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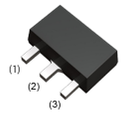
2SAR293P5

Middle Power Transistors (-30V / -1.0A) Datasheet

Parameter	Value
V_{CEO}	-30V
I_C	-1A

●Outline

MPT3

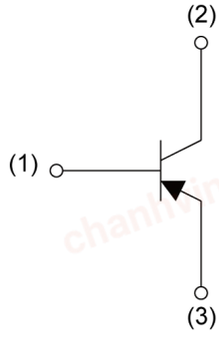


(SC-62)

●Features

1) Suitable for Middle Power Driver.
2) Complementary NPN Types : 2SCR293P5.
3) Low $V_{CE(sat)}$
$V_{CE(sat)}$=-350mV(Max.).
(I_C/I_B=-500mA/-25mA)

●Inner circuit



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

●Application

LOW FREQUENCY AMPLIFIER, DRIVER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SAR293P5	MPT3	6595	T100	330	16	1000	ML

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●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	-30	V
Collector-emitter voltage	V_{CEO}	-30	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	I_C	-1	A
	I_{CP}*1	-2	A
Power dissipation	P_D*2	0.5	W
	P_D*3	2.0	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 = -10μA	-30	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = -1mA	-30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = -10μA	-6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = -30V	-	-	-100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = -6V	-	-	-100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$*4	I_C = -500mA, I_B = -25mA	-	-150	-350	mV
DC current gain	h_{FE}	V_{CE} = -2V, I_C = -100mA	270	-	680	-
Transition frequency	f_T*4	V_{CE} = -2V, I_E = 100mA, f = 100MHz	-	320	-	MHz
Output capacitance	C_{ob}	V_{CB} = -10V, I_E = 0A, f = 1MHz	-	7	-	pF
Turn-On time	t_{on}	I_C = -500mA, I_{B1} = -25mA, I_{B2} = 25mA, V_{CC} ≃ -5V, R_L = 10Ω See test circuit	-	60	-	ns
Storage time	t_{stg}		-	160	-	ns
Fall time	t_f		-	50	-	ns

*1 Pw=10ms Sigle Pulse
*2 Each terminal mounted on a reference land.
*3 Mounted on a ceramic board(40×40×0.7 mm) .
*4 Pulsed

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●Electrical characteristic curves(T_a = 25°C)

Fig.1 Grounded Emitter Propagation Characteristics

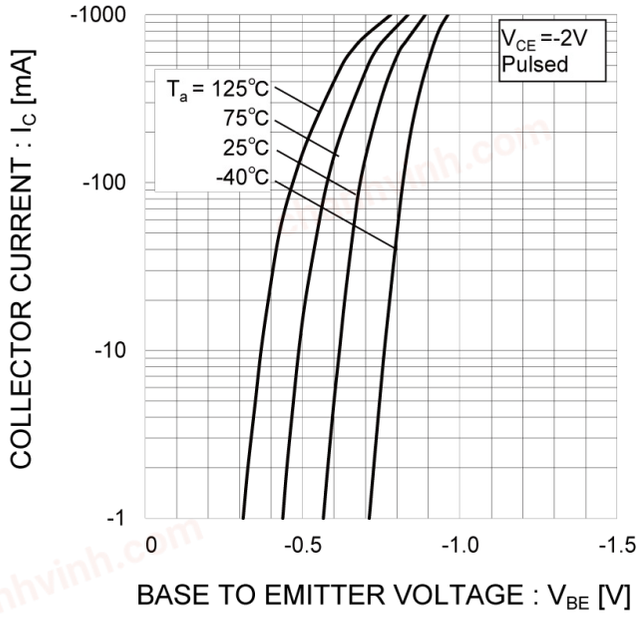


Fig.2 Typical Output Characteristics

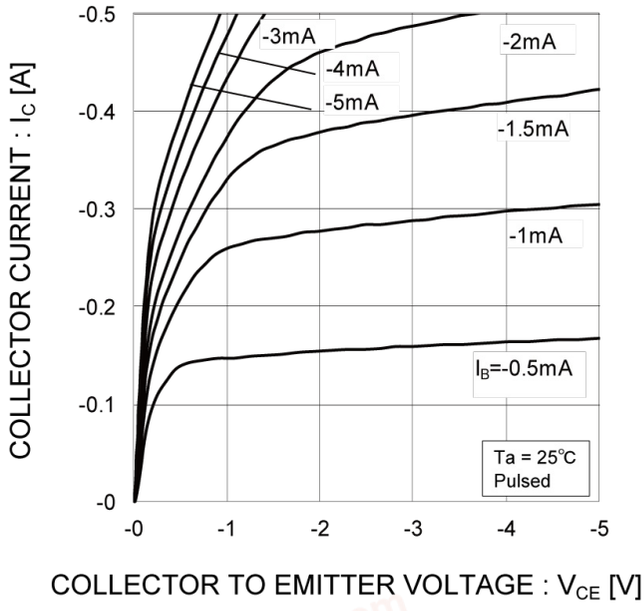


Fig.3 DC Current Gain vs. Collector Current(I)

