

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

2SA1862

●Features

- 1) High breakdown voltage. ($BV_{CEO} = -400V$)
- 2) Low saturation voltage.
(Max. $V_{CE(sat)} = -0.5V$ 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).

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−400	V
Collector-emitter voltage	V_{CEO}	−400	V
Emitter-base voltage	V_{EBO}	−7	V
Collector current	I_C	−2	A (DC)
		−4	A (Pulse) *
Collector power dissipation	P_C	1	W
		10	W ($T_c = 25^\circ C$)
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	−55 to +150	$^\circ C$

* Single pulse, $P_w = 10ms$

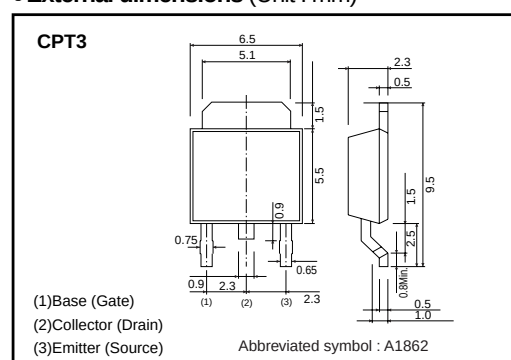
●Packaging specifications and h_{FE}

Type	2SA1862
Package	CPT3
h_{FE}	P
Code	TL
Basic ordering unit (pieces)	2500

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−400	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	−400	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EBO}	−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	$V_{CE(sat)}$	—	—	−0.5	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	h_{FE}	82	—	180	—	$V_{CE} = -5V, I_C = -0.1A$
Transition frequency	f_T	—	18	—	MHz	$V_{CB} = -10V, I_E = 0.1A, f = 5MHz$
Output capacitance	C_{ob}	—	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	$V_{CC} = -150V$

●External dimensions (Unit : mm)



Transistors

●Electrical characteristic curves

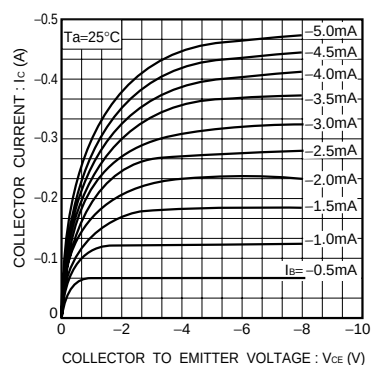


Fig.1 Ground emitter output characteristics

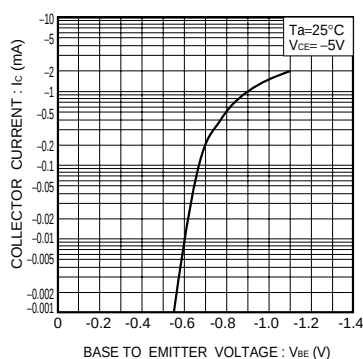


Fig.2 Grounded emitter propagation characteristics

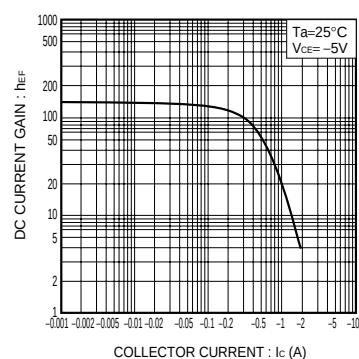


Fig.3 DC current gain vs. collector current

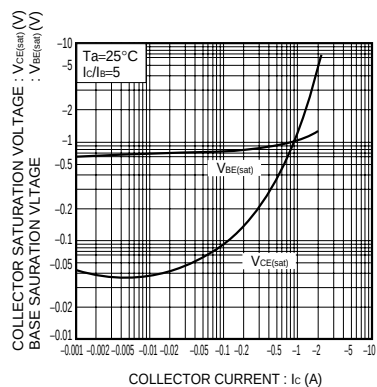
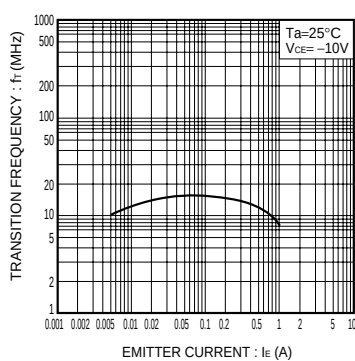
Fig.4 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

Fig.5 Gain bandwidth product vs. emitter current

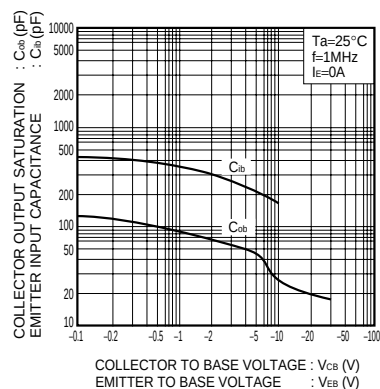
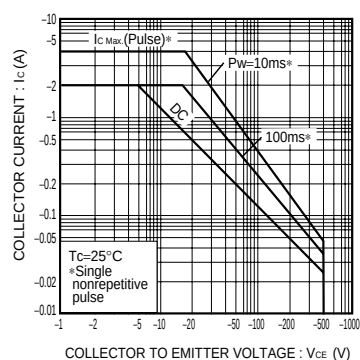
Fig.6 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Fig.7 Safe operating area

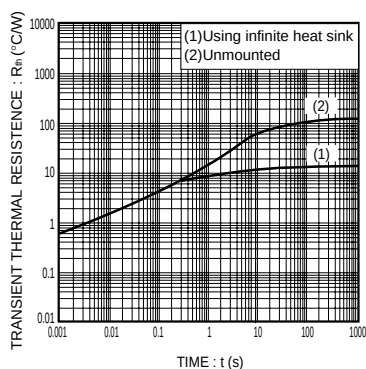


Fig.8 Transient thermal resistance

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