

Medium Power Transistors (80V / 0.7A)

2SCR514R

● Features

- 1) Low saturation voltage, typically
 $V_{CE(sat)} = 0.3V$ (Max.) ($I_C / I_B = 300mA / 15mA$)
- 2) High speed switching

● Structure

NPN Silicon epitaxial planar transistor

● Applications

Driver

● Packaging specification:

Type	Package	TSMT3
	Code	TL
	Basic ordering unit (pieces)	3000

● Absolute maximum ratings (Ta = 25°C)

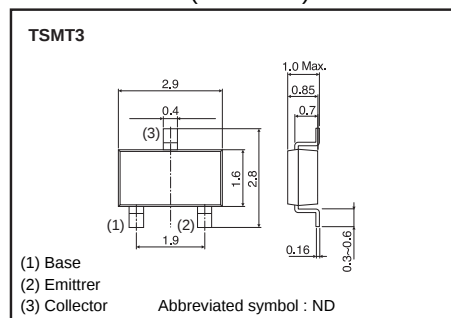
Parameter		Symbol	Limits	Unit
Collector-base voltage		V _{CBO}	80	V
Collector-emitter voltage		V _{CEO}	80	V
Emitter-base voltage		V _{EBO}	6	V
Collector current	DC	I _C	0.7	A
	Pulsed	I _{CP} *1	1.4	A
Power dissipation		P _D *2	0.5	W
		P _D *3	1.0	W
Junction temperature		T _j	150	°C
Range of storage temperature		T _{stg}	-55 to 150	°C

*1 $P_W=10ms$, Single Pulse

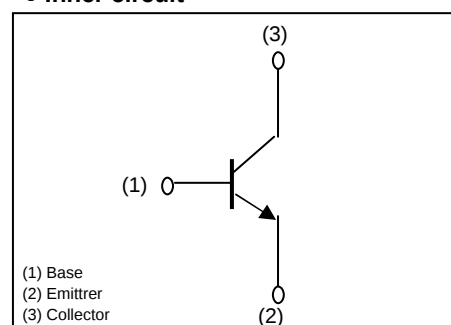
*2 Mounted on a recommended land.

*3 Mounted on a $40 \times 40 \times 0.7[mm^3]$ 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}	80	-	-	V	$I_C = 1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	80	-	-	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	$V_{CB} = 80\text{V}$
Emitter cut-off current	I_{EBO}	-	-	1	μA	$V_{EB} = 4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	100	300	mV	$I_C = 300\text{mA}$, $I_B = 15\text{mA}$
DC current gain	h_{FE}	120	-	390	-	$V_{CE} = 3\text{V}$, $I_C = 100\text{mA}$
Transition frequency	f_T	-	320	-	MHz	$V_{CE} = 10\text{V}$ $I_E = -200\text{mA}$, $f = 100\text{MHz}$
Collector output capacitance	C_{ob}	-	6	-	pF	$V_{CB} = 10\text{V}$, $I_E = 0\text{A}$ $f = 1\text{MHz}$
Turn-on time	t_{on}^{*1}	-	50	-	ns	$I_C = 0.35\text{A}$, $I_{B1} = 35\text{mA}$, $I_{B2} = -35\text{mA}$, $V_{CC} = 10\text{V}$
Storage time	t_{stg}^{*1}	-	650	-	ns	
Fall time	t_f^{*1}	-	100	-	ns	

*1 See switching time test circuit

● Electrical characteristic curves (Ta = 25°C)

Fig1. Typical Output Characteristics

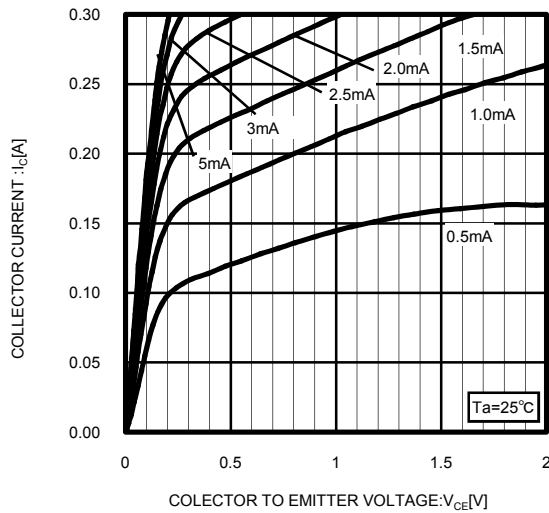


Fig2. DC Current Gain vs. Collector Current (I)

