

# Midium Power Transistors (30V / 1A)

## 2SCR293P

● **Structure**

NPN 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)**

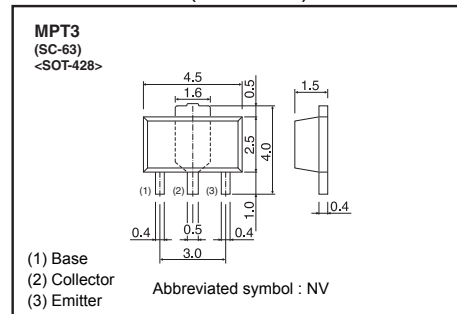
Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CBO}$	30	V	
Collector-emitter voltage	$V_{CEO}$	30	V	
Emitter-base voltage	$V_{EBO}$	6	V	
Collector current	DC	$I_C$	1	A
	Pulsed	$I_{CP}^{*1}$	2	A
Power dissipation		$P_D^{*2}$	0.5	W
		$P_D^{*3}$	2.0	W
Junction temperature	$T_j$	150	°C	
Range of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

\*1 Pw=10ms, Single Pulse

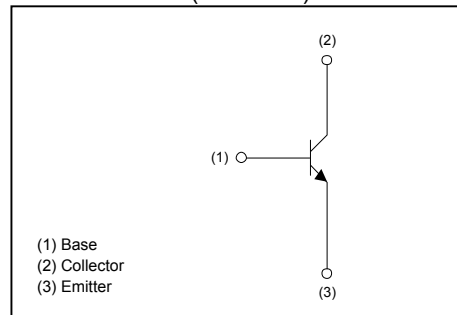
\*2 Mounted on a recommended land

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

● **Dimensions (Unit : mm)**



● **Inner circuit (Unit : mm)**



## ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	$BV_{CEO}$	30	-	-	V	$I_C = 1\text{mA}$
Collector-base breakdown voltage	$BV_{CBO}$	30	-	-	V	$I_C = 10\mu\text{A}$
Emitter-base breakdown voltage	$BV_{EBO}$	6	-	-	V	$I_E = 10\mu\text{A}$
Collector cut-off current	$I_{CBO}$	-	-	100	nA	$V_{CB} = 30\text{V}$
Emitter cut-off current	$I_{EBO}$	-	-	100	nA	$V_{EB} = 6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	-	120	350	mV	$I_C = 500\text{mA}$ , $I_B = 25\text{mA}$
DC current gain	$h_{FE}$	270	-	680	-	$V_{CE} = 2\text{V}$ , $I_C = 100\text{mA}$
Transition frequency	$f_T^{*1}$	-	320	-	MHz	$V_{CE} = 2\text{V}$ $I_E = -100\text{mA}$ , $f = 100\text{MHz}$
Collector output capacitance	$C_{ob}$	-	7	-	pF	$V_{CB} = 10\text{V}$ , $I_E = 0\text{A}$ $f = 1\text{MHz}$
Turn-on time	$t_{on}^{*2}$	-	90	-	ns	$I_C = 500\text{mA}$ , $I_{B1} = 25\text{mA}$ , $I_{B2} = -25\text{mA}$ , $V_{CC} \approx 5\text{V}$
Storage time	$t_{stg}^{*2}$	-	300	-	ns	
Fall time	$t_f^{*2}$	-	60	-	ns	

\*1 Pulsed

\*2 See switching time test circuit

●Electrical characteristic curves (Ta=25°C)

