B</sub> =0	500 400			V
Collector-emitter breakdown voltage MPSA44 MPSA45	BV <sub>CEO</sub>	I <sub>c</sub> =1mA, I <sub>B</sub> =0	400 350			V
Emitter-base breakdown voltage	BV <sub>EB0</sub>	I <sub>E</sub> =100μA, I <sub>c</sub> =0	6			V
Collector cut-off current MPSA44 MPSA45	I <sub>CB0</sub>	V <sub>CB</sub> =400V, I <sub>E</sub> =0 V <sub>CB</sub> =320V, I <sub>E</sub> =0			0.1 0.1	μA
Collector cut-off current MPSA44 MPSA45	I <sub>CE0</sub>	V <sub>CE</sub> =400V, I <sub>B</sub> =0 V <sub>CE</sub> =320V, I <sub>B</sub> =0			0.5 0.5	μA

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QW-R208-006,A

# UTCMP5A44/45 NPN EPITAXIAL SILICON TRANSISTOR

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4V, I_c=0$			0.1	$\mu A$
DC current gain(note)	$h_{FE}$	$V_{CE}=10V, I_c=1mA$	40		240	
		$V_{CE}=10V, I_c=10mA$	50			
		$V_{CE}=10V, I_c=50mA$	45			
		$V_{CE}=10V, I_c=100mA$	40			
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
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	$\mu F$

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

## TYPICAL CHARACTERISTIC CURVES

Fig.1 DC current gain

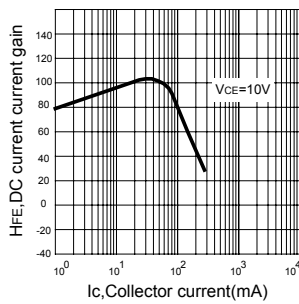


Fig.2 Turn-on switching times

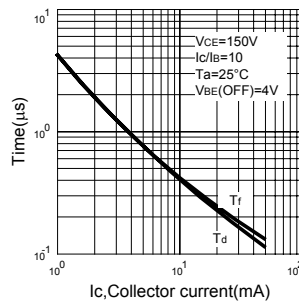


Fig.3 Turn-off switching times

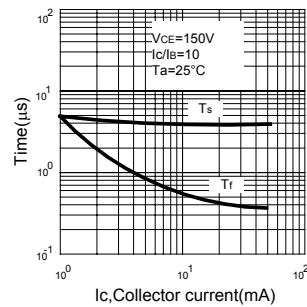


Fig.4 Capacitance

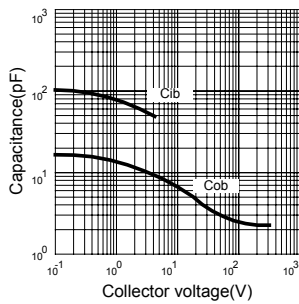


Fig.5 ON Voltage

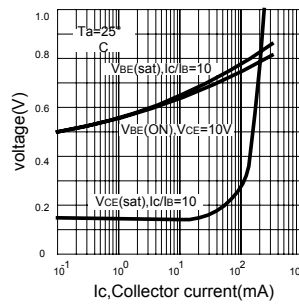
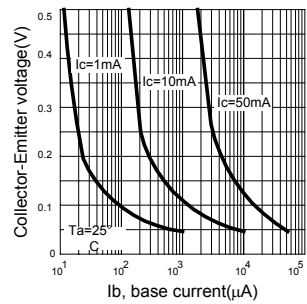


Fig.6 Collector saturation region



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Fig.7 High Frequency current gain

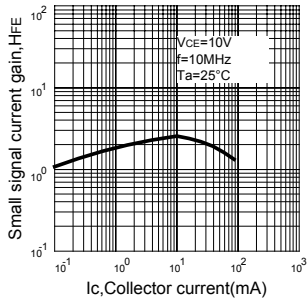
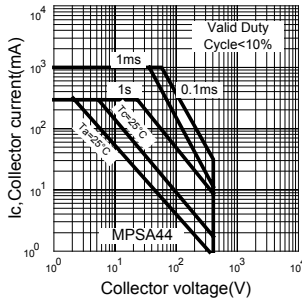


Fig.8 Safe operating area



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