2SAR543R

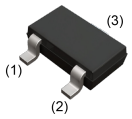
PNP -3.0A -50V Middle Power Transistor

Datasheet

Parameter	Value
V_{CEO}	-50V
I_C	-3A

●Outline

TSMT3



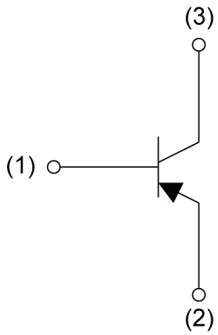
SOT-346T

SC-96

●Features

1)Suitable for Middle Power Driver
2)Complementary NPN Types:2SCR543R
3)Low saturation voltage
$V_{CE(sat)}$=-400mV(Max.)
(I_C/ I_B=-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

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●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	-50	V
Collector-emitter voltage	V_{CEO}	-50	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	I_C	-3	A
	I_{CP}*1	-6	A
Power dissipation	P_D*2	0.5	W
	P_D*3	1.0	W
Junction temperature	T_j	150	℃
Range of storage temperature	T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = -100μA	-50	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = -1mA	-50	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = -100μA	-6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = -50V	-	-	-1.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = -4V	-	-	-1.0	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -2A, I_B = -100mA	-	-200	-400	mV
DC current gain	h_{FE}	V_{CE} = -3V, I_C = -100mA	180	-	450	-
Transition frequency	f_T	V_{CE} = -10V, I_E = 300mA, f = 100MHz	-	300	-	MHz
Output capacitance	C_{ob}	V_{CB} = -10V, I_E = 0mA, f = 1MHz	-	35	-	pF
Turn-On time	t_{on}	I_C = -2A, I_{B1} = -200mA, I_{B2} = 200mA, V_{CC} ≃ -10V, R_L = 4.7Ω See test circuit	-	45	-	ns
Storage time	t_{stg}		-	250	-	ns
Fall time	t_f		-	40	-	ns

*1 Pw=10ms, Single Pulse

*2 Mounted on a reference land

*3 Mounted on a ceramic board (40×40×0.7mm)

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●Electrical characteristic curves(T_a = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