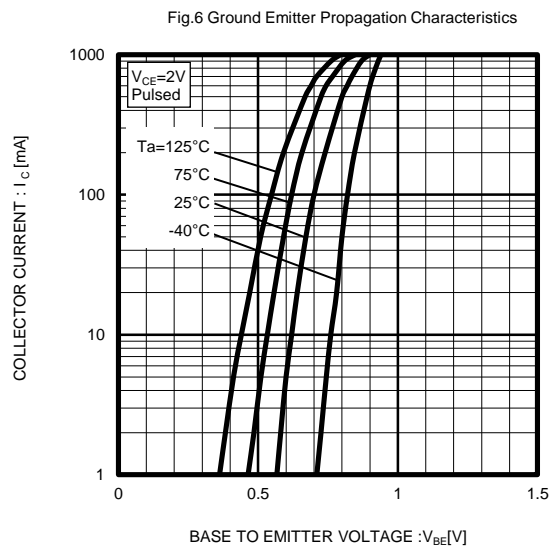
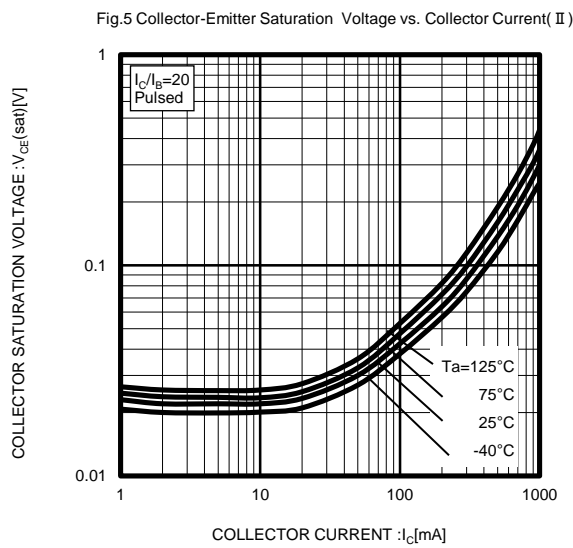
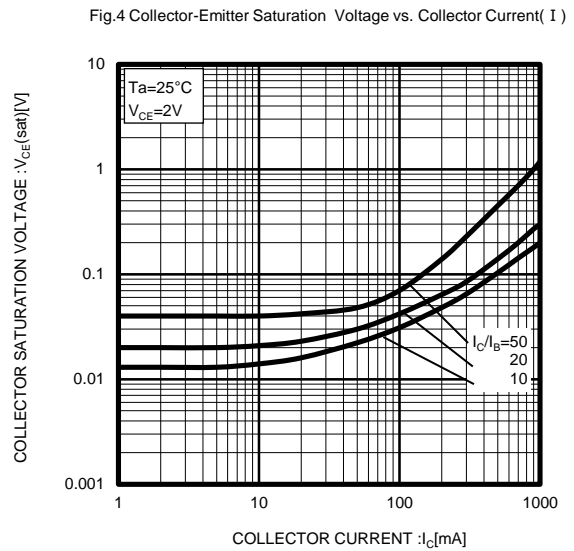
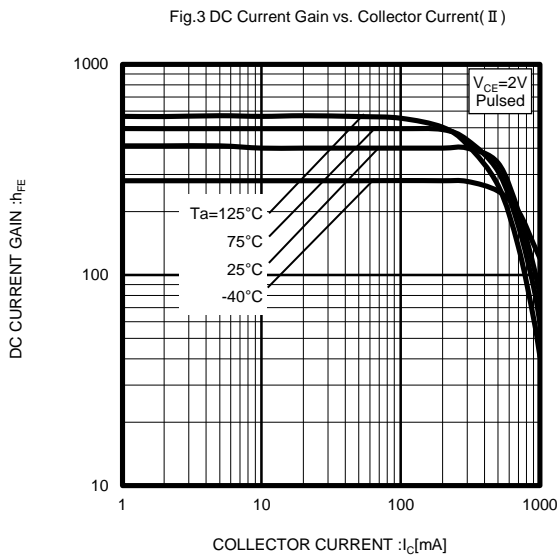
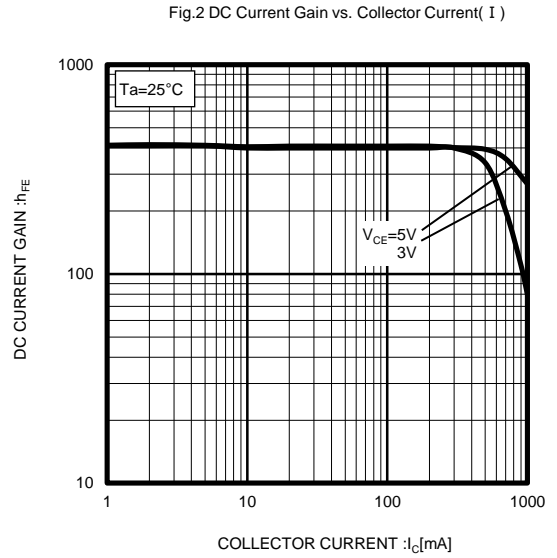
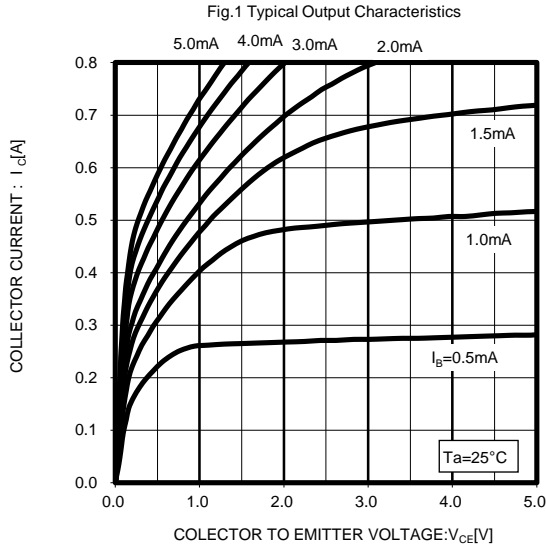


Fig.7 Emitter input capacitance vs. Emitter-Base Voltage  
Collector output capacitance vs. Collector-Base Voltage

