

Medium Power Transistors (30V / 2A)

2SCR512P

● **Structure**

NPN Silicon epitaxial planar transistor

● **Features**

- 1) Low saturation voltage, typically
 $V_{CE(sat)} = 0.4V$ (Max.) ($I_C / I_B = 700mA / 35mA$)
- 2) High speed switching

● **Applications**

Driver

● **Packaging specifications**

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SCR512P		○

● **Absolute maximum ratings** ($T_a = 25^\circ C$)

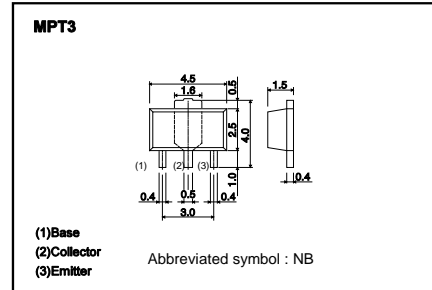
Parameter	Symbol	Limits	Unit	
Collector-base voltage	V_{CBO}	30	V	
Collector-emitter voltage	V_{CEO}	30	V	
Emitter-base voltage	V_{EBO}	6	V	
Collector current	DC	I_C	2	A
	Pulsed	I_{CP}^{*1}	4	A
Power dissipation	P_D^{*2}	0.5	W	
	P_D^{*3}	2	W	
Junction temperature	T_j	150	$^\circ C$	
Range of storage temperature	T_{stg}	-55 to 150	$^\circ C$	

*1 $P_w=10ms$, Single Pulse

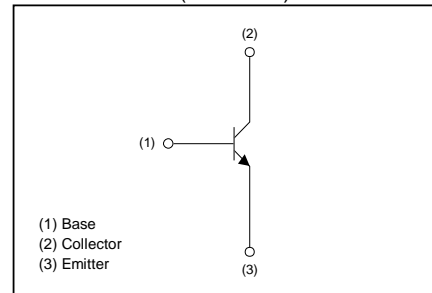
*2 Each terminal mounted on a recommended land.

*3 Mounted on a ceramic board. (40x40x0.7mm³)

● **Dimensions** (Unit : mm)



● **Inner circuit** (Unit : mm)



●Electrical characteristic (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	$I_C = 100\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	6	-	-	V	$I_E = 100\mu\text{A}$
Collector cut-off current	I_{CBO}	-	-	1	μA	$V_{CB} = 30\text{V}$
Emitter cut-off current	I_{EBO}	-	-	1	μA	$V_{EB} = 4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	-	200	400	mV	$I_C = 700\text{mA}$, $I_B = 35\text{mA}$
DC current gain	h_{FE}	200	-	500	-	$V_{CE} = 2\text{V}$, $I_C = 100\text{mA}$
Transition frequency	f_T^{*1}	-	320	-	MHz	$V_{CE} = 10\text{V}$ $I_E = -100\text{mA}$, $f = 100\text{MHz}$
Collector output capacitance	C_{ob}	-	10	-	pF	$V_{CB} = 10\text{V}$, $I_E = 0\text{A}$ $f = 1\text{MHz}$
Turn-on time	t_{on}^{*2}	-	25	-	ns	$I_C = 1\text{A}$, $I_{B1} = 100\text{mA}$, $I_{B2} = -100\text{mA}$, $V_{CC} \sim 10\text{V}$
Storage time	t_{stg}^{*2}	-	240	-	ns	
Fall time	t_f^{*2}	-	20	-	ns	

*1 Pulsed

*2 See switching time test circuit

●Electrical characteristic curves

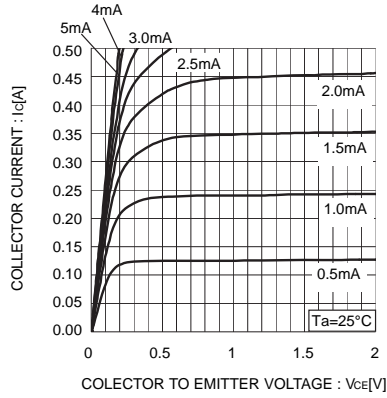


Fig.1 Typical Output Characteristics

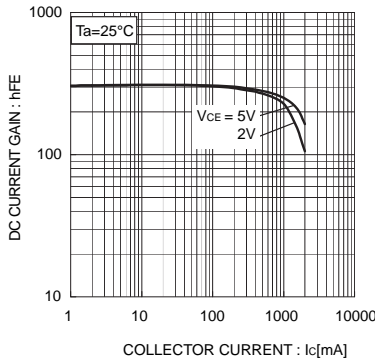


Fig.2 DC Current Gain vs. Collector Current (I)

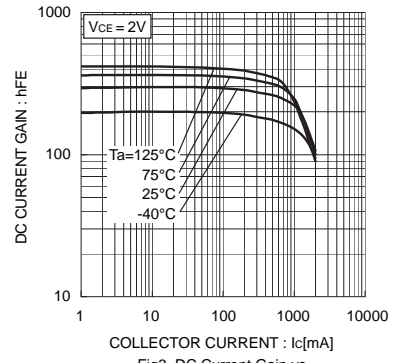


Fig.3. DC Current Gain vs. Collector Current (II)

