

High-voltage Switching Transistor (Telephone, Power supply) (−600V, −1A)

2SA1807

● Features

- 1) High breakdown voltage. ($V_{CE0} = -600V$)
- 2) Low saturation voltage, typically $V_{CE(sat)} = -0.25V$ at $I_C / I_B = -300mA / -60mA$.
- 3) High switching speed, typically $t_f = 0.4\mu s$ at $I_C = -500mA$
- 4) Wide SOA (safe operating area).

● Packaging specifications and hFE

Type	2SA1807
Package	CPT3
hFE	NP
Code	TL
Basic ordering unit (pieces)	2500

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	−600	V
Collector-emitter voltage	V_{CE0}	−600	V
Emitter-base voltage	V_{EB0}	−7	V
Collector current	I_C	−1	A (DC)
		−2	A (Pulse) *
Collector power dissipation	P_C	1	W
		10	W (Tc=25°C)
Junction temperature	TJ	150	°C
Storage temperature	Tstg	−55~+150	°C

* Single pulse, $P_w = 100ms$

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	−600	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	−600	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EB0}	−7	—	—	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	—	—	−10	μA	$V_{CB} = -600V$
Emitter cutoff current	I_{EBO}	—	—	−10	μA	$V_{EB} = -7V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.25	−1	V	$I_C/I_B = -300mA/-60mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.2	V	$I_C/I_B = -300mA/-60mA$
DC current transfer ratio	hFE	56	—	180	—	$V_{CE} = -5V, I_C = -100mA$
Transition frequency	fT	—	15	—	MHz	$V_{CB} = -10V, I_E = 50mA, f = 5MHz$
Output capacitance	Cob	—	40	—	pF	$V_{CE} = -10V, I_E = 0A, f = 1MHz$
Turn-on time	t_{on}	—	0.2	—	μs	$I_C = -500mA, R_L = 500\Omega$
Storage time	t_{stg}	—	1.8	—	μs	$I_{B1} = -I_{B2} = -100mA$
Fall time	t_f	—	0.4	—	μs	$V_{CC} \sim -250V$

(96-102-A331)

High-voltage Switching Transistor (Telephone, Power supply) (−400V, −2A)

2SA1862

● Features

- 1) High breakdown voltage. ($V_{CE0} = -400V$)
- 2) Low saturation voltage, typically $V_{CE(sat)} = -0.3V$ at $I_C / I_B = -500mA / -100mA$.
- 3) High switching speed, typically $t_f = 0.4\mu s$ at $I_C = -1A$.
- 4) Wide SOA (safe operating area).

● Packaging specifications and hFE

Type	2SA1862
Package	CPT3
hFE	P
Code	TL
Basic ordering unit (pieces)	2500

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	−400	V
Collector-emitter voltage	V_{CE0}	−400	V
Emitter-base voltage	V_{EB0}	−7	V
Collector current	I_C	−2	A (DC)
		−4	A (Pulse) *
Collector power dissipation	P_C	1	W
		10	W (Tc=25°C)
Junction temperature	TJ	150	°C
Storage temperature	Tstg	−55~+150	°C

* Single pulse, $P_w = 10ms$

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	−400	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	−400	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EB0}	−7	—	—	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	—	—	−10	μA	$V_{CB} = -400V$
Emitter cutoff current	I_{EBO}	—	—	−10	μA	$V_{EB} = -5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.3	−0.5	V	$I_C/I_B = -0.5A/-0.1A$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.2	V	$I_C/I_B = -0.5A/-0.1A$
DC current transfer ratio	hFE	82	—	180	—	$V_{CE} = -5V, I_C = -0.1A$
Transition frequency	fT	—	18	—	MHz	$V_{CB} = -10V, I_E = 0.1A, f = 5MHz$
Output capacitance	Cob	—	30	—	pF	$V_{CE} = -10V, I_E = 0A, f = 1MHz$
Turn-on time	t_{on}	—	0.2	—	μs	$I_C = -1A, R_L = 150\Omega$
Storage time	t_{stg}	—	1.8	—	μs	$I_{B1} = -I_{B2} = -0.2A$
Fall time	t_f	—	0.4	—	μs	$V_{CC} \sim 150V$

(96-109-A343)

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