Midium 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

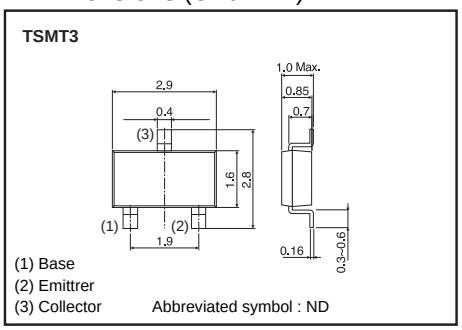
● Structure

NPN Silicon epitaxial planar transistor

● Applications

Driver

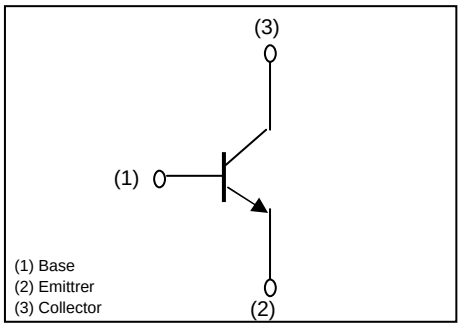
● Dimensions (Unit : mm)



● Packaging specifications

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

● Inner circuit



● 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 Pw=10ms, Single Pulse

*2 Mounted on a recommended land.

*3 Mounted on a 40 x 40 x 0.7[mm^3] ceramic substrate.

● **Electrical characteristic** (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	80	-	-	V	I_C= 1mA
Collector-base breakdown voltage	BV_{CBO}	80	-	-	V	I_C= 100μA
Emitter-base breakdown voltage	BV_{EBO}	6	-	-	V	I_E= 100μA
Collector cut-off current	I_{CBO}	-	-	1	μA	V_{CB}= 80V
Emitter cut-off current	I_{EBO}	-	-	1	μA	V_{EB}= 4V
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	100	300	mV	I_C= 300mA, I_B= 15mA
DC current gain	h_{FE}	120	-	390	-	V_{CE}= 3V, I_C= 100mA
Transition frequency	f_T	-	320	-	MHz	V_{CE}= 10V I_E=-200mA, f=100MHz
Collector output capacitance	C_{ob}	-	6	-	pF	V_{CB}= 10V, I_E=0A f=1MHz
Turn-on time	t_{on} *1	-	50	-	ns	I_C= 0.35A, I_{B1}= 35mA, I_{B2}=-35mA, V_{CC}≒ 10V
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

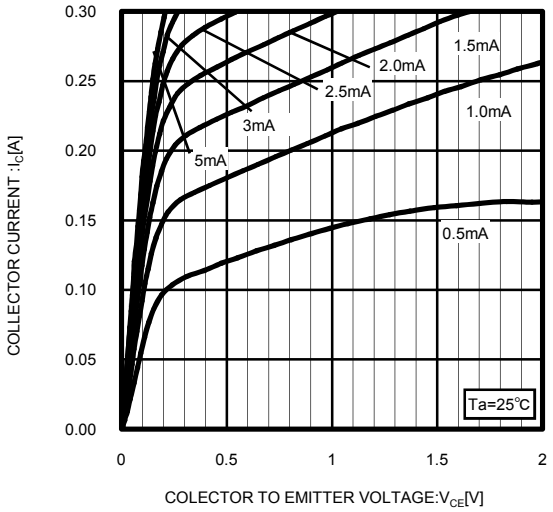


Fig2. DC Current Gain vs. Collector Current(Ⅰ)

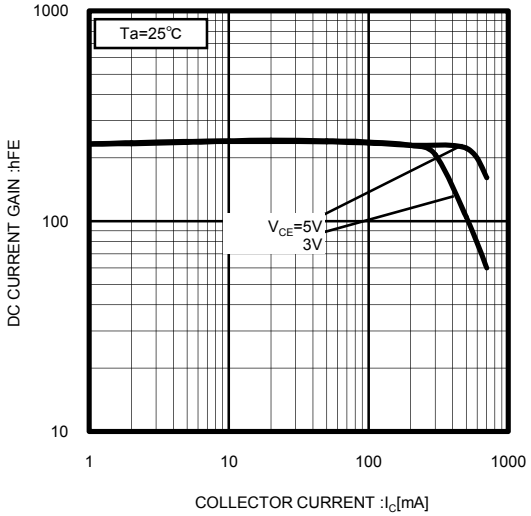


Fig3. DC Current Gain vs.Collector Current(Ⅱ)