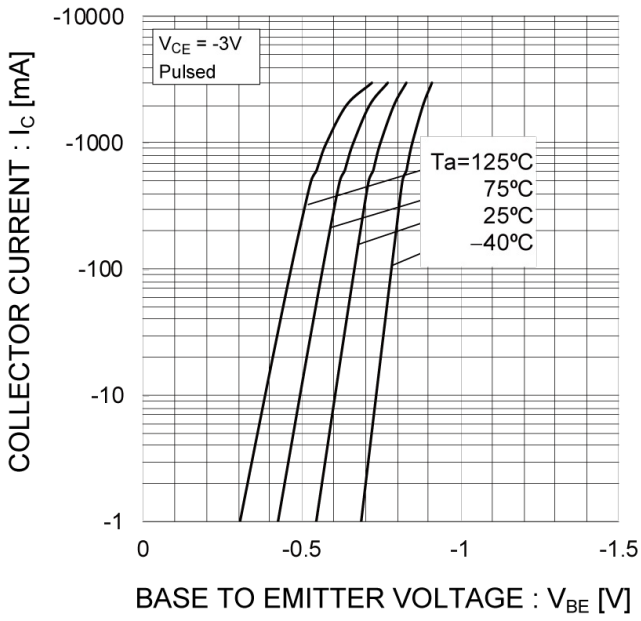


Fig.2 Typical Output Characteristics

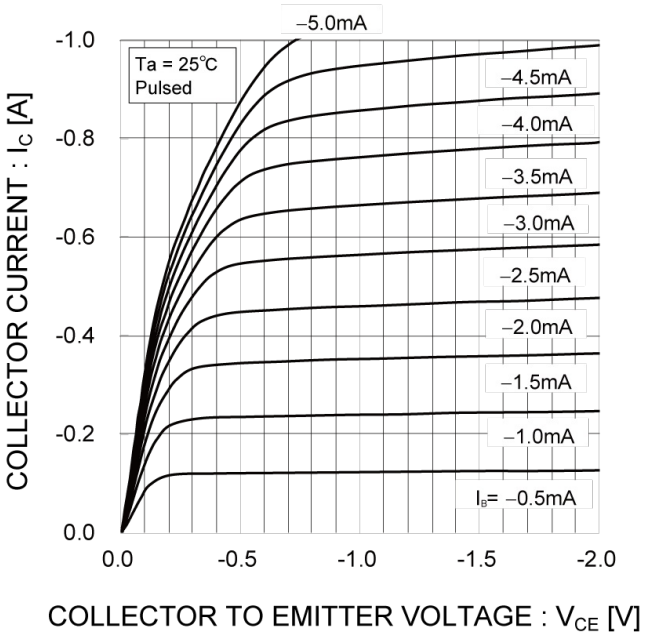


Fig.3 DC Current Gain vs. Collector Current (I)

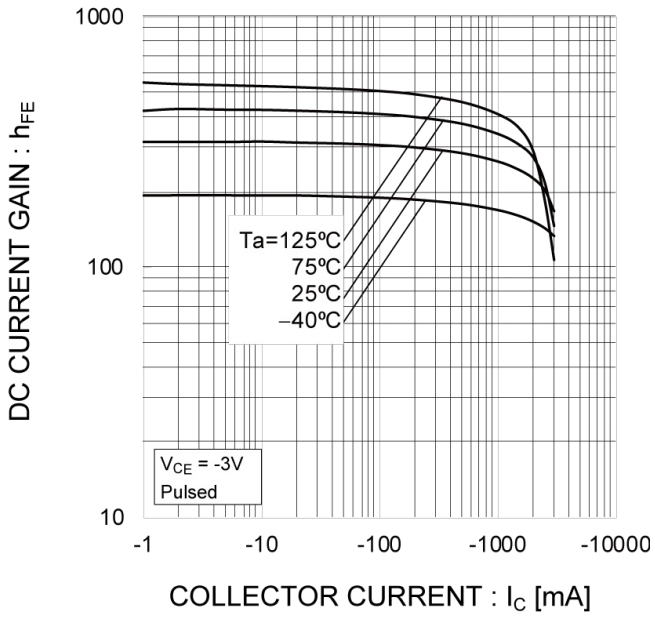
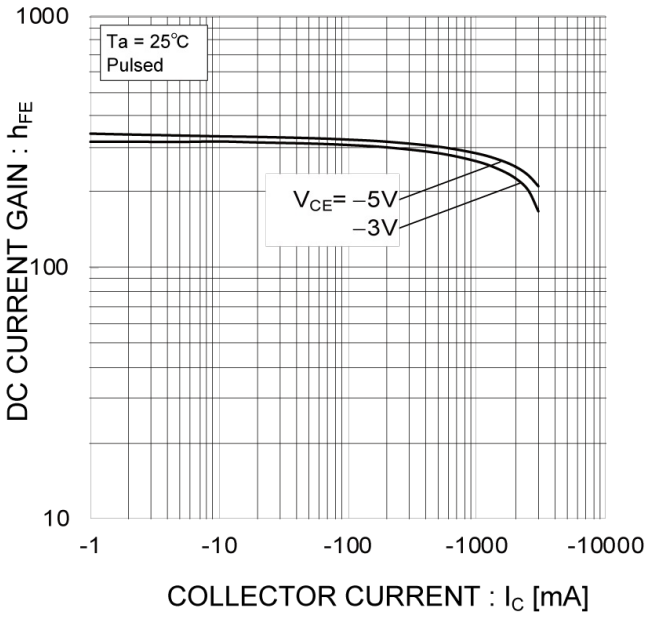


Fig.4 DC Current Gain vs. Collector Current (II)



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●Electrical characteristic curves(T_a = 25°C)

