

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

2SA1952 / 2SA1906 / 2SA2006

●Features

- 1) High speed switching. (t_f : Typ. 0.15 μ s at $I_C = -3$ A)
- 2) Low $V_{CE(sat)}$. (Typ. –0.2V at $I_C / I_B = -3 / -0.15$ A)
- 3) Wide SOA. (safe operating area)
- 4) Complements the 2SC5103 / 2SC5525.

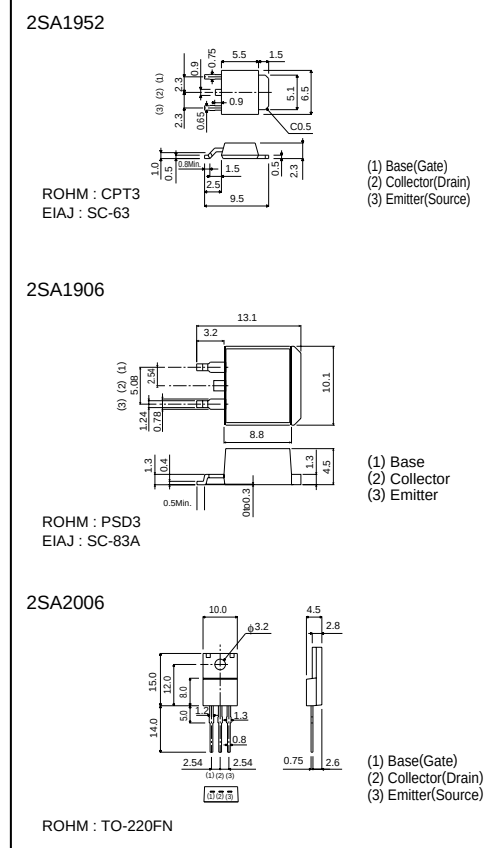
●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	–100	V
Collector-emitter voltage	V_{CEO}	–60	V
Emitter-base voltage	V_{EBO}	–5	V
Collector current	I_C	–5	A
Collector power dissipation	P_C	–10	A(Pulse)
		1	W
		10	W($T_C = 25^\circ\text{C}$)
		1.5	W
		25	W($T_C = 25^\circ\text{C}$)
		2	W
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	–55 – +150	$^\circ\text{C}$

●Packaging specifications and h_{FE}

Type	2SA1952	2SA1906	2SA2006
Package	CPT3	PSD3	TO-220FN
h_{FE}	Q	DEF	EF
Code	TL	TL	–
Basic ordering unit (pieces)	2500	1000	500

●External dimensions (Units : mm)



●Electrical characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–100	–	–	V	$I_C = -50\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	–60	–	–	V	$I_C = -1\text{mA}$
Emitter-base breakdown voltage	BV_{EBO}	–5	–	–	V	$I_E = -50\mu\text{A}$
Collector cutoff current	I_{CBO}	–	–	–10	μA	$V_{CB} = -100\text{V}$
Emitter cutoff current	I_{EBO}	–	–	–10	μA	$V_{EB} = -5\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	–0.3	V	$I_C / I_B = -3\text{A} / -0.15\text{A}$
		–	–	–0.5	V	$I_C / I_B = -4\text{A} / -0.2\text{A}$
Base-emitter saturation voltage	$V_{BE(sat)}$	–	–	–1.2	V	$I_C / I_B = -3\text{A} / -0.15\text{A}$
		–	–	–1.5	V	$I_C / I_B = -4\text{A} / -0.2\text{A}$
DC current transfer ratio	2SA1952	120	–	270	–	$V_{CE} = -2\text{V}$, $I_C = -1\text{A}$
	2SA1906	60	–	320	–	
	2SA2006	100	–	320	–	
Transition frequency	f_T	–	80	–	MHz	$V_{CE} = -10\text{V}$, $I_E = 0.5\text{A}$, $f = 30\text{MHz}$
Output capacitance	C_{ob}	–	130	–	pF	$V_{CB} = -10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$
Turn-on time	t_{on}	–	–	0.3	μs	$I_C = -3\text{A}$, $R_L = 10\Omega$
Storage time	t_{stg}	–	–	1.5	μs	$I_{B1} = -I_{B2} = -0.15\text{A}$
Fall time	t_f	–	–	0.3	μs	$V_{CC} = -30\text{V}$