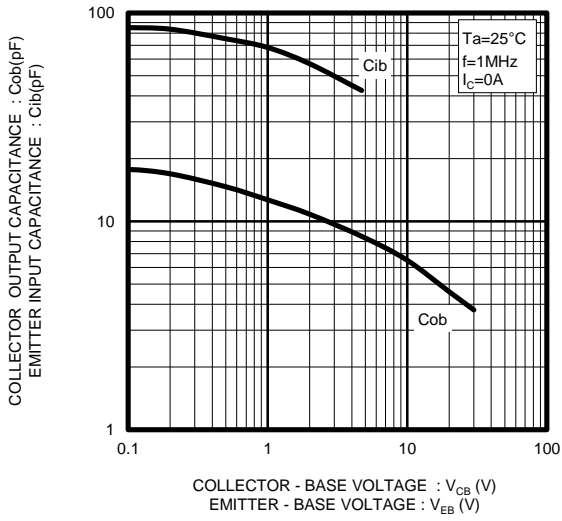


Fig.8 Gain Bandwidth Product vs. Emitter Current

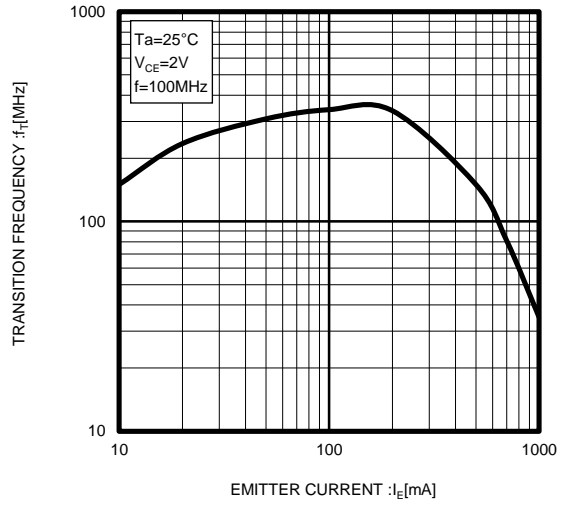
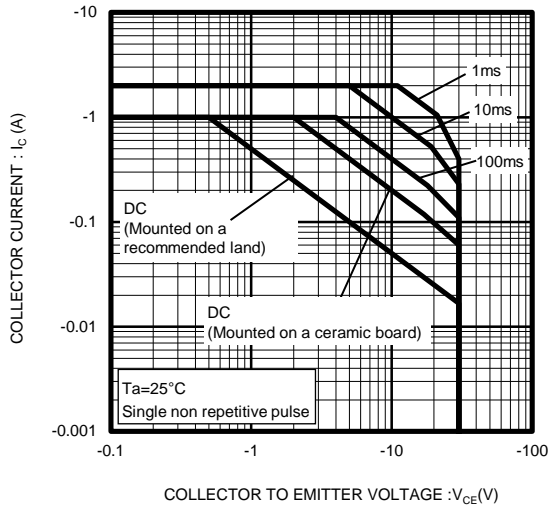
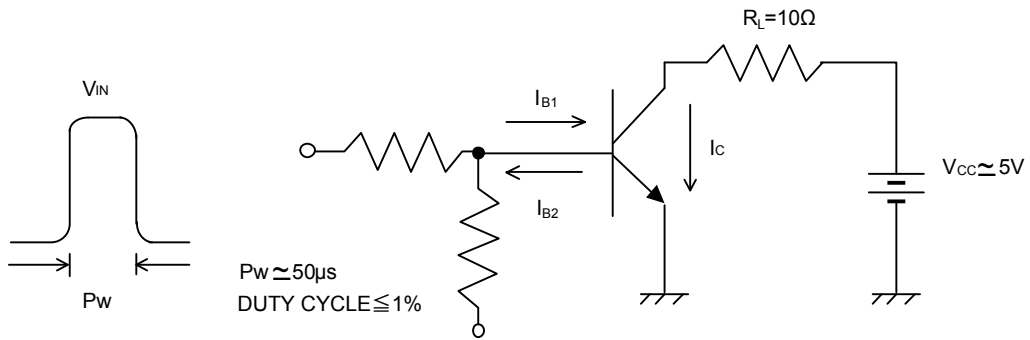


Fig.9. SAFE OPERATING AREA

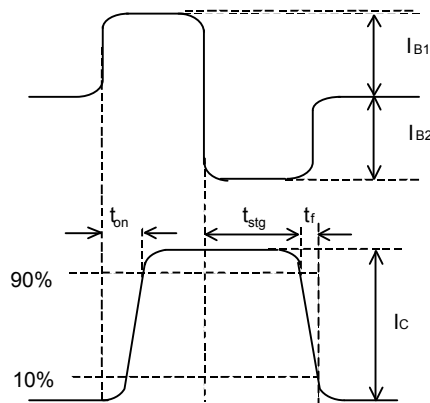


● Switching time test circuit



BASE CURRENT WAVEFORM

COLLECTOR CURRENT WAVEFORM



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