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

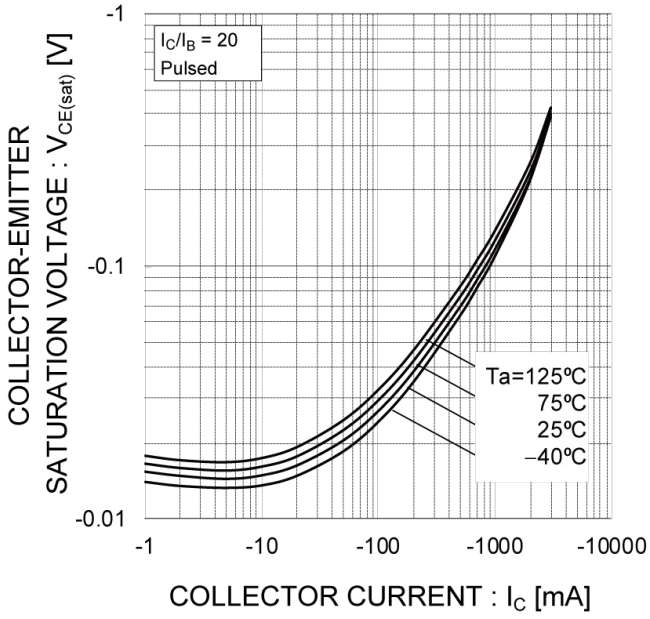


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

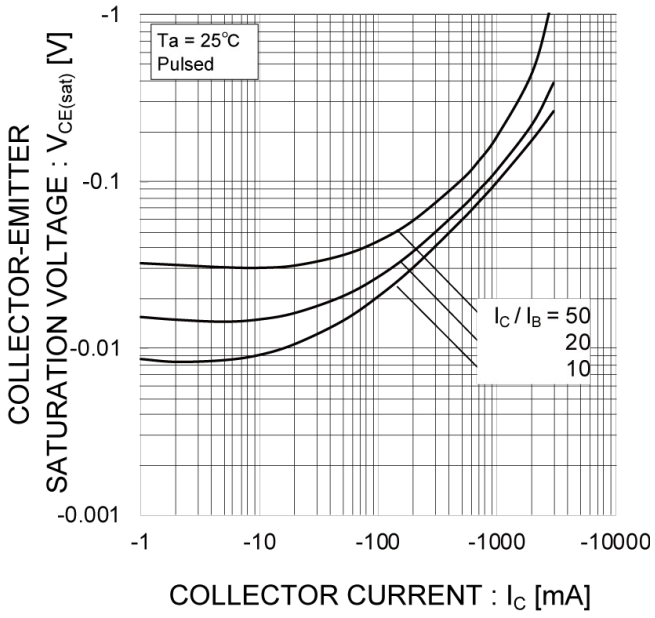


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

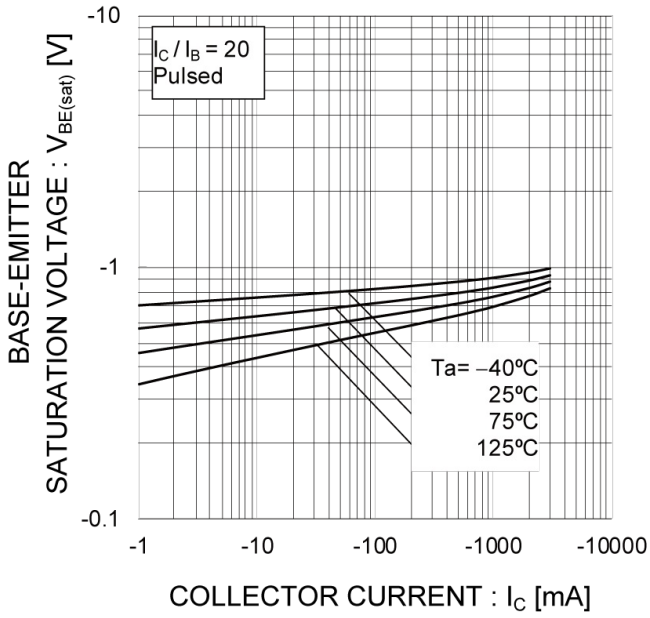
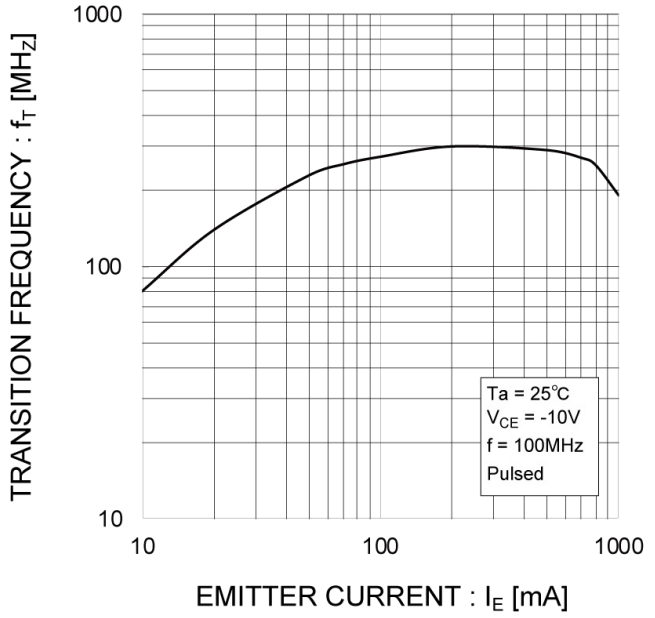


