Power Transistor (50V, 3A)

2SD1760 / 2SD1864 / 2SD1762

●Features

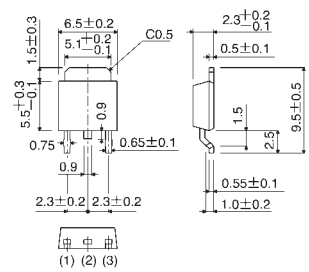
1) Low $V_{CE(sat)}$,
   $V_{CE(sat)}$ = 0.5V (Typ.)
   (I_C / I_B = 2A / 0.2A)
2) Complements the
   2SB1184 / 2SB1243 / 2SB1185.

●Structure

Epitaxial planar type
NPN silicon transistor

●External dimensions (Units: mm)

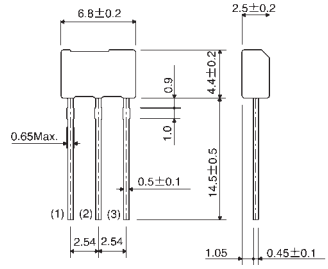
2SD1760



ROHM : CPT3
EIAJ : SC-63

(1) Base
(2) Collector
(3) Emitter

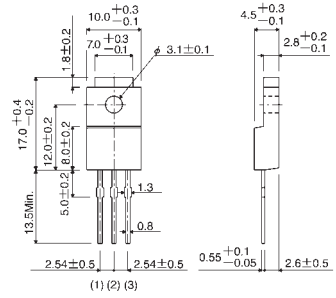
2SD1864



ROHM : ATV

(1) Emitter
(2) Collector
(3) Base

2SD1762



ROHM : TO-220FP
EIAJ : SC-67

(1) Base
(2) Collector
(3) Emitter

(96-214-D57)

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	60	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	3	A(DC)
			4.5	A(Pulse) ∗1
Collector power dissipation	2SD1760	P_C	15	W(Tc=25℃) ∗2
	2SD1864		1	W
	2SD1762		25	W(Tc=25℃) ∗2
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55～+150	℃

∗1 Single pulse, P_W=10ms
∗2 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

●Electrical characteristics (Ta = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	60	—	—	V	I_C=50 μA
Collector-emitter breakdown voltage		BV_{CEO}	50	—	—	V	I_C=1mA
Emitter-base breakdown voltage		BV_{EBO}	5	—	—	V	I_E=50 μA
Collector cutoff current		I_{CBO}	—	—	1	μA	V_{CB}=40V
Emitter cutoff current		I_{EBO}	—	—	1	μA	V_{EB}=4V
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	0.5	1	V	I_C/I_B=2A/0.2A ∗
DC current transfer ratio	2SD1760, 2SD1864	h_{FE}	82	—	390	—	V_{CE}=3V, I_C=0.5A ∗
	2SD1762		60		320		
Transition frequency		f_T	—	90	—	MHz	V_{CE}=5V, I_E=−500mA, f=30MHz ∗
Output capacitance		Cob	—	40	—	pF	V_{CB}=10V, I_E=0A, f=1MHz

∗ Measured using pulse current.

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping		Bulk
		Code	TL	TV2	—
		Basic ordering unit (pieces)	2500	2500	200
2SD1760	PQR		○	—	—
2SD1864	PQR		—	○	—
2SD1762	DEF		—	—	○

h_{FE} values are classified as follows :

Item	P	Q	R
h_{FE}	82～180	120～270	180～390

Item	D	E	F
h_{FE}	60～120	100～200	160～320

●Electrical characteristic curves

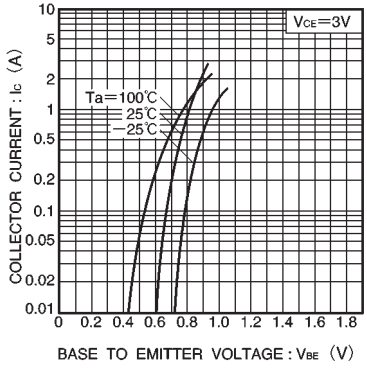


Fig.1 Grounded emitter propagation characteristics

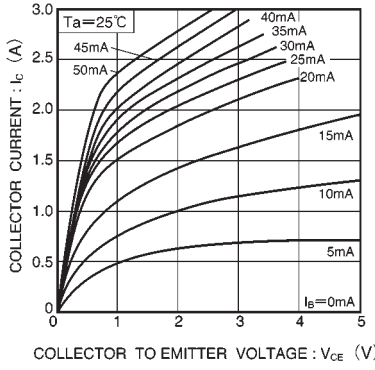


Fig.2 Grounded emitter output characteristics (Ⅰ)

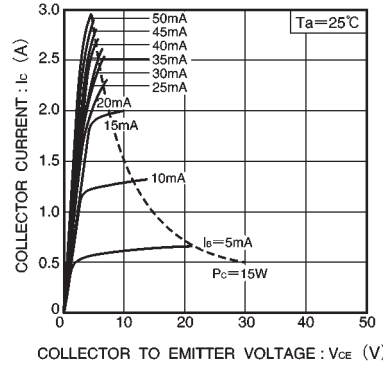


Fig.3 Grounded-emitter output characteristics (Ⅱ)

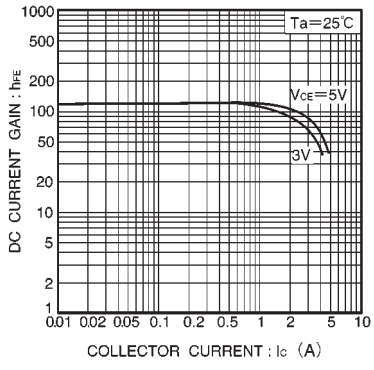


Fig.4 DC current gain vs. collector current (Ⅰ)

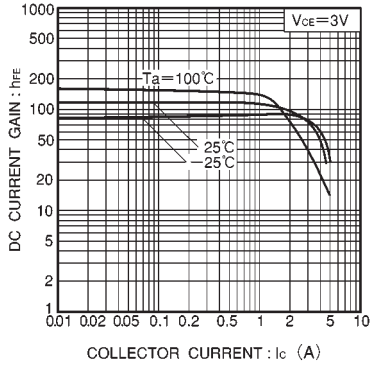


Fig.5 DC current gain vs. collector curren (Ⅱ)

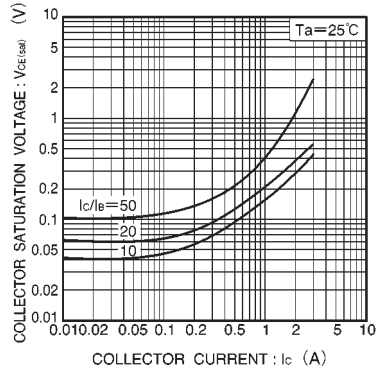


Fig.6 Collector-emitter saturation voltage vs. collector current

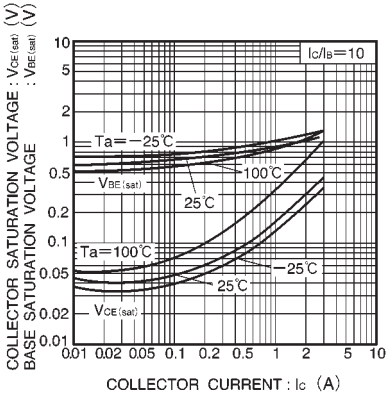


Fig.7 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

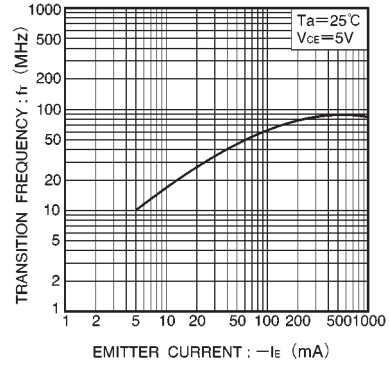


Fig.8 Gain bandwidth product vs. emitter current

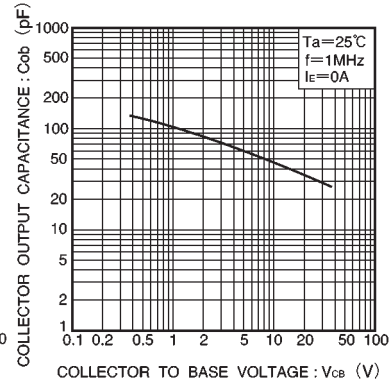


Fig.9 Collector output capacitance vs. collector-base voltage

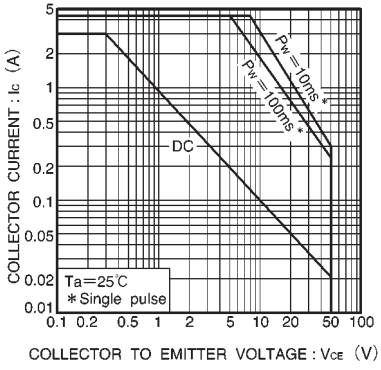


Fig.10 Safe operating area (2SD1760)

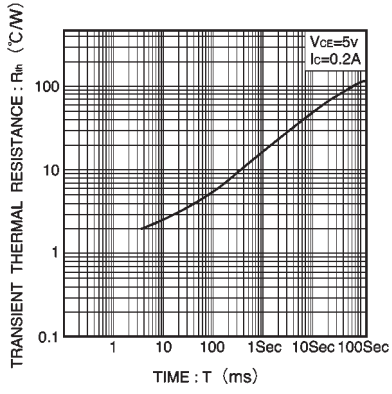


Fig.11 Transient thermal resistance (2SD1760)

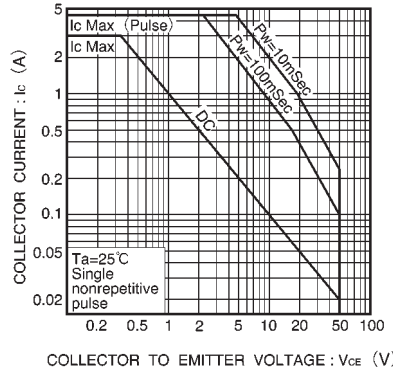


Fig.12 Safe operating area (2SD1864)

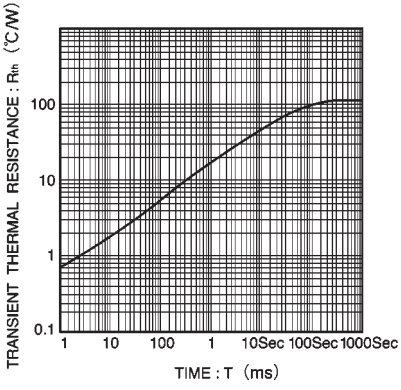


Fig.13 Transient thermal resistance (2SD1864)

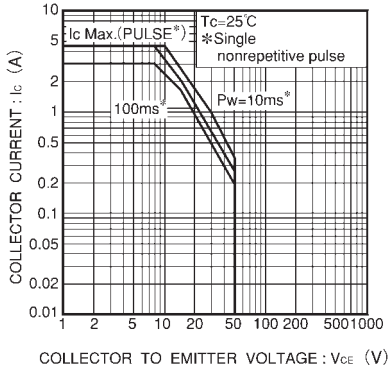


Fig.14 Safe operating area (2SD1762)

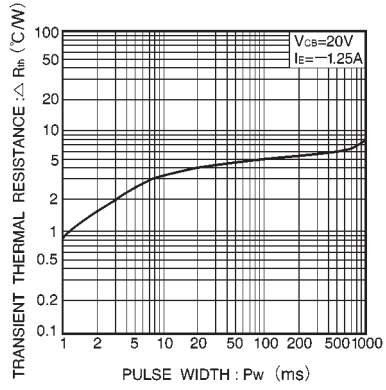


Fig.15 Transient thermal resistance (2SD1762)