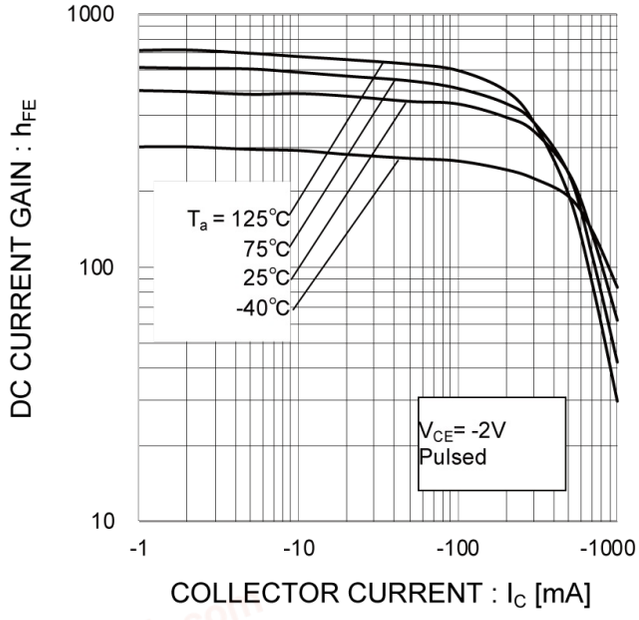
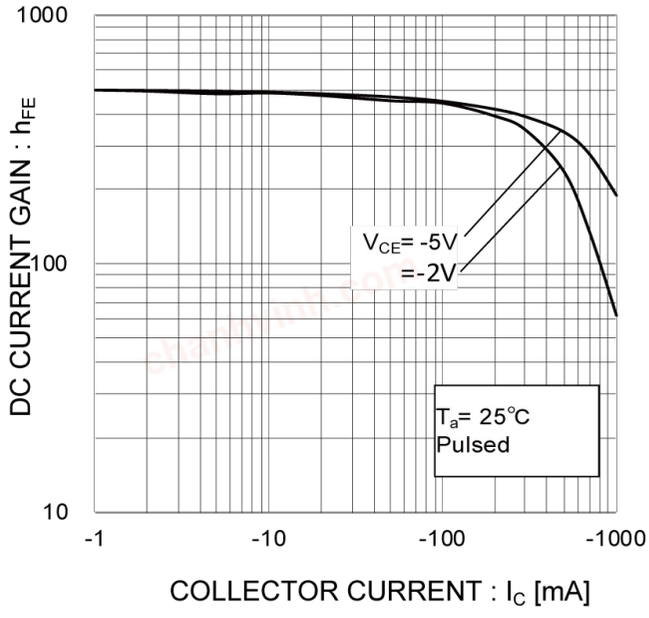


Fig.4 DC Current Gain vs. Collector Current(II)



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●Electrical characteristic curves(T_a = 25°C)