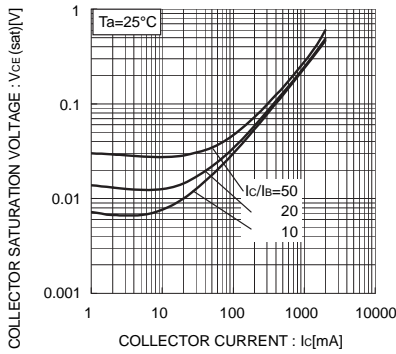


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (I)

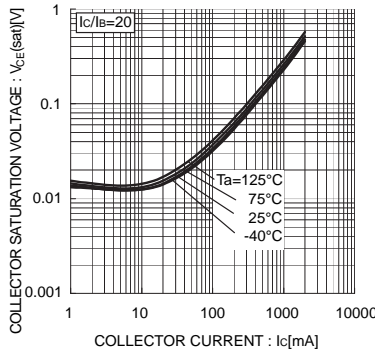


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (II)

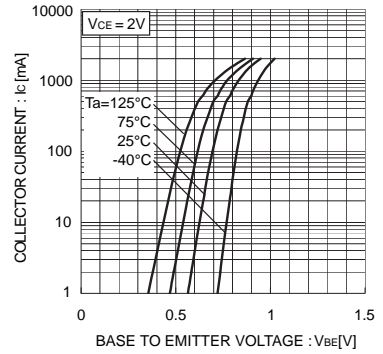


Fig.6 Ground Emitter Propagation Characteristics

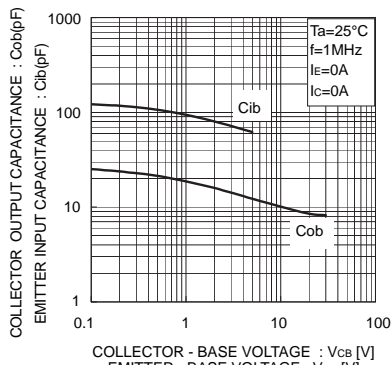


Fig.7 Emitter Input Capacitance vs. Emitter-Base Voltage
Collector Output Capacitance vs. Collector-Base Voltage

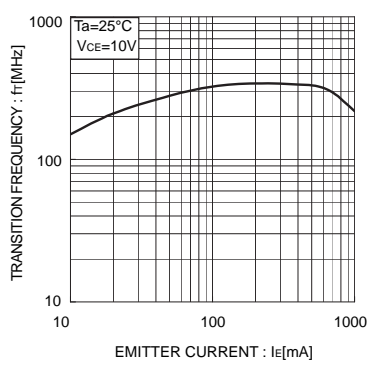


Fig.8 Gain Bandwidth Product vs. Emitter Current

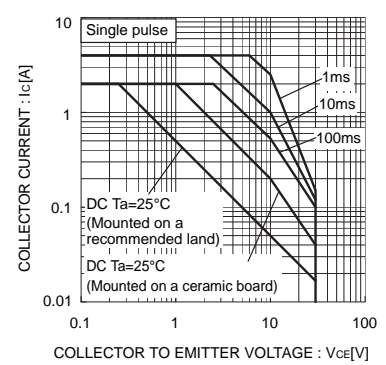
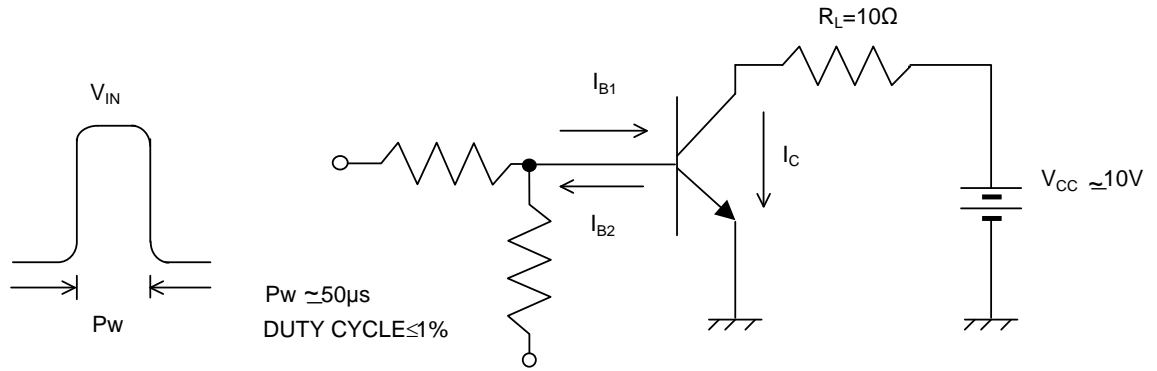
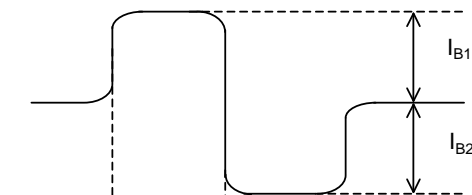


Fig.9 Safe Operating Area

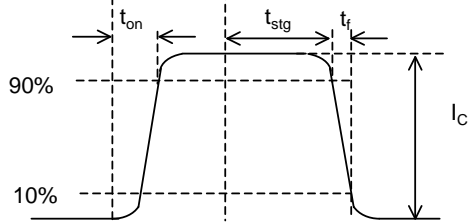
●Switching time test circuit



BASE CURRENT WAVEFORM



COLLECTOR CURRENT WAVEFORM



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