

# High-speed Switching Transistor (-60V, -5A)

## 2SA1952

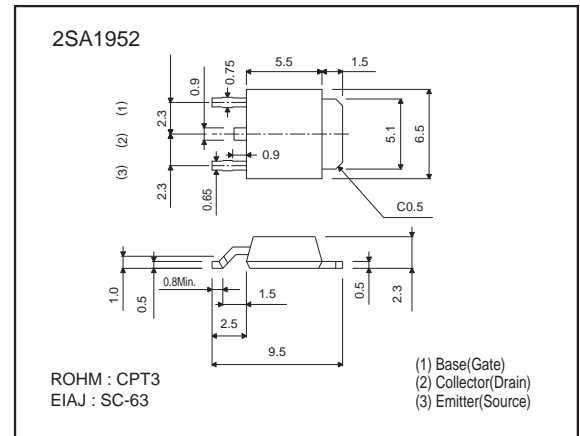
### ●Features

- 1) High speed switching. (tf : Typ. 0.15 μs at Ic = -3A)
- 2) Low V<sub>CE(sat)</sub>. (Typ. -0.2V at Ic/I<sub>B</sub> = -3/-0.15A)
- 3) Wide SOA. (safe operating area)
- 4) Complements the 2SC5103.

### ●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	-100	V
Collector-emitter voltage	V <sub>CE0</sub>	-60	V
Emitter-base voltage	V <sub>EB0</sub>	-5	V
Collector current	I <sub>c</sub>	-5	A
		-10	A(Pulse)
Collector power dissipation	P <sub>c</sub>	1	W
		10	W(Tc=25°C)
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ●Dimensions (Unit : mm)



### ●Packaging specifications and h<sub>FE</sub>

Type	2SA1952
Package	CPT3
h <sub>FE</sub>	Q
Code	TL
Basic ordering unit (pieces)	2500

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	-100	-	-	V	I <sub>c</sub> = -50 μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	-60	-	-	V	I <sub>c</sub> = -1 mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	-5	-	-	V	I <sub>e</sub> = -50 μA
Collector cutoff current	I <sub>CA0</sub>	-	-	-10	μA	V <sub>CB</sub> = -100V
Emitter cutoff current	I <sub>EB0</sub>	-	-	-10	μA	V <sub>EB</sub> = -5V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-0.3	-0.5	V	I <sub>c</sub> /I <sub>B</sub> = -3A/-0.15A
		-	-	-1.2	V	I <sub>c</sub> /I <sub>B</sub> = -4A/-0.2A
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	-	-	-1.5	V	I <sub>c</sub> /I <sub>B</sub> = -3A/-0.15A
		-	-	-1.5	V	I <sub>c</sub> /I <sub>B</sub> = -4A/-0.2A
DC current transfer ratio	h <sub>FE1</sub>	120	-	270	-	V <sub>CE</sub> = -2V, I <sub>c</sub> = -1A
	h <sub>FE2</sub>	40	-	-	-	V <sub>CE</sub> = -2V, I <sub>c</sub> = -3A
Transition frequency	f <sub>T</sub>	-	80	-	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 0.5A, f = 30MHz
Output capacitance	C <sub>ob</sub>	-	130	-	pF	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0A, f = 1MHz
Turn-on time	t <sub>on</sub>	-	-	0.3	μs	I <sub>c</sub> = -3A, R <sub>L</sub> = 10Ω
Storage time	t <sub>stg</sub>	-	-	1.5	μs	I <sub>B1</sub> = -I <sub>B2</sub> = -0.15A
Fall time	t <sub>f</sub>	-	-	0.3	μs	V <sub>CC</sub> ≈ -30V

●Electrical characteristics curves

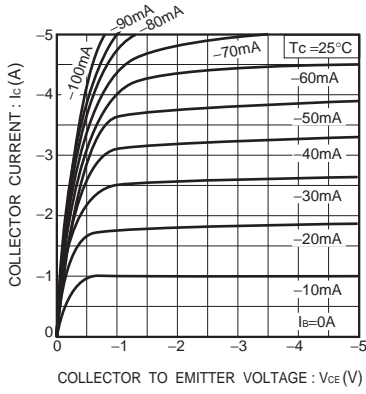


Fig.1 Ground emitter output characteristics

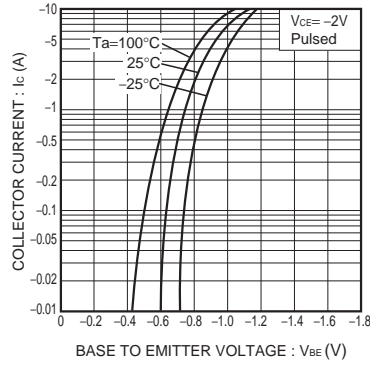


Fig.2 Ground emitter propagation characteristics

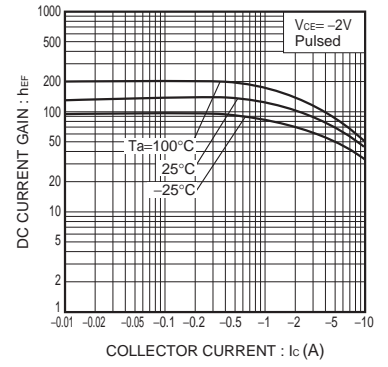


Fig.3 DC current gain vs. collector current

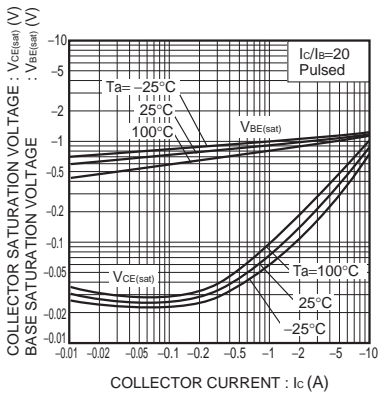


Fig.4 Collector-emitter saturation voltage vs. collector current  
Base-emitter saturation voltage

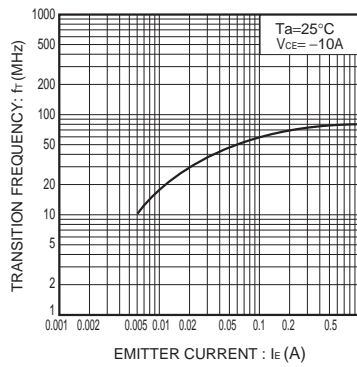


Fig.5 Resistance ratio vs. emitter current

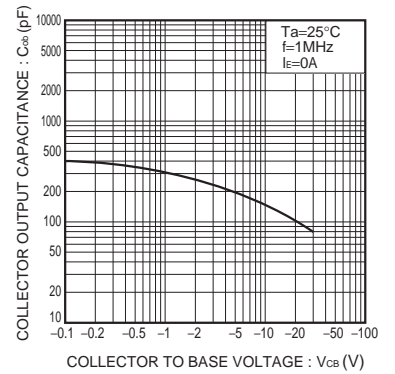


Fig.6 Collector output capacitance vs. collector-base voltage

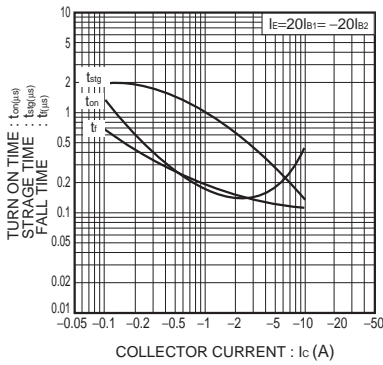


Fig.7 Switching characteristics

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