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

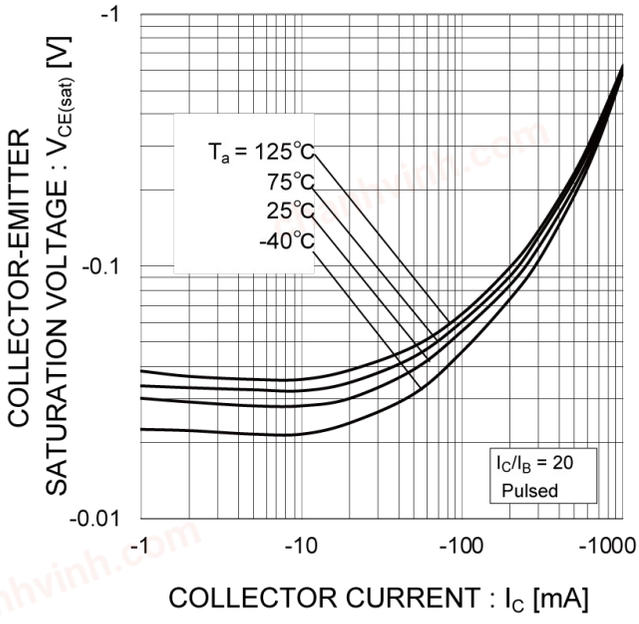


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

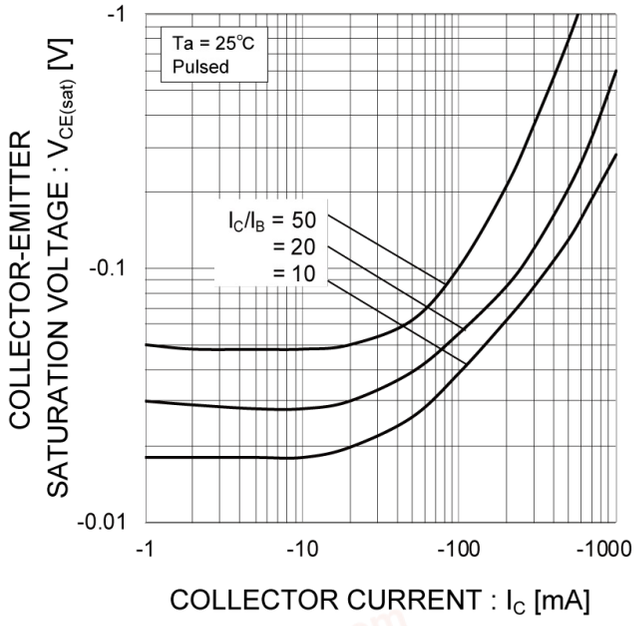


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

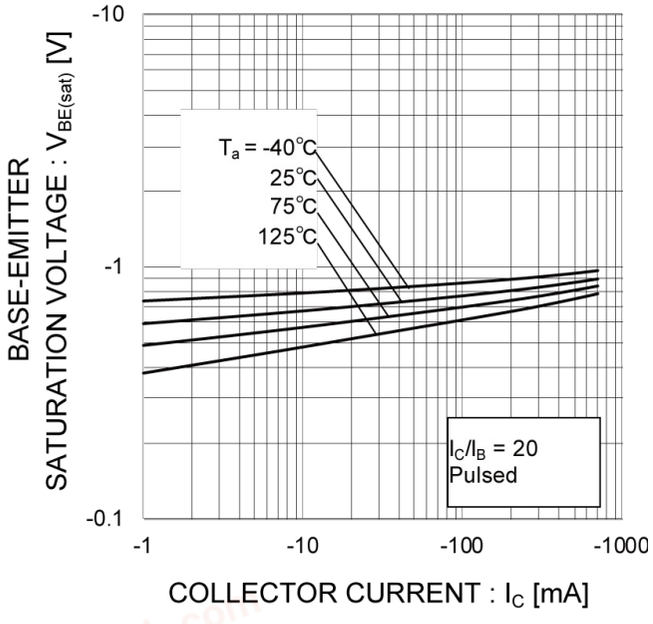
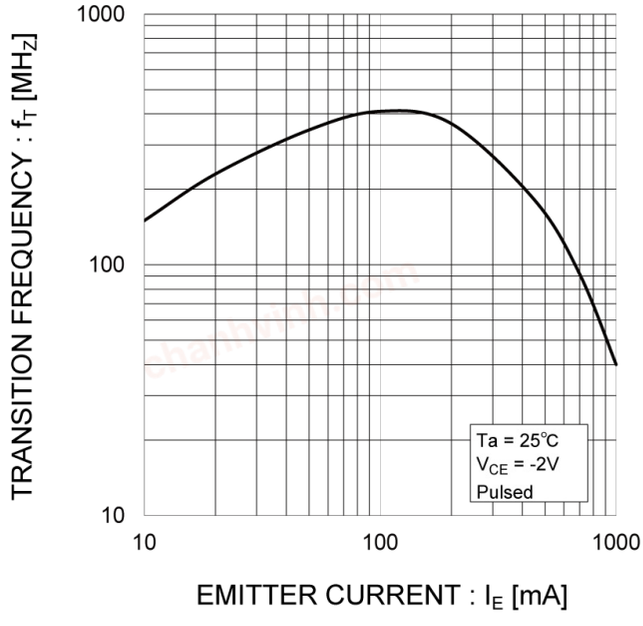


