

Power Transistor (400V, 0.1A)

2SC4505

●Features

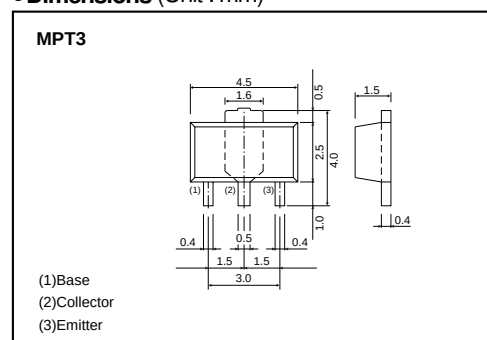
- 1) High breakdown voltage. ($BV_{CEO} = 400V$)
- 2) Low saturation voltage,
typically $V_{CE(sat)} = 0.05V$ at $I_C / I_B = 10mA / 1mA$.
- 3) High switching speed, typically $t_f = 1.7\mu s$ at $I_C = 100mA$.
- 4) Complements the 2SC4505 and the 2SA1759.

●Packaging specifications and h_{FE}

Type	2SC4505
Package	MPT3
h_{FE}	PQ
Marking	CE*
Code	T100
Basic ordering unit (pieces)	1000

* Denotes h_{FE}

●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	W *2
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

*1 Single pulse, $P_w = 20ms$, Duty = 1/2

*2 When mounted on a $40 \times 40 \times 0.7mm$ 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	$V_{CE(sat)}$	—	0.05	0.5	V	$I_C / I_B = 10mA / 1mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C / I_B = 10mA / 1mA$
DC current transfer ratio	h_{FE}	82	—	270	—	$V_{CE} = 10V$, $I_C = 10mA$
Transition frequency	f_T	—	20	—	MHz	$V_{CE} = 10V$, $I_E = -10mA$, $f = 10MHz$
Output capacitance	C_{ob}	—	7	—	pF	$V_{CB} = 10V$, $I_E = 0A$, $f = 1MHz$
Turn-on time	t_{on}	—	1	—	μs	$I_C = -100mA$, $R_L = 1.5k\Omega$
Storage time	t_{stg}	—	5.5	—	μs	$I_{B1} = -I_{B2} = 10mA$
Fall time	t_f	—	1.7	—	μs	$V_{CC} = -150V$

Transistors

●Electrical characteristics (Ta=25°C)

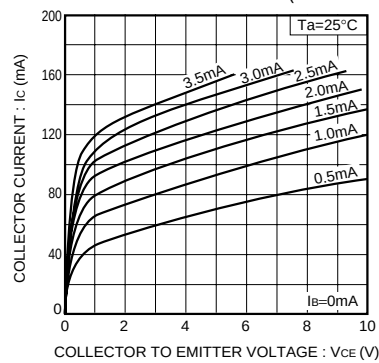


Fig.1 Ground emitter output characteristics

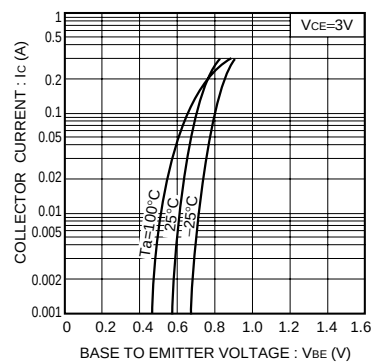


Fig.2 Ground emitter propagation characteristics

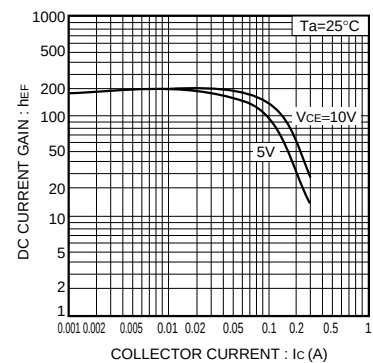


Fig.3 DC current gain vs. collector current (I)