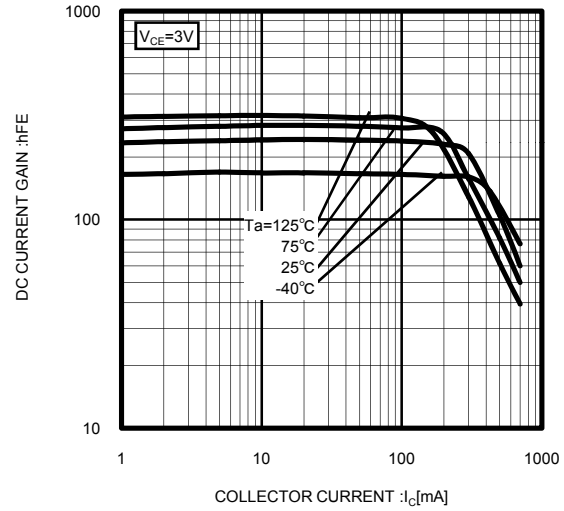


Fig4. Collector-Emitter Saturation Voltage vs. Collector Current(Ⅰ)

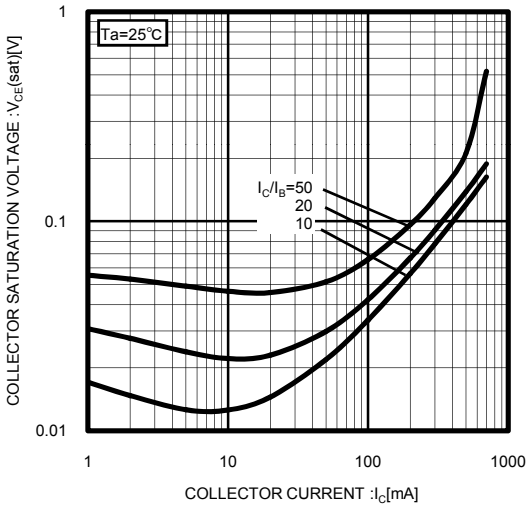


Fig5. Collector-Emitter Saturation Voltage vs. Collector Current(Ⅱ)