Fig.8 Gain Bandwidth Product vs. Emitter Current



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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

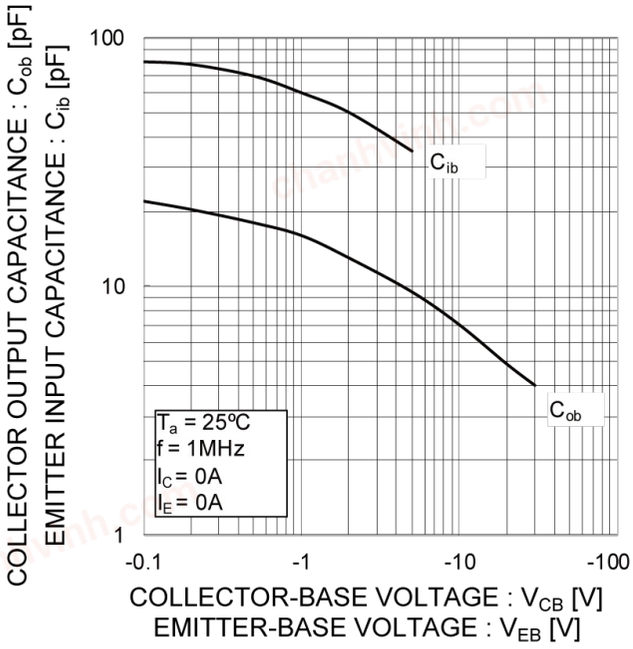
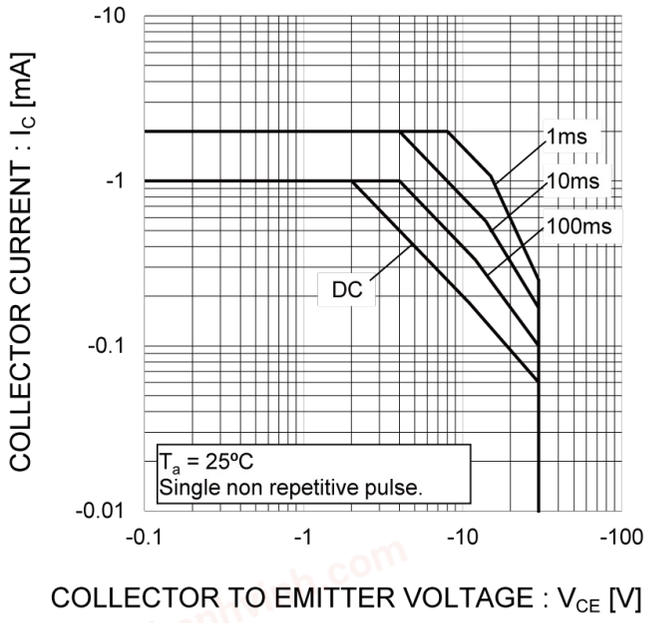
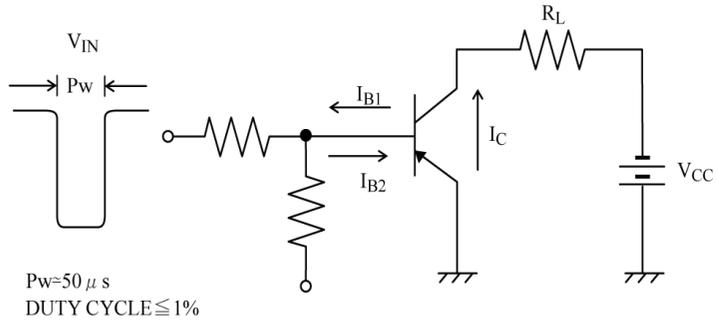
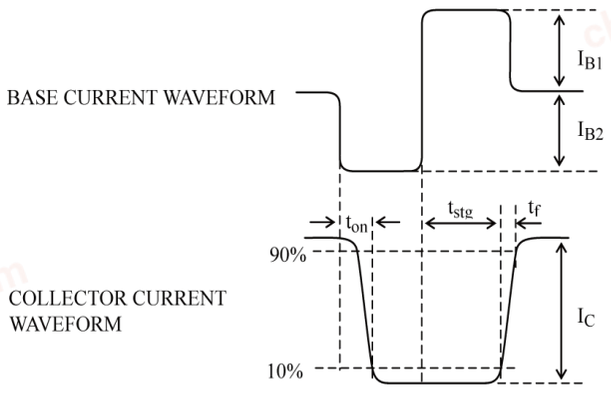