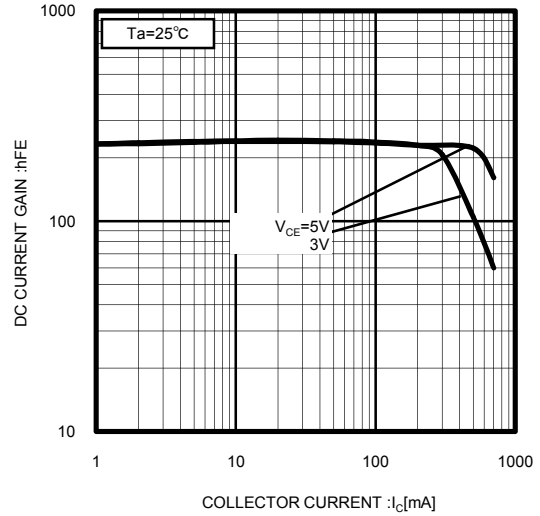


Fig3. DC Current Gain vs. Collector Current (II)

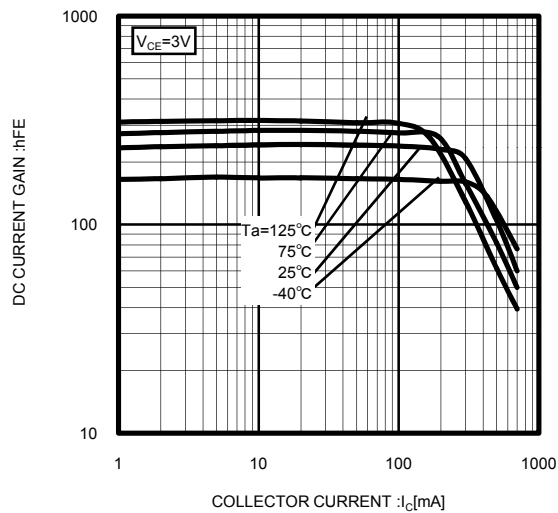


Fig4. Collector-Emitter Saturation Voltage vs. Collector Current (I)

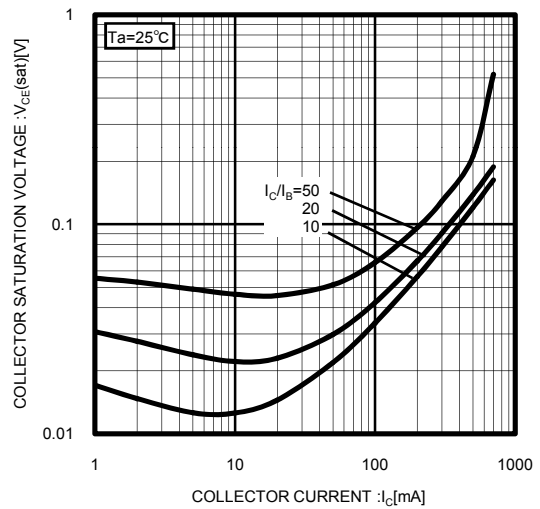


Fig5. Collector-Emitter Saturation Voltage vs. Collector Current (II)

