High-voltage Switching Transistor
(Camera strobes and Telephone, Power supply)
(–400V, –0.1A)

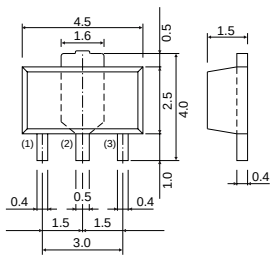
2SA1759

●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 tf = 1μs at Ic =100mA.
4) Wide SOA (safe operating area).
5) Complements the 2SC4505.

●Dimensions (Unit : mm)

MPT3



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

●Absolute maximum ratings (Ta=25°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	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

∗1 Single pulse, Pw=100ms
∗2 When mounted on a 40×40×0.7 mm ceramic board.

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	–400	–	–	V	I_C= –50μA
Collector-emitter breakdown voltage	BV_{CEO}	–400	–	–	V	I_C= –1mA
Emitter-base breakdown voltage	BV_{EBO}	–7	–	–	V	I_E= –50μA
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	Cob	–	13	–	pF	V_{CB}= –10V , I_E=0A , f=1MHz
Turn-on time	t_{on}	–	0.7	–	μs	I_C= –100mA R_L=1.5kΩ
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}

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

∗ Denotes h_{FE}

●Electrical characteristics (Ta=25°C)

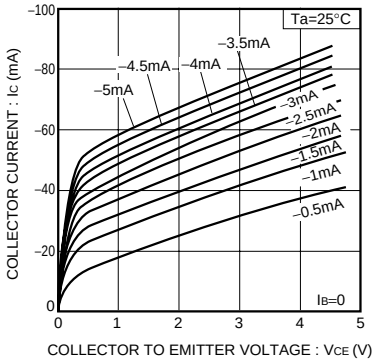


Fig.1 Ground emitter output characteristics (I)

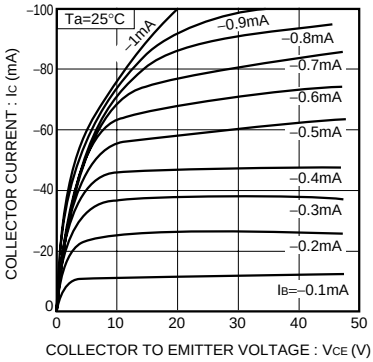


Fig.2 Ground emitter output characteristics (II)

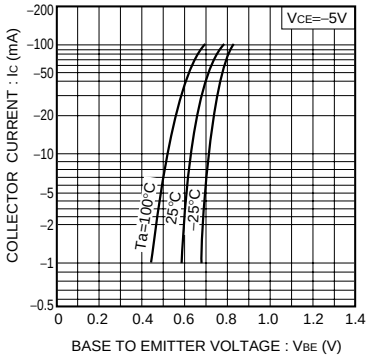


Fig.3 Ground emitter propagation characteristis

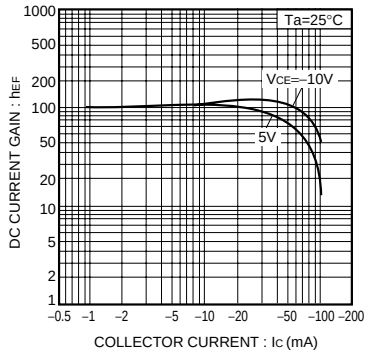


Fig.4 DC current gain vs.collector current (I)

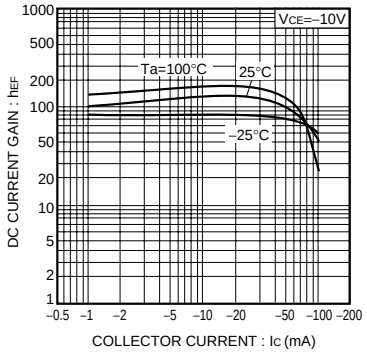


Fig.5 DC current gain vs.collector current (II)