Fig.10 Safe Operating Area



SWITCHING TIME TEST CIRCUIT



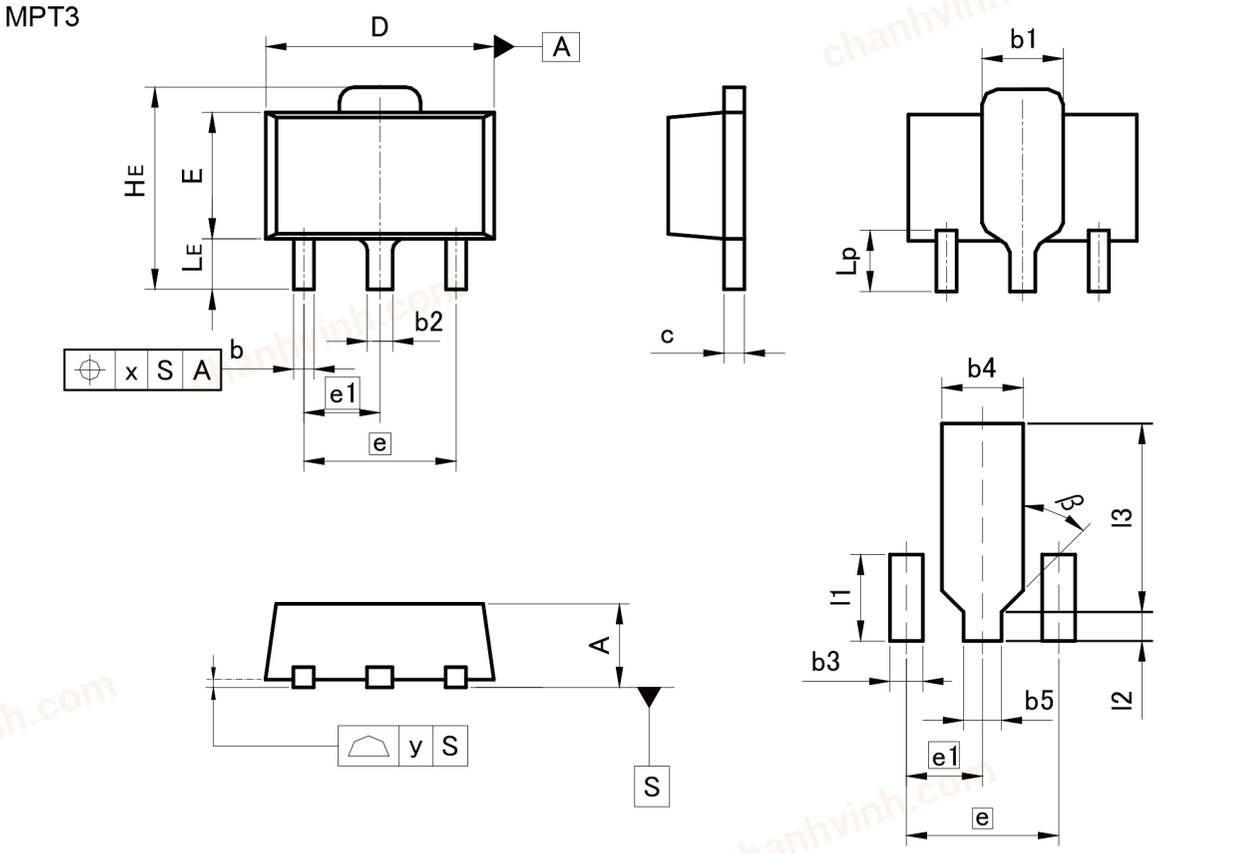


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●Dimensions

MPT3



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.40	1.50	0.055	0.059
b	0.30	0.50	0.012	0.020
b1	1.50	1.70	0.059	0.067
b2	0.40	0.60	0.016	0.024
c	0.35	0.50	0.014	0.020
D	4.40	4.70	0.173	0.185
E	2.40	2.70	0.094	0.106
e	3.00		0.118	
e1	1.50		0.059	
HE	3.70	4.30	0.146	0.169
LE	0.80	1.20	0.031	0.047
Lp	1.01	1.41	0.040	0.056
x	–	0.15	–	0.006
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b3	–	0.65	–	0.026
b4	–	1.70	–	0.067
b5	–	0.75	–	0.030
l1	–	1.71	–	0.067
l2	–	0.58	–	0.023
l3	–	3.72	–	0.146
β	45°		45°	

Dimension in mm/inches

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