

High-voltage Switching Transistor

(Camera strobes and Telephone, Power supply)

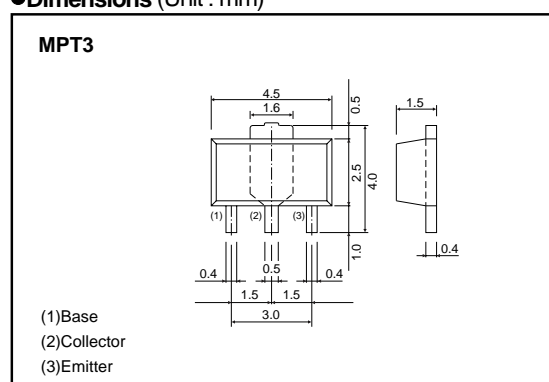
(−400V, −0.1A)

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	$V_{CC} = -150V$

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●Packaging specifications and h_{FE}

Type	2SA1759
Package	MPT3
h_{FE}	P
Marking	AH*
Code	T100
Basic ordering unit (pieces)	3000

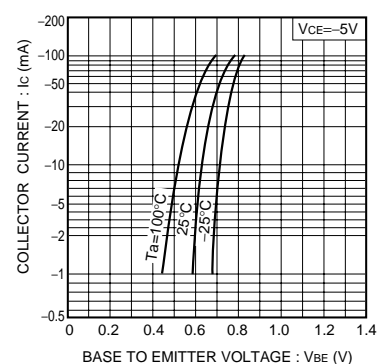
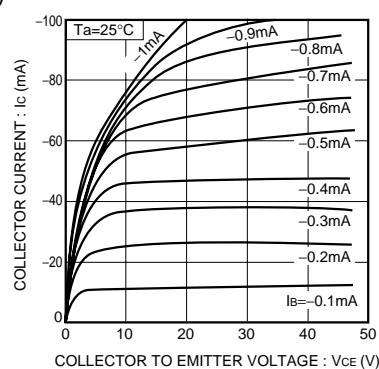
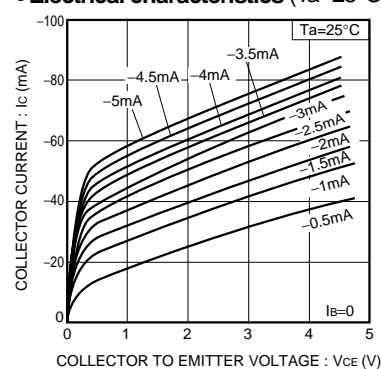
* Denotes h_{FE} ●Electrical characteristics ($T_a=25^\circ\text{C}$)

Fig.1 Ground emitter output characteristics (I) Fig.2 Ground emitter output characteristics (II) Fig.3 Ground emitter propagation characteristics

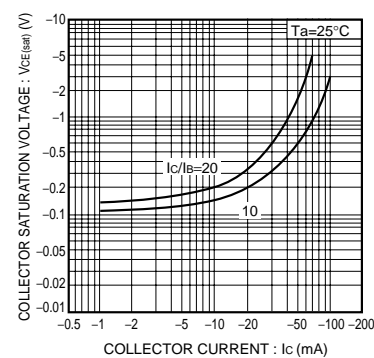
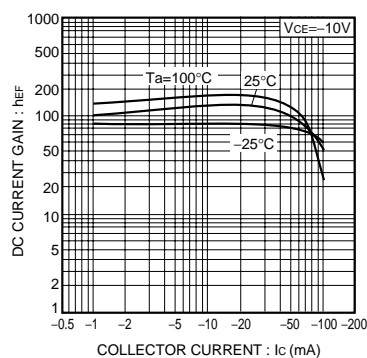
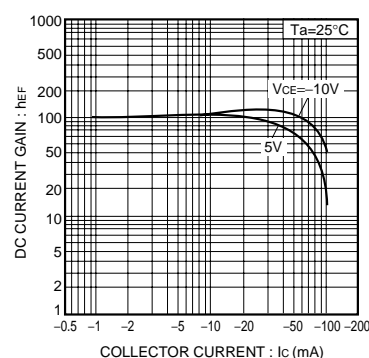


