

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

## 2SA1862

### ●Features

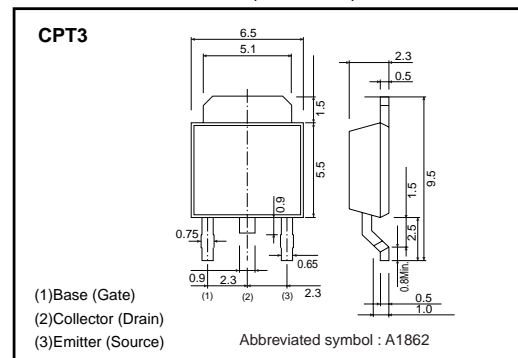
- 1) High breakdown voltage. ( $BV_{CEO} = -400V$ )
- 2) Low saturation voltage.  
(Max.  $V_{CE(sat)} = -0.5V$  at  $I_C / I_B = -500mA / -100mA$ )
- 3) High switching speed, typically  $t_f = 0.4\mu s$  at  $I_C = -1A$ .
- 4) Wide SOA (safe operating area).

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CB0}$	-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 ( $T_C=25^\circ C$ )
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

\* Single pulse,  $P_w=10ms$

### ●External dimensions (Unit : mm)



### ●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	$BV_{CB0}$	-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	$I_{CB0}$	-	-	-10	$\mu A$	$V_{CB} = -400V$
Emitter cutoff current	$I_{EB0}$	-	-	-10	$\mu A$	$V_{EB} = -5V$
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	-	$\mu s$	$I_C = -1A, R_L = 150\Omega$
Storage time	$t_{stg}$	-	1.8	-	$\mu s$	$I_{B1} = -I_{B2} = -0.2A$
Fall time	$t_f$	-	0.4	-	$\mu s$	$V_{CC} = -150V$

Transistors

●Electrical characteristic curves

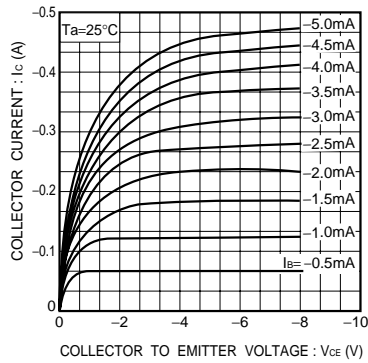


Fig.1 Ground emitter output characteristics

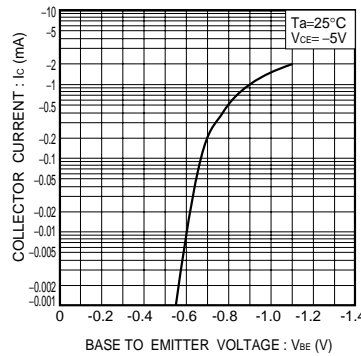


Fig.2 Grounded emitter propagation characteristics

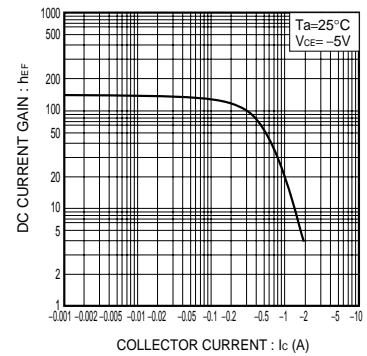


Fig.3 DC current gain vs. collector current

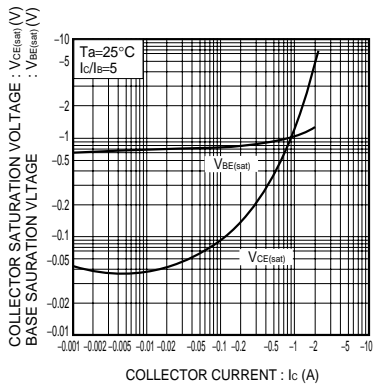


Fig.4 Collector-emitter saturation voltage vs. collector current  
Base-emitter saturation voltage vs. collector current

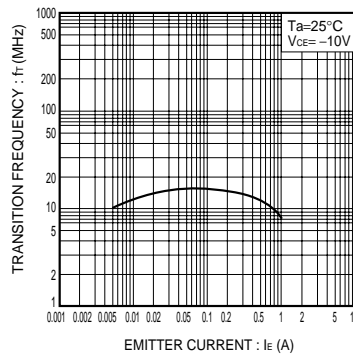


Fig.5 Gain bandwidth product vs. emitter current

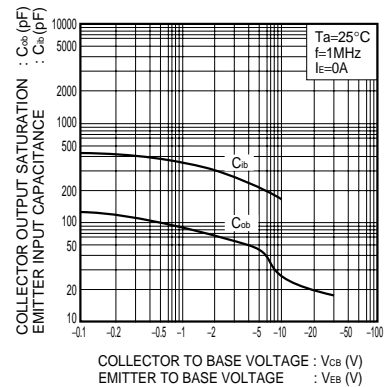


Fig.6 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

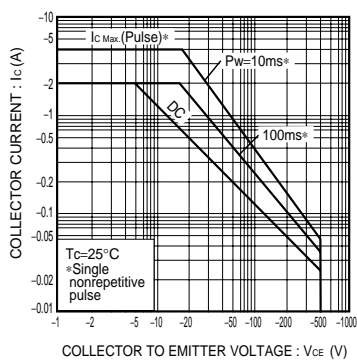


Fig.7 Safe operating area

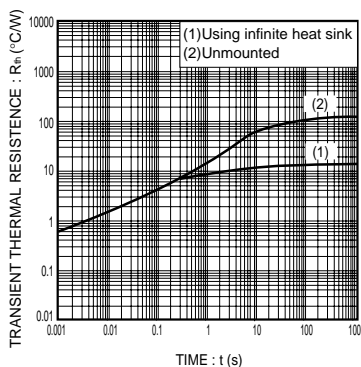


Fig.8 Transient thermal resistance