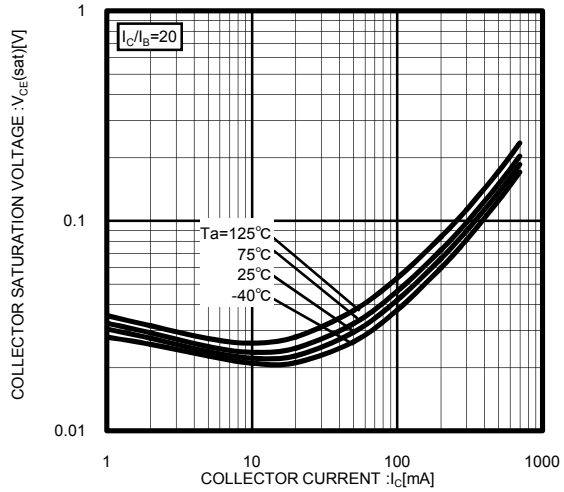


Fig.6 Ground Emitter Propagation Characteristics

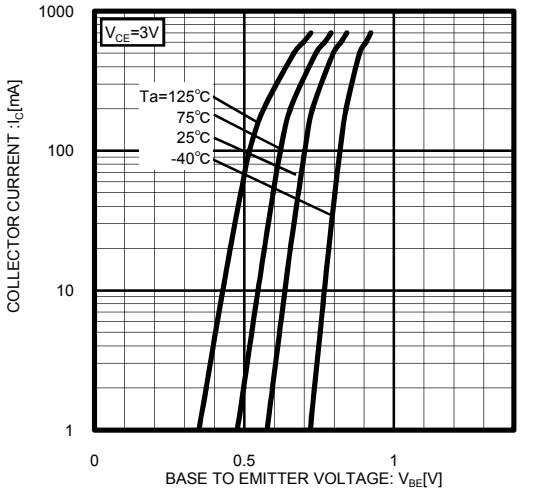


Fig.7 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

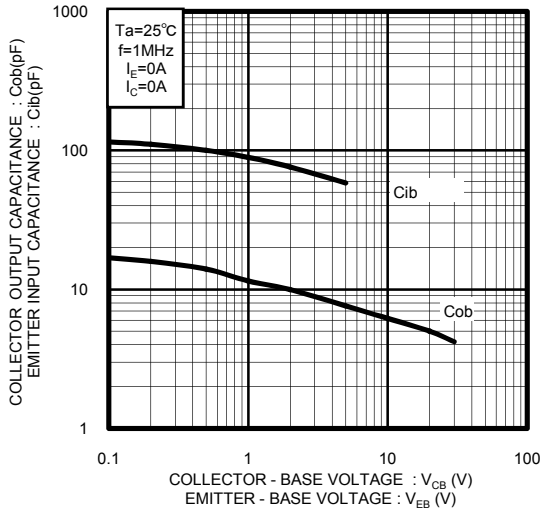


Fig8. Gain Bandwidth Product vs. Emitter Current

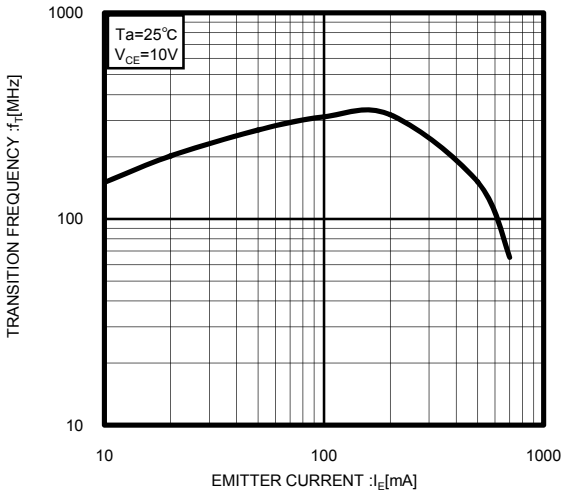
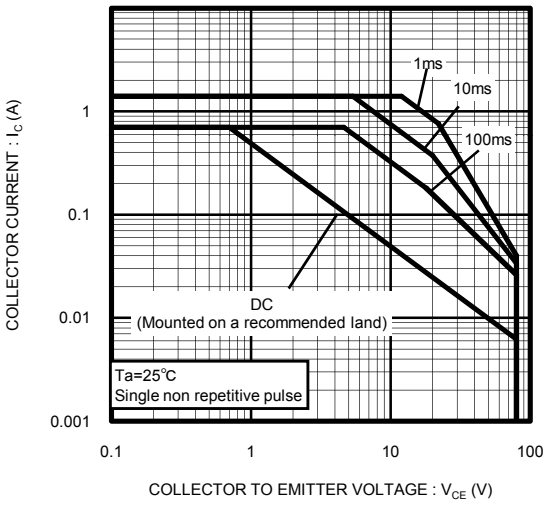
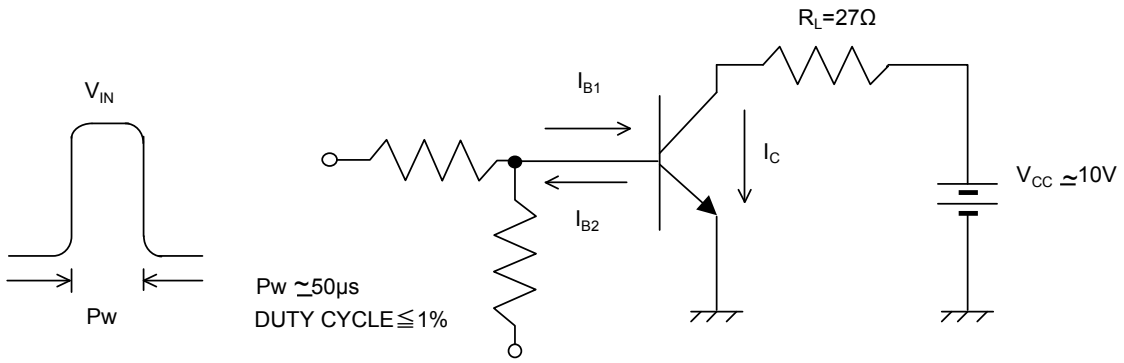
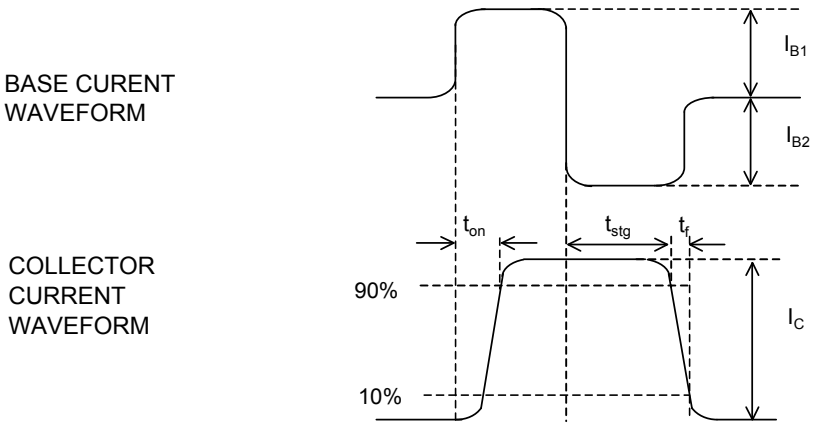


Fig9. Safe Operating Area



● **Switching time test circuit**





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