Fig.4 DC current gain vs.collector current (I) Fig.5 DC current gain vs.collector current (II) Fig.6 Collector-emitter saturation voltage vs. collector current

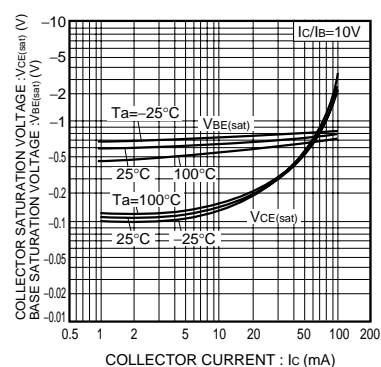


Fig.7 Collector-emitter saturation voltage vs. Collector current

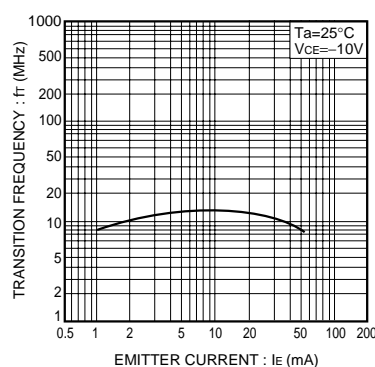


Fig.8 Gain bandwidth products vs. emitter current

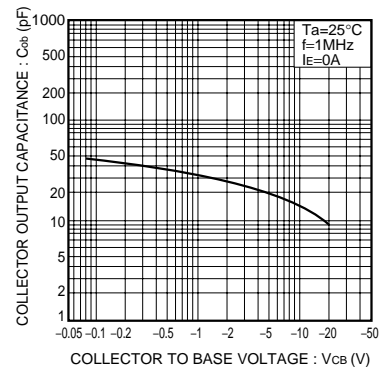


Fig.9 Collector output capacitance vs. collector-base voltage

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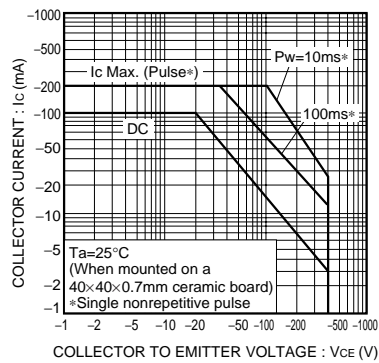


Fig.10 Safe operating area

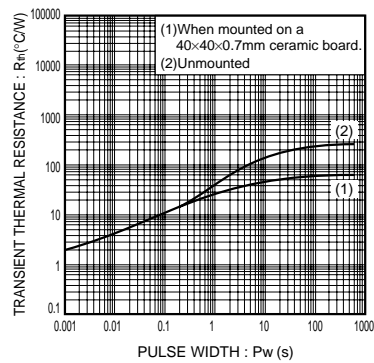


Fig.11 Transient thermal resistance

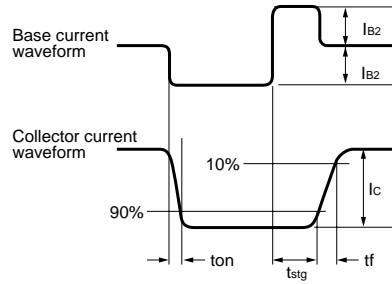
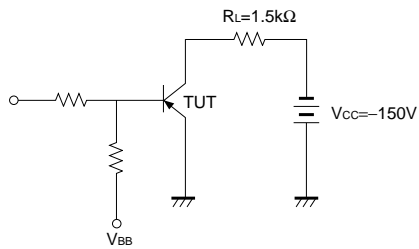


Fig.12 Switching characteristics measurement circuits

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