

Medium Power Transistors (-30V / -1A)

2SAR293P

●Structure

PNP Silicon epitaxial planar transistor

●Features

Low saturation voltage

$V_{CE(sat)} = -0.35V$ (Max.) ($I_C / I_B = -500mA / -25mA$)

●Applications

Driver

●Packaging specifications

Type	Package	MPT3
	Code	T100
	Basic ordering unit (pieces)	1000

●Absolute maximum ratings (Ta=25°C)

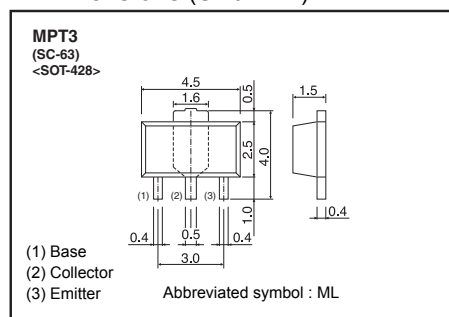
Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	-30	V
Collector-emitter voltage	V_{CEO}	-30	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	DC	I_C	-1
	Pulsed	I_{CP}^{*1}	-2
Power dissipation		P_D^{*2}	0.5
		P_D^{*3}	2.0
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to 150	°C

*1 $P_w=10ms$, Single Pulse

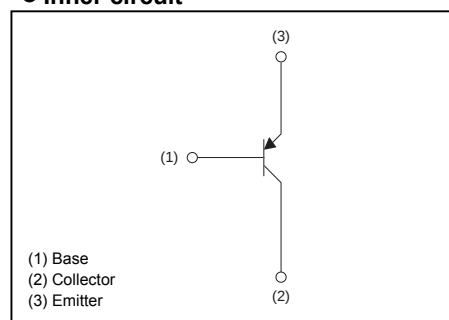
*2 Mounted on a recommended land

*3 Mounted on a $40 \times 40 \times 0.7$ [mm] ceramic substrate

●Dimensions (Unit : mm)



●Inner circuit



●Electrical characteristic (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	-30	-	-	V	$I_C = -1mA$
Collector-base breakdown voltage	BV_{CBO}	-30	-	-	V	$I_C = -10\mu A$
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	$I_E = -10\mu A$
Collector cut-off current	I_{CBO}	-	-	-100	nA	$V_{CB} = -30V$
Emitter cut-off current	I_{EBO}	-	-	-100	nA	$V_{EB} = -6V$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	-	-150	-350	mV	$I_C = -500mA, I_B = -25mA$
DC current gain	h_{FE}	270	-	680	-	$V_{CE} = -2V, I_C = -100mA$
Transition frequency	f_T^{*1}	-	320	-	MHz	$V_{CE} = -2V, I_E = 100mA$ $f = 100MHz$
Collector output capacitance	C_{ob}	-	7	-	pF	$V_{CB} = -10V, I_E = 0A$ $f = 1MHz$
Turn-on time	t_{on}^{*2}	-	60	-	ns	$I_C = -500mA, I_{B1} = -25mA$ $I_{B2} = 25mA, V_{CC} \approx -10V$
Storage time	t_{stg}^{*2}	-	160	-	ns	
Fall time	t_f^{*2}	-	50	-	ns	

*1 Pulsed

*2 See switching time test circuit

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics

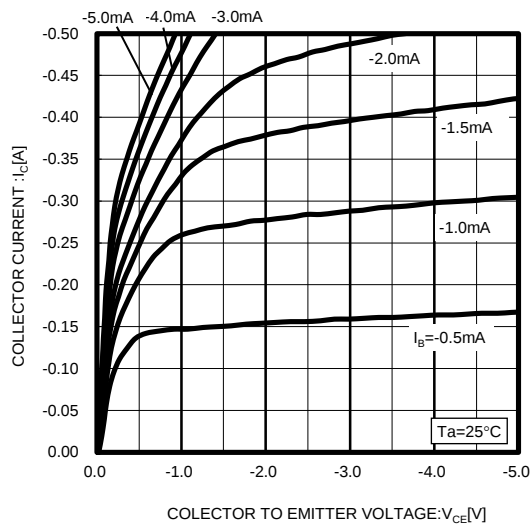


Fig.2 DC Current Gain vs. Collector Current(I)

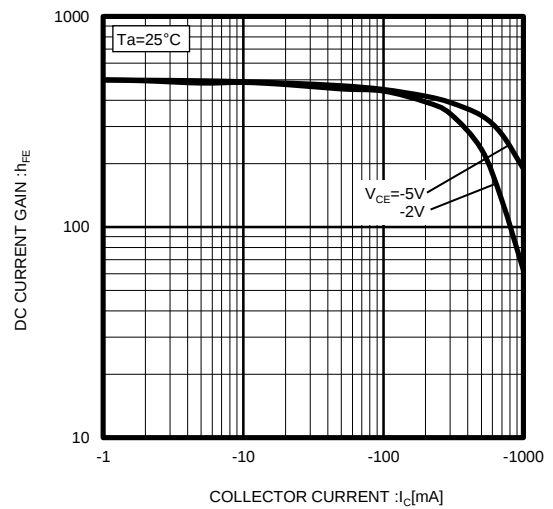


Fig.3 DC Current Gain vs. Collector Current(II)