Fig.8 Gain Bandwidth Product vs. Emitter Current



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●Electrical characteristic curves(T_a = 25°C)

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

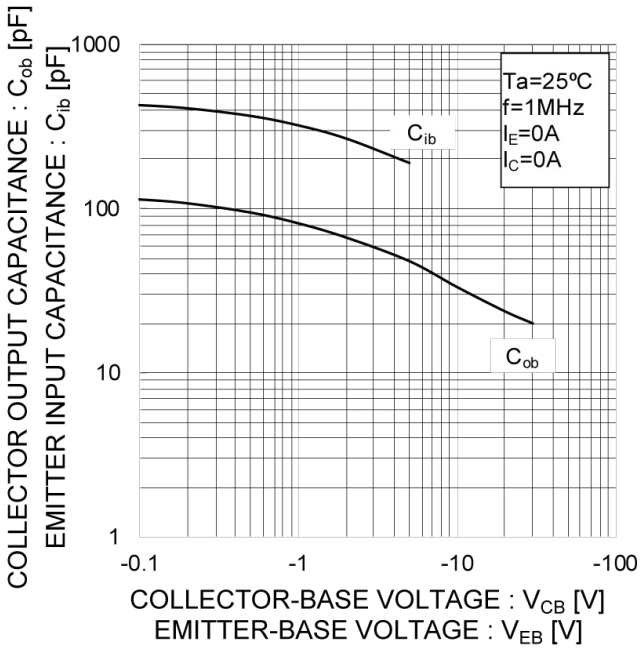
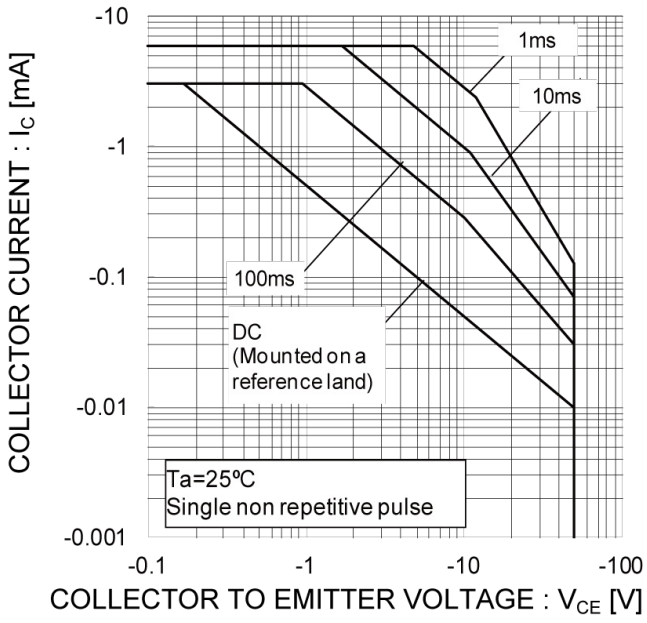
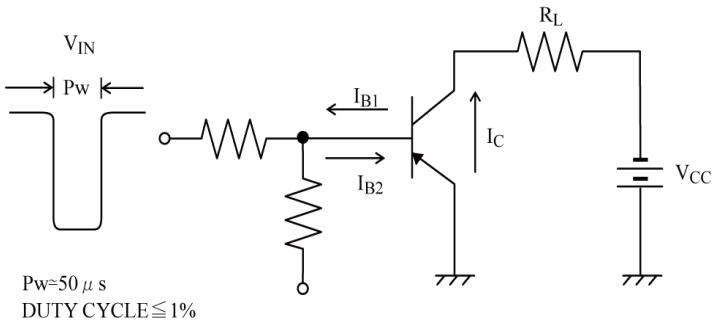
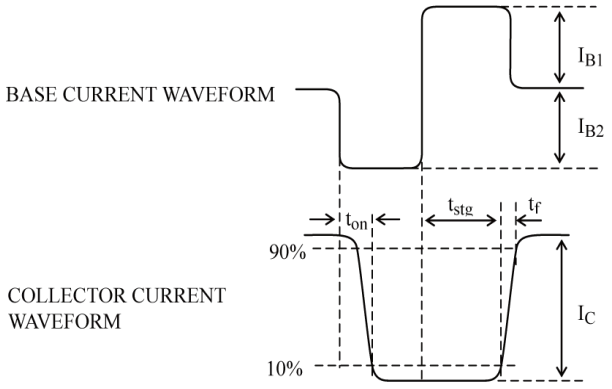


