

# Power Transistor (400V, 0.1A)

## 2SC4505

### ●Features

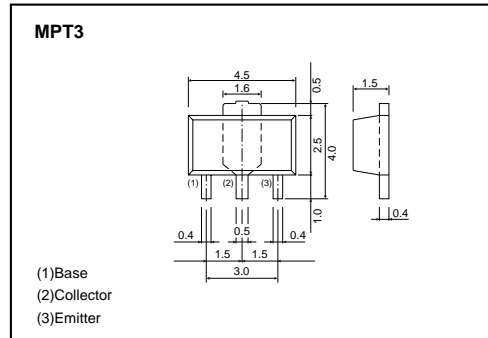
- 1) High breakdown voltage. ( $BV_{CEO} = 400V$ )
- 2) Low saturation voltage,  
typically  $V_{CE(sat)} = 0.05V$  at  $I_C / I_B = 10mA / 1mA$ .
- 3) High switching speed, typically  $t_f = 1.7\mu s$  at  $I_C = 100mA$ .
- 4) Complements the 2SC4505 and the 2SA1759.

### ●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 40×40×0.7mm 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	$\mu A$	$V_{CB} = 400V$
Emitter cutoff current	$I_{EBO}$	—	—	10	$\mu A$	$V_{EB} = 6V$
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	—	$\mu s$	$I_C = -100mA$ , $R_L = 1.5k\Omega$
Storage time	$t_{stg}$	—	5.5	—	$\mu s$	$I_{B1} = -I_{B2} = 10mA$
Fall time	$t_f$	—	1.7	—	$\mu s$	$V_{CC} = -150V$

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●Electrical characteristics (Ta=25°C)

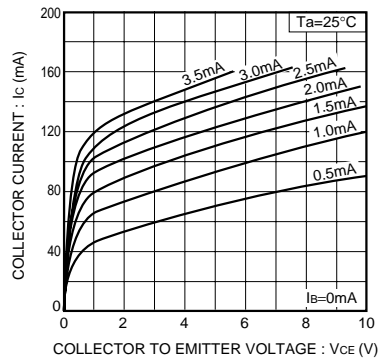


Fig.1 Ground emitter output characteristics

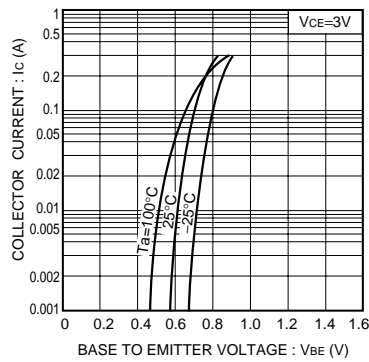


Fig.2 Ground emitter propagation characteristics

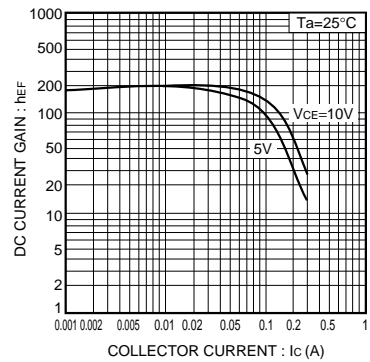


Fig.3 DC current gain vs. collector current ( I )

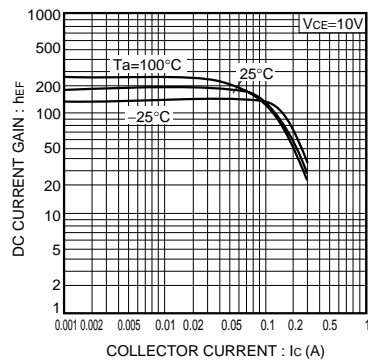


Fig.4 DC current gain vs. collector current ( II )

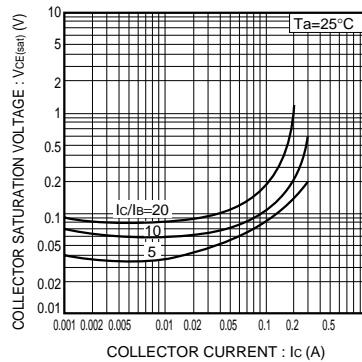


Fig.5 Collector-emitter saturation voltage vs. collector current

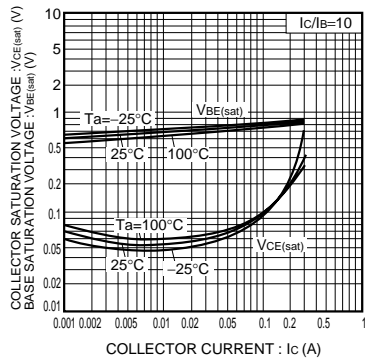


Fig.6 Collector-emitter saturation voltage vs. collector current  
Collector-base saturation voltage

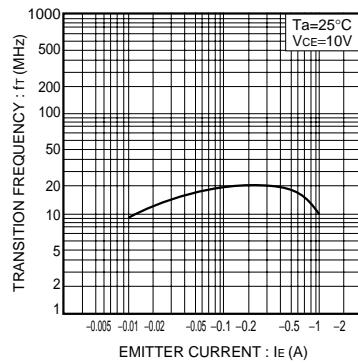


Fig.7 Gain bandwidth product vs. emitter current

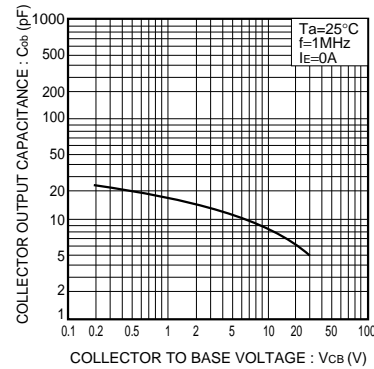


Fig.8 Collector output capacitance vs. collector-base voltage