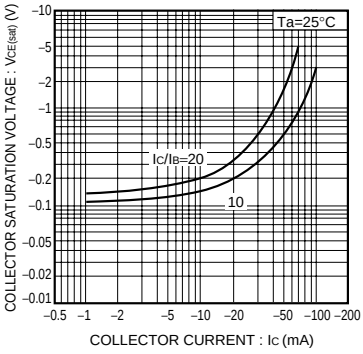


Fig.6 Collector-emitter saturation voltage vs. collector current

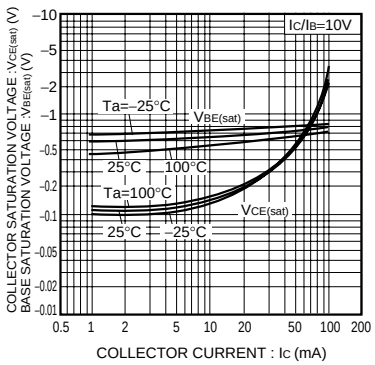


Fig.7 Collector-emitter saturation voltage
Base-emitter saturation voltage vs. Collector current

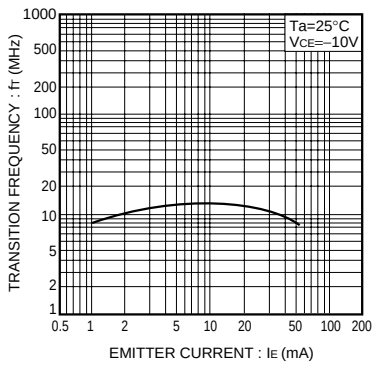


Fig.8 Gain bandwidth products vs. emitter current

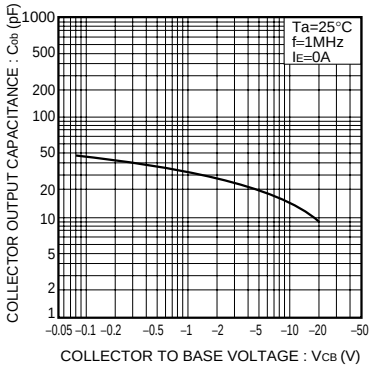


Fig.9 Collector output capacitance vs. collector-base voltage

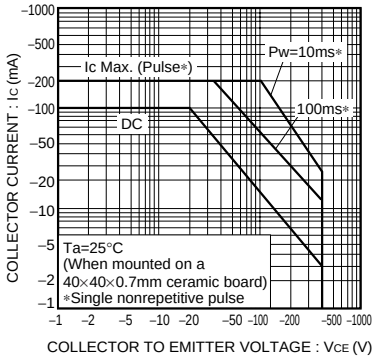


Fig.10 Safe operating area

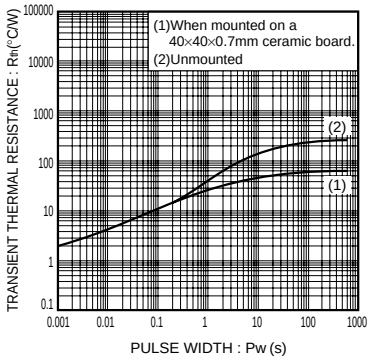


Fig.11 Transient thermal resistance

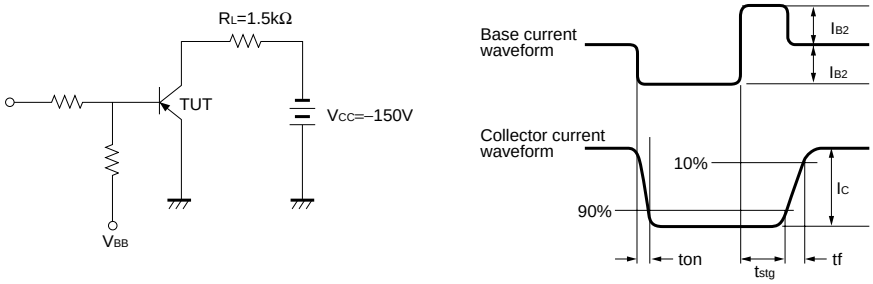


Fig.12 Switching characteristics mesurement circuits

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