

Power Transistor (400V, 0.1A)

2SC4505

●Features

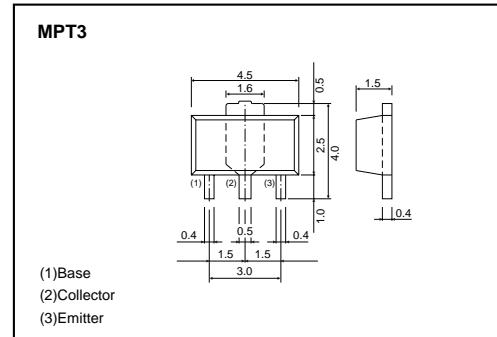
- 1) High breakdown voltage. ($BV_{CEO} = 400V$)
- 2) Low saturation voltage,
typically $V_{CE(sat)} = 0.05V$ at $I_C / I_B = 10mA / 1mA$.
- 3) High switching speed, typically $t_f = 1.7\mu s$ at $I_C = 100mA$.
- 4) Complements the 2SC4505 and the 2SA1759.

●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 0.2	A (DC) A (Pulse)*1
Collector power dissipation	P_C	0.5 2	W W *2
Junction temperature	T_J	150	°C
Storage temperature	T_{STG}	-55 to +150	°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	$V_{CC}\sim 150V$

Transistors

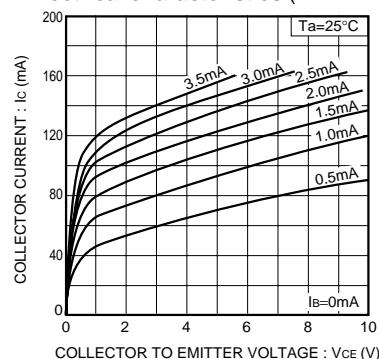
●Electrical characteristics ($T_a=25^\circ\text{C}$)

Fig.1 Ground emitter output characteristics

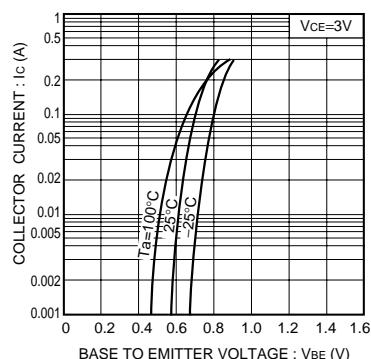


Fig.2 Ground emitter propagation characteristics

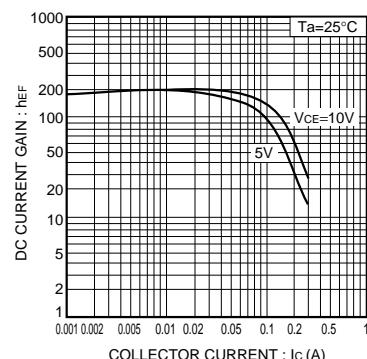


Fig.3 DC current gain vs. collector current (I)

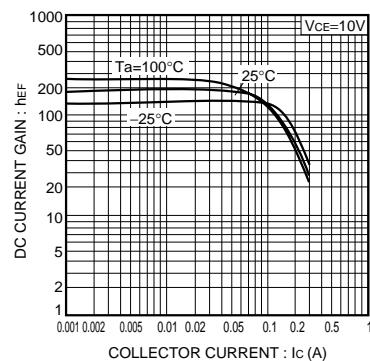


Fig.4 DC current gain vs. collector current (II)

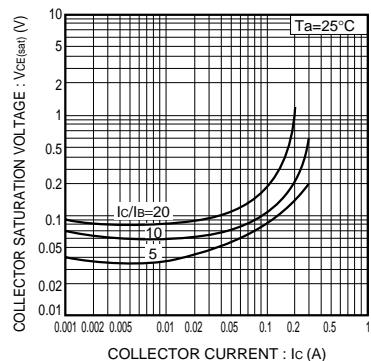


Fig.5 Collector-emitter saturation voltage vs. collector current

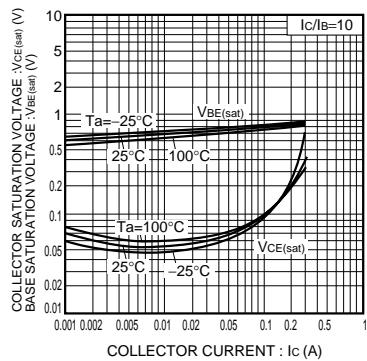
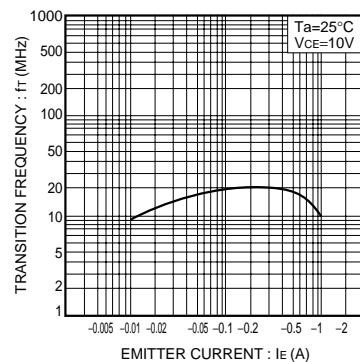
Fig.6 Collector-emitter saturation voltage
Collector-base saturation voltage vs. collector current

Fig.7 Gain bandwidth product vs. emitter current

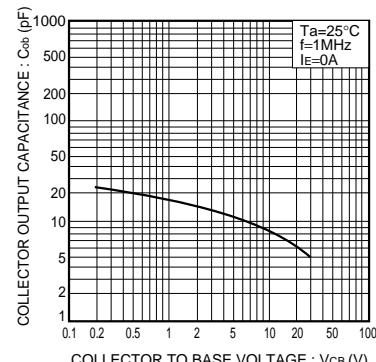


Fig.8 Collector output capacitance vs. collector-base voltage

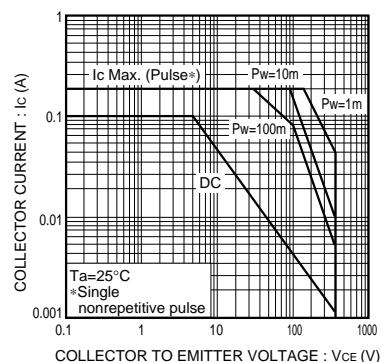


Fig.9 Safe operating area

Transistors

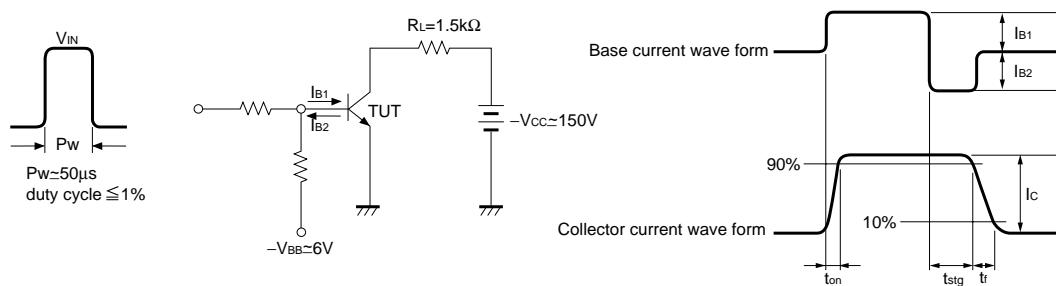


Fig.10 Switching time measurement circuit

Appendix

Notes

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