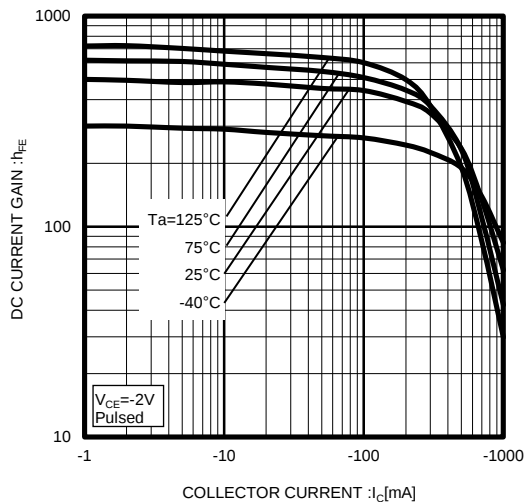


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current(I)

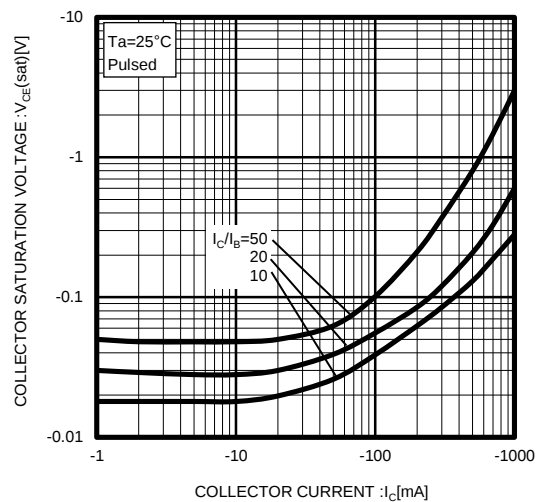


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current(II)

