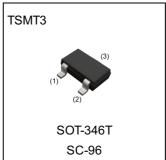


#### PNP -3.0A -50V Middle Power Transistor

Parameter	Value
$V_{CEO}$	-50V
I <sub>C</sub>	-3A

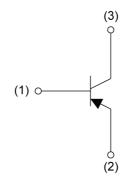
#### Outline



#### Features

- 1)Suitable for Middle Power Driver
- 2)Complementary NPN Types:2SCR543R
- 3)Low saturation voltage V<sub>CE(sat)</sub>=-400mV(Max.) (I<sub>C</sub>/I<sub>B</sub>=-2A/-100mA)

#### •Inner circuit



- (1) Base
- (2) Emitter
- (3) Collector

## Application

LOW FREQUENCY AMPLIFIER, HIGH SPEED SWITCHING

## Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SAR543R	TSMT3	2928	TL	180	8	3000	MR

## ● Absolute maximum ratings (T<sub>a</sub> = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	$V_{EBO}$	-6	V
Collector current	I <sub>C</sub>	-3	Α
Collector current	I <sub>CP</sub> *1	-6	Α
Down discinction	P <sub>D</sub> *2	0.5	W
Power dissipation	P <sub>D</sub> *3	1.0	W
Junction temperature	T <sub>j</sub>	150	°C
Range of storage temperature	T <sub>stg</sub>	-55 to +150	°C

## ● Electrical characteristics (T<sub>a</sub> = 25°C)

Parameter	Symbol	Conditions	Values			Lloit
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-base breakdown voltage	BV <sub>CBO</sub>	I <sub>C</sub> = -100μA	-50	-	-	V
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> = -1mA	-50	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	I <sub>E</sub> = -100μA	-6	-	-	V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = -50V	-	-	-1.0	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = -4V	-	-	-1.0	μA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	$I_C = -2A$ , $I_B = -100mA$	-	-200	-400	mV
DC current gain	h <sub>FE</sub>	$V_{CE} = -3V, I_{C} = -100 \text{mA}$	180	-	450	-
Transition frequency	f <sub>T</sub>	$V_{CE} = -10V, I_{E} = 300 \text{mA},$ f = 100MHz	-	300	-	MHz
Output capacitance	C <sub>ob</sub>	$V_{CB} = -10V$ , $I_E = 0mA$ , $f = 1MHz$	-	35	-	pF
Turn-On time	t <sub>on</sub>	I <sub>C</sub> = -2A, I <sub>B1</sub> = -200mA,	-	45	-	ns
Storage time	t <sub>stg</sub>	$I_{B2} = 200 \text{mA},$ $V_{CC} \simeq -10 \text{V},$	-	250	-	ns
Fall time	t <sub>f</sub>	$R_L = 4.7\Omega$ See test circuit	-	40	-	ns

<sup>\*1</sup> Pw=10ms, Single Pulse

<sup>\*2</sup> Mounted on a reference land

<sup>\*3</sup> Mounted on a ceramic board (40×40×0.7mm)

### ● Electrical characteristic curves(T<sub>a</sub> = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

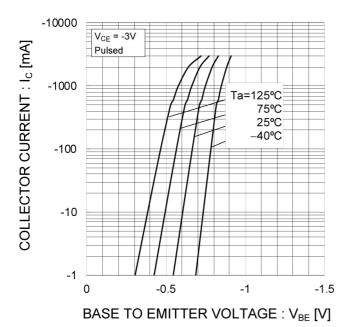
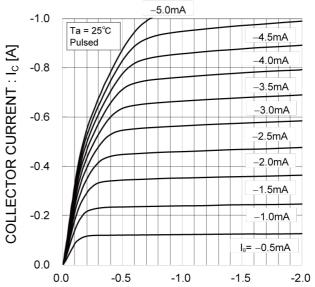


Fig.2 Typical Output Characteristics



COLLECTOR TO EMITTER VOLTAGE: VCE [V]

Fig.3 DC Current Gain vs. Collector Current (I)

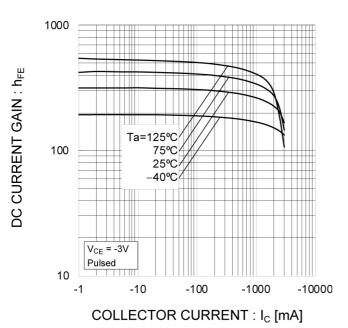
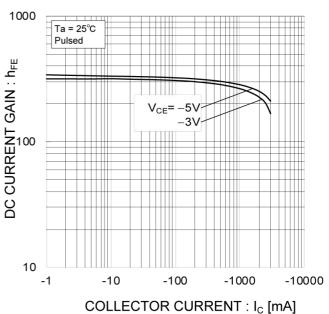


Fig.4 DC Current Gain vs. Collector Current (II)



