

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

2SA1952

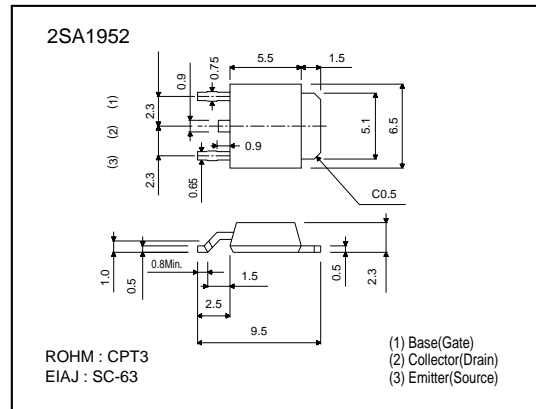
●Features

- 1) High speed switching. (t_f : Typ. 0.15 μ s at $I_C = -3A$)
- 2) Low $V_{CE(sat)}$. (Typ. −0.2V at $I_C/I_B = -3/-0.15A$)
- 3) Wide SOA. (safe operating area)
- 4) Complements the 2SC5103.

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	−100	V
Collector-emitter voltage	V_{CE0}	−60	V
Emitter-base voltage	V_{EB0}	−5	V
Collector current	I_C	−5	A
		−10	A(Pulse)
Collector power dissipation	P_C	1	W
		10	W(Tc=25°C)
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	−55~+150	°C

●External dimensions (Unit : mm)



●Packaging specifications and hFE

Type	2SA1952
Package	CPT3
hFE	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_{CB0}	−100	−	−	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	−60	−	−	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EB0}	−5	−	−	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	−	−	−10	μA	$V_{CB} = -100V$
Emitter cutoff current	I_{EBO}	−	−	−10	μA	$V_{EB} = -5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	−	−	−0.3	V	$I_C/I_B = -3A/-0.15A$
		−	−	−0.5	V	$I_C/I_B = -4A/-0.2A$
		−	−	−1.2	V	$I_C/I_B = -3A/-0.15A$
Base-emitter saturation voltage	$V_{BE(sat)}$	−	−	−1.5	V	$I_C/I_B = -4A/-0.2A$
		−	−	−	−	$V_{CE} = -2V, I_C = -1A$
DC current transfer ratio	h_{FE1}	120	−	−	−	$V_{CE} = -2V, I_C = -3A$
	h_{FE2}	40	−	−	−	$V_{CE} = -2V, I_C = -3A$
Transition frequency	f_T	−	80	−	MHz	$V_{CE} = -10V, I_E = 0.5A, f = 30MHz$
Output capacitance	C_{ob}	−	130	−	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$
Turn-on time	t_{on}	−	−	0.3	μs	$I_C = -3A, R_L = 10\Omega$
Storage time	t_{stg}	−	−	1.5	μs	$I_{B1} = -I_{B2} = -0.15A$
Fall time	t_f	−	−	0.3	μs	$V_{CC} = -30V$

Transistors

●Electrical characteristics curves

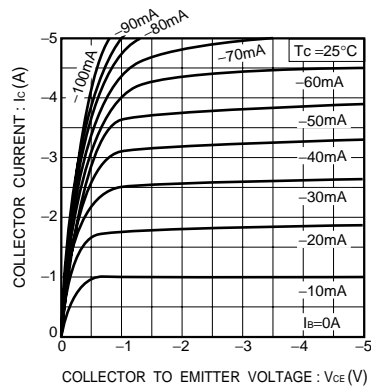


Fig.1 Ground emitter output characteristics

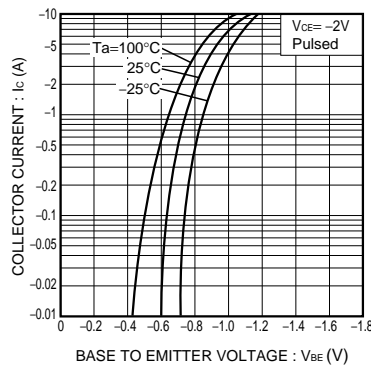


Fig.2 Ground emitter propagation characteristics

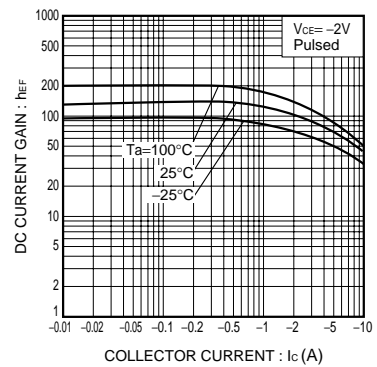


Fig.3 DC current gain vs. collector current

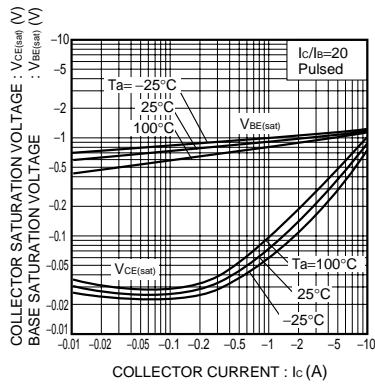


Fig.4 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage

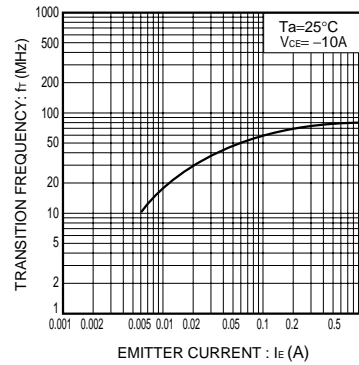


Fig.5 Resistance ratio vs. emitter current

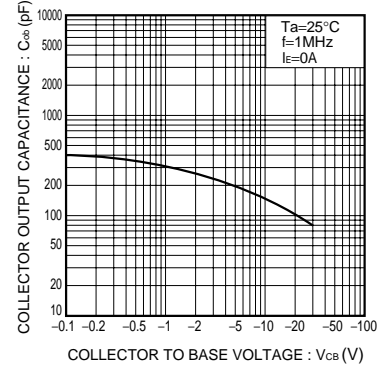


Fig.6 Collector output capacitance vs. collector-base voltage

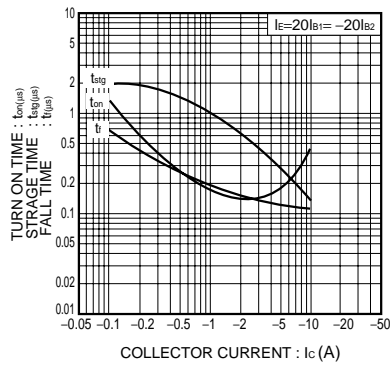


Fig.7 Switching characteristics

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