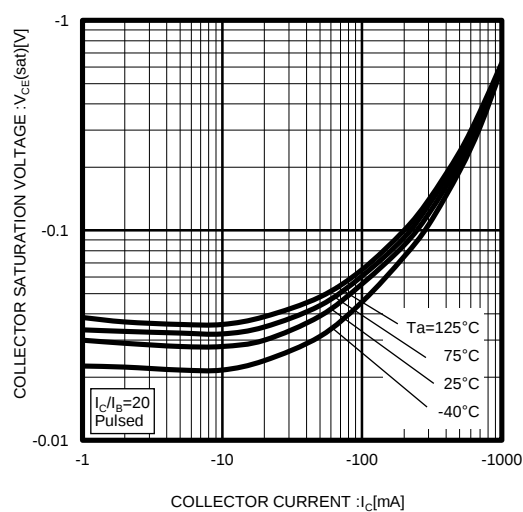


Fig.6 Ground Emitter Propagation Characteristics

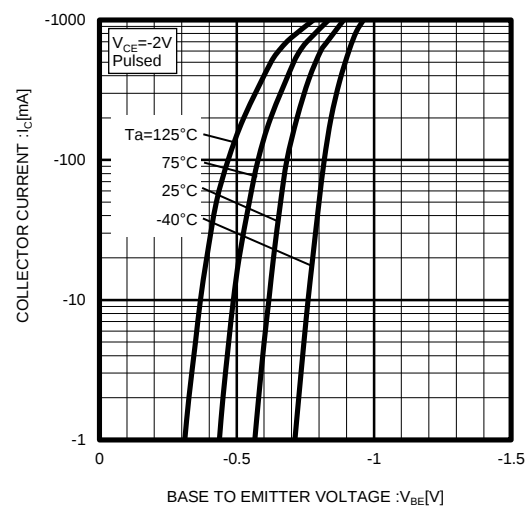


Fig.7 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

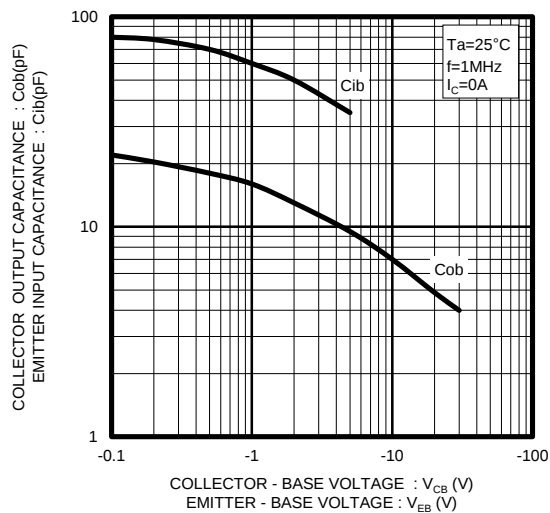


Fig.8 Gain Bandwidth Product vs. Emitter Current

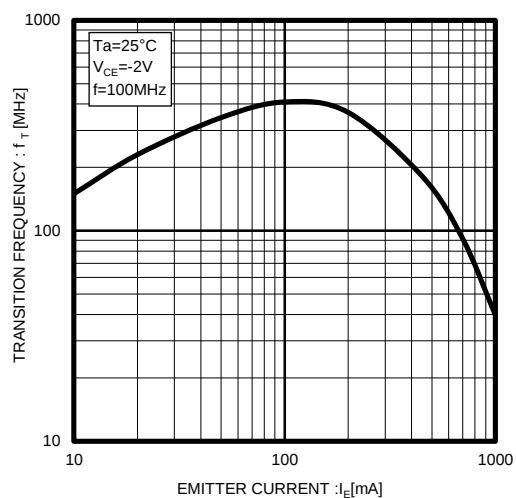
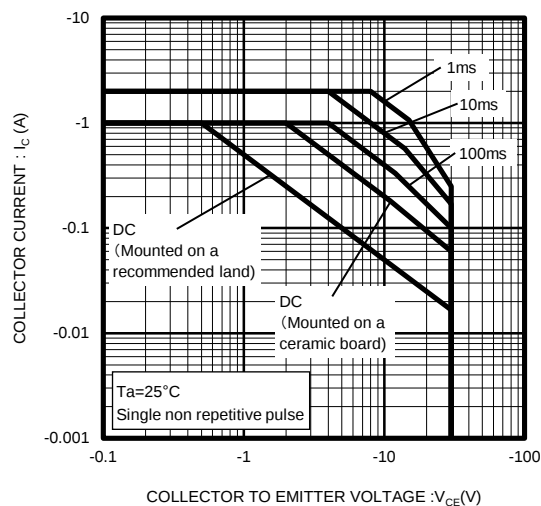
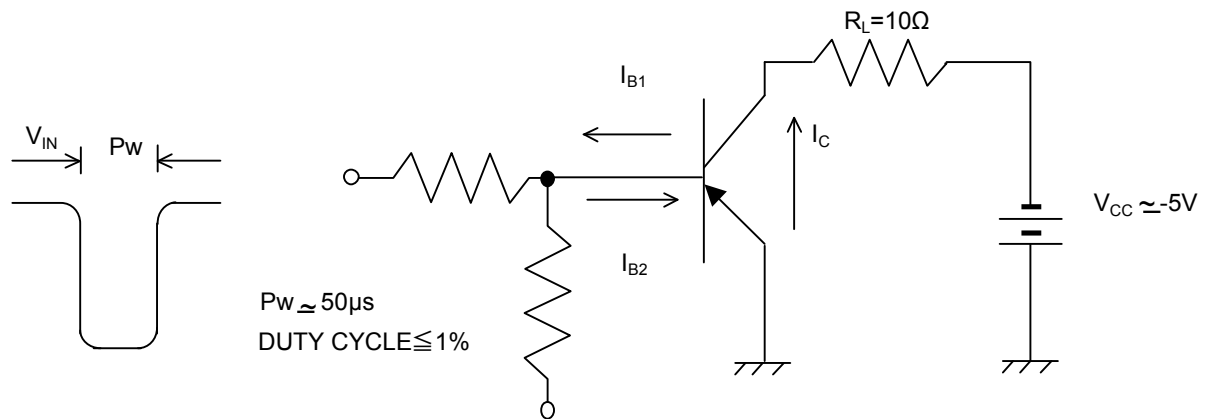


Fig.9. SAFE OPERATING AREA

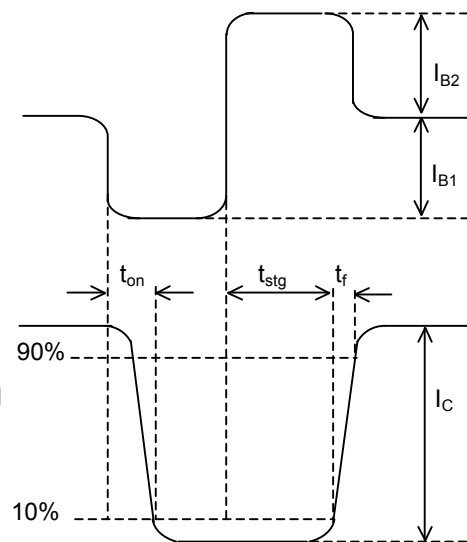


● Switching time test circuit



BASE CURENT WAVEFORM

COLLECTOR CURRENT WAVEFORM



Notes

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