Fig.10 Safe Operating Area



SWITCHING TIME TEST CIRCUIT



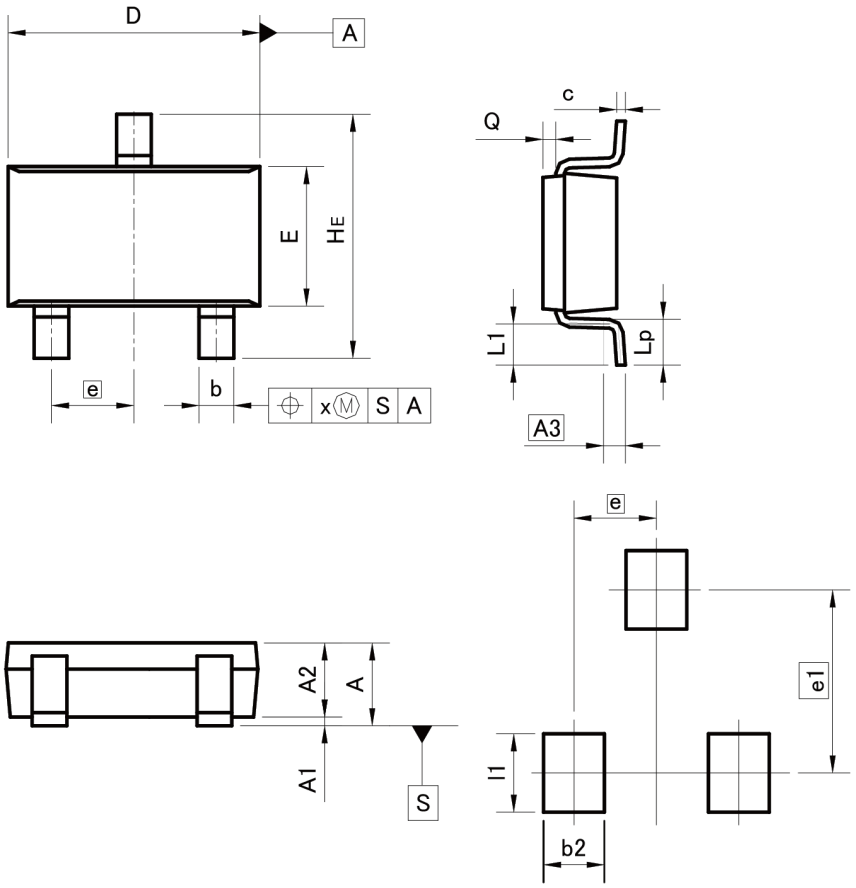


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●Dimensions

TSMT3



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	–	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		0.010	
b	0.35	0.50	0.014	0.020
c	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
e	0.95		0.037	
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
x	–	0.20	–	0.008

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2		0.70	–	0.028
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm/inches

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7) The Products specified in this document are not designed to be radiation tolerant.

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