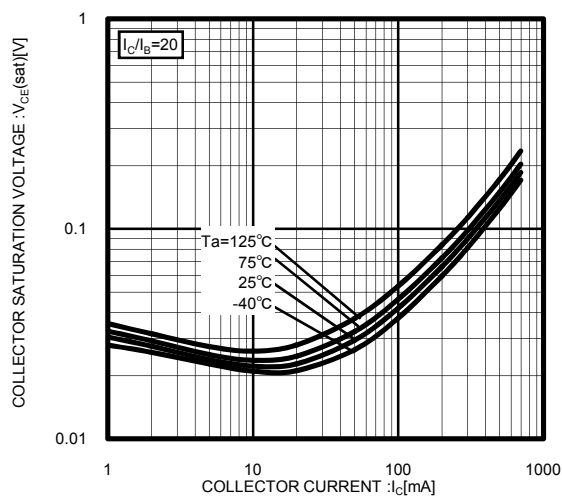


Fig.6 Ground Emitter Propagation Characteristics

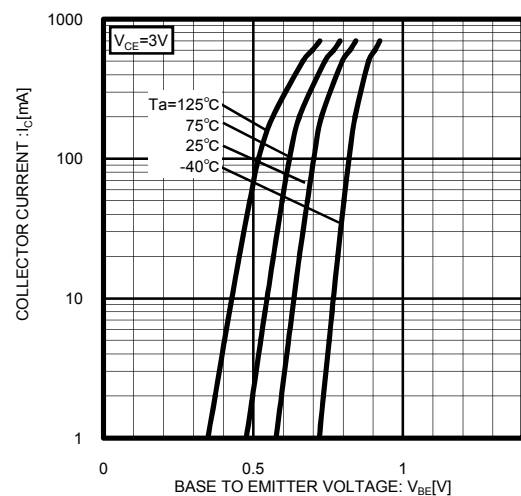


Fig.7 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

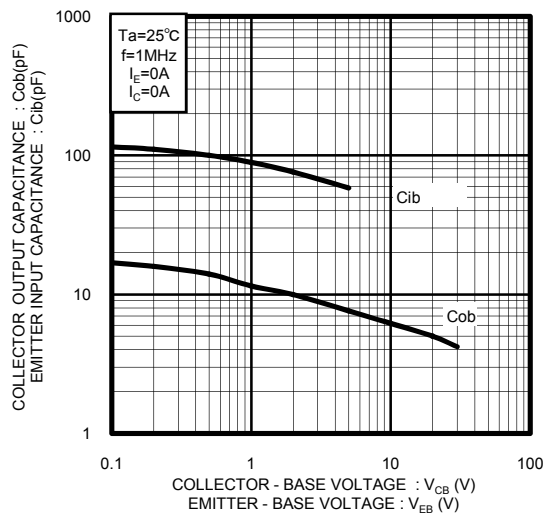


Fig.8 Gain Bandwidth Product vs. Emitter Current

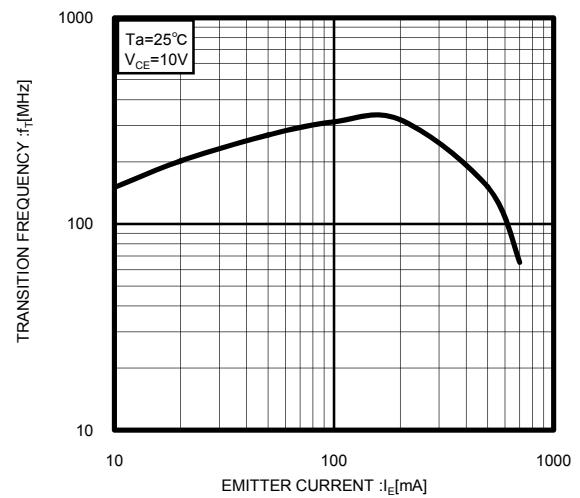
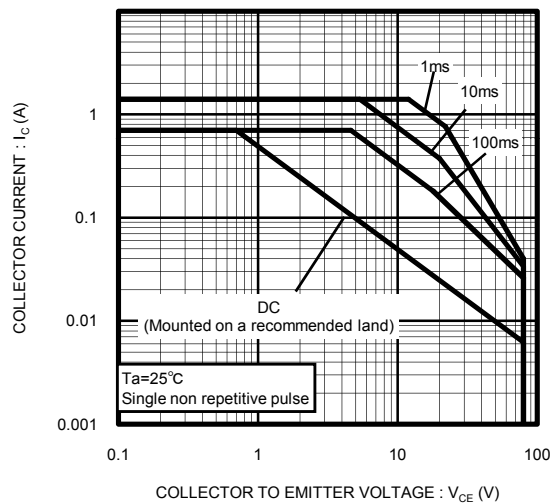
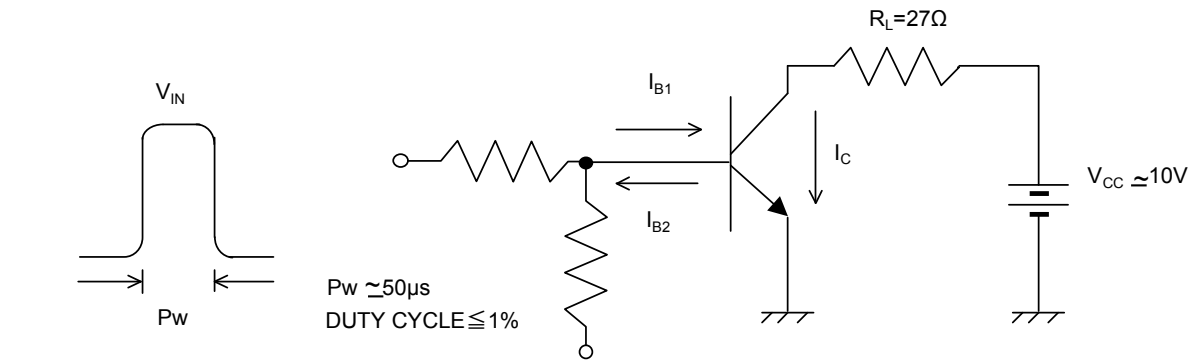


Fig.9. Safe Operating Area

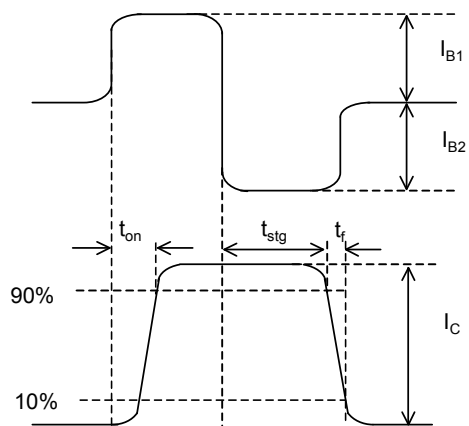


● Switching time test circuit



BASE CURENT
WAVEFORM

COLLECTOR
CURRENT
WAVEFORM



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