## ● Electrical characteristic curves(T<sub>a</sub> = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

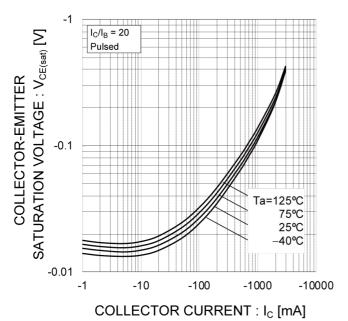
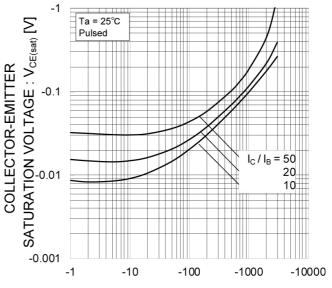


Fig.6 Collector-Emitter Saturation
Voltage vs. Collector Current (II)



COLLECTOR CURRENT : I<sub>C</sub> [mA]

Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

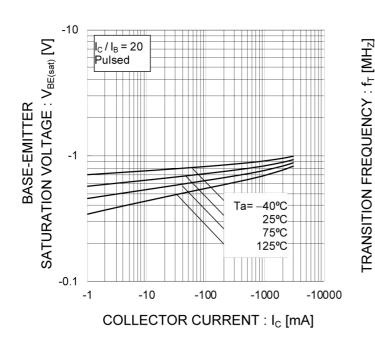
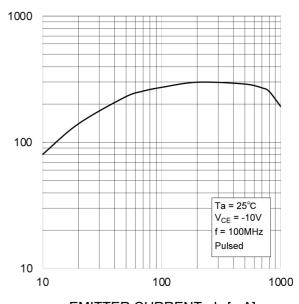


Fig.8 Gain Bandwidth Product vs. Emitter Current

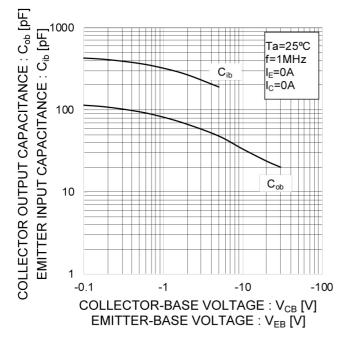


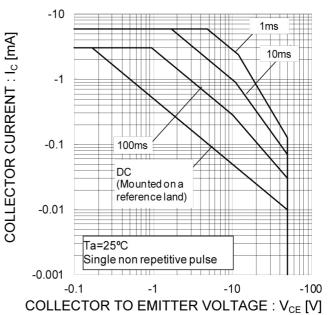
EMITTER CURRENT : IE [mA]

## ● Electrical characteristic curves(T<sub>a</sub> = 25°C)

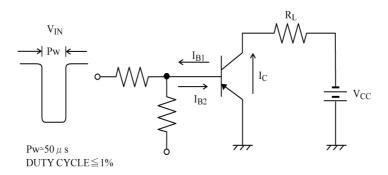
Fig.9 Emitter Input Capacitance vs.
Emitter-Base Voltage
Collector Output Capacitance vs.
Collector-Base Voltage

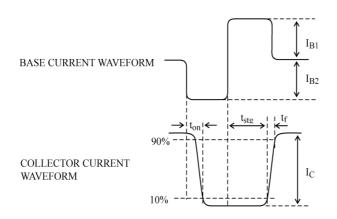
Fig.10 Safe Operating Area





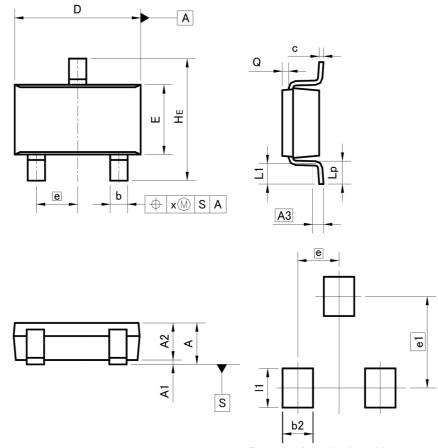
#### SWITCHING TIME TEST CIRCUIT





#### Dimensions

TSMT3



Pattern of terminal position areas [Not a recommended pattern of soldering pads]

DIM	MILIM	ETERS	INC	HES
DIM	MIN	MAX	MIN	MAX
Α	I	1.00	-	0.039
A1	0.00	0.10	0.000	0.004
A2	0.75	0.95	0.030	0.037
A3	0.:	25	0.0	10
b	0.35	0.50	0.014	0.020
С	0.10	0.26	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
е	0.9	0.95		.037
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.05	0.25	0.002	0.010
х	_	0.20	_	0.008

DIM	MILIMETERS		INCHES		
	DIM	MIN	MAX	MIN	MAX
	b2		0.70	-	0.028
	e1	2.	10	0.0	83
	11	-	0.90	ı	0.035

Dimension in mm/inches



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#### Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru\_6 moschip.ru\_4 moschip.ru\_9