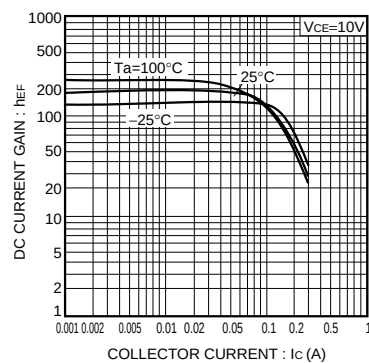


Fig.4 DC current gain vs. collector current (II)

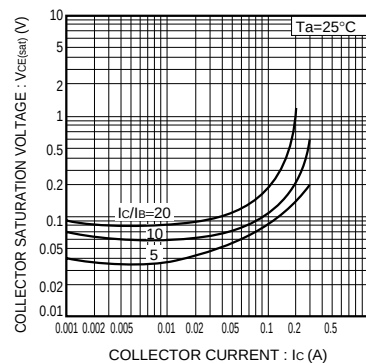


Fig.5 Collector-emitter saturation voltage vs. collector current

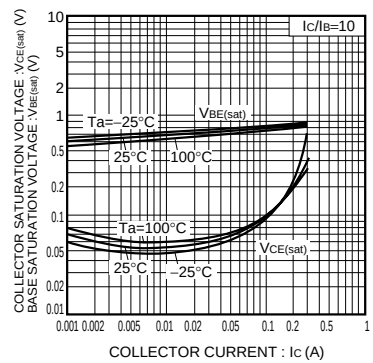
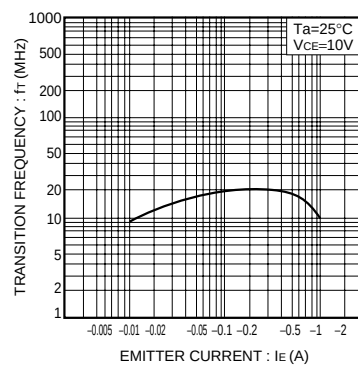
Fig.6 Collector-emitter saturation voltage vs. collector current
Collector-base saturation voltage

Fig.7 Gain bandwidth product vs. emitter current

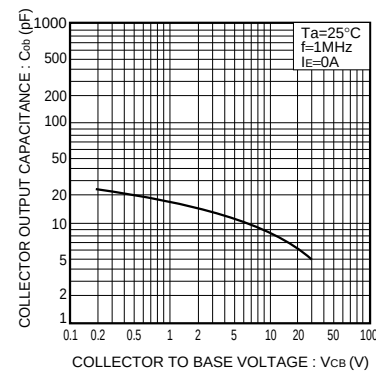


Fig.8 Collector output capacitance vs. collector-base voltage

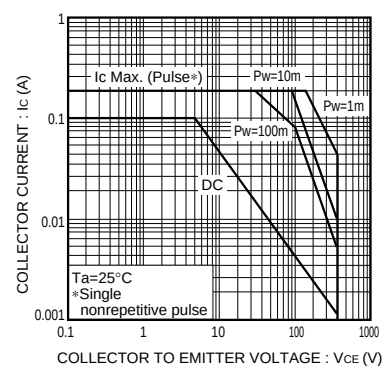


Fig.9 Safe operating area

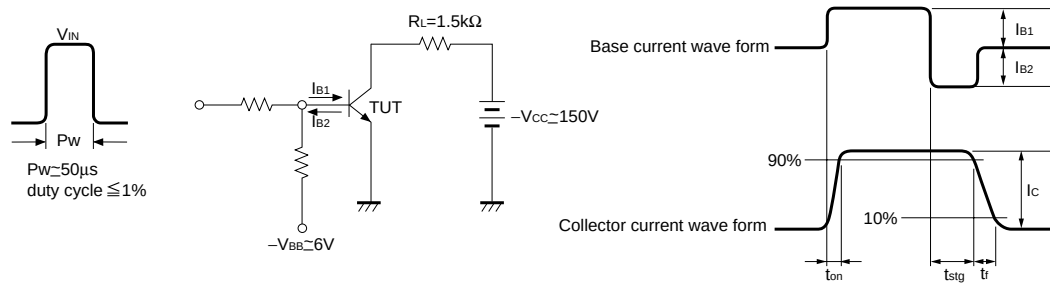


Fig.10 Switching time measurement circuit

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