

High-voltage Switching Transistor

(Camera strobes and Telephone, Power supply)

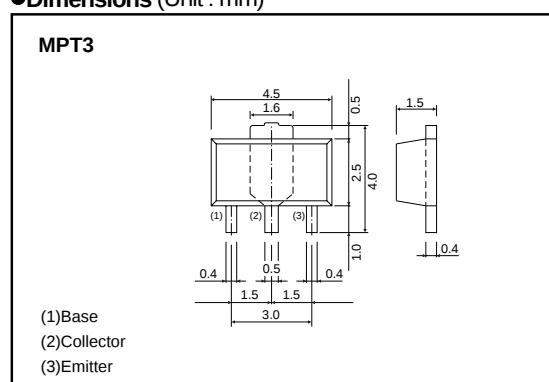
(−400V, −0.1A)

2SA1759

●Features

- 1) High breakdown voltage. ($BV_{CEO} = -400V$)
- 2) Low saturation voltage,
typically $V_{CE(sat)} = -0.2V$ at $I_C / I_B = -20mA / -2mA$.
- 3) High switching speed, typically $t_f = 1\mu s$ at $I_C = 100mA$.
- 4) Wide SOA (safe operating area).
- 5) Complements the 2SC4505.

●Dimensions (Unit : mm)



●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	−0.1	A(DC)
		−0.2	A(Pulse) *1
Collector power dissipation	P_C	0.5	W
		2 *2	
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	−55 to +150	$^\circ C$

*1 Single pulse, $P_w = 100ms$

*2 When mounted on a $40 \times 40 \times 0.7$ mm ceramic board.

●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	$V_{EB} = -6V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.2	−0.5	V	$I_C = -20mA, I_B = -2mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.5	V	$I_C = -20mA, I_B = -2mA$
DC current transfer ratio	h_{FE}	82	—	180	—	$V_{CE} = -10V, I_C = -10mA$
Transition frequency	f_T	—	12	—	MHz	$V_{CE} = -10V, I_E = 10mA, f = 5MHz$
Output capacitance	C_{ob}	—	13	—	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$
Turn-on time	t_{on}	—	0.7	—	μs	$I_C = -100mA, R_L = 1.5k\Omega$
Storage time	t_{stg}	—	1.8	—	μs	$I_{B1} = -I_{B2} = -10mA$
Fall time	t_f	—	1	—	μs	$V_{CC} = -150V$

●Packaging specifications and h_{FE}

* Denotes hFE

-100					Ta=25°C
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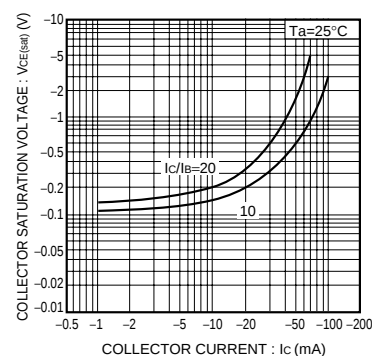


Fig.4 DC current gain vs.collector current (I) Fig.5 DC current gain vs.collector current (II) Fig.6 Collector-emitter saturation voltage vs. collector current

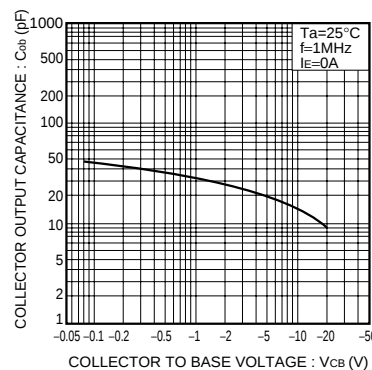


Fig.7 Collector-emitter saturation voltage vs. Collector current Fig.8 Gain bandwidth products vs. emitter current Fig.9 Collector output capacitance vs. collector-base voltage

Transistors

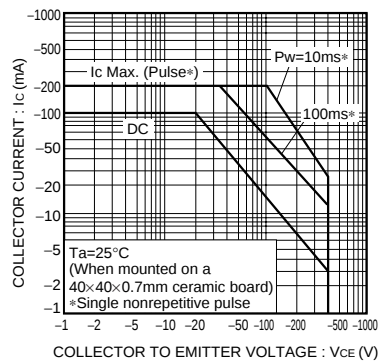


Fig.10 Safe operating area

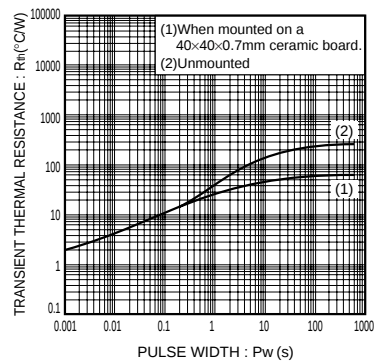


Fig.11 Transient thermal resistance

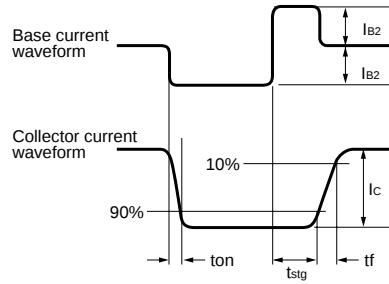
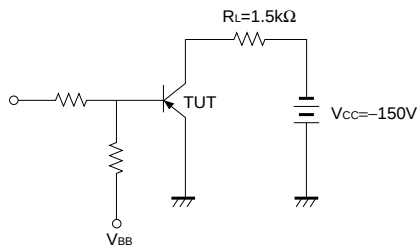


Fig.12 Switching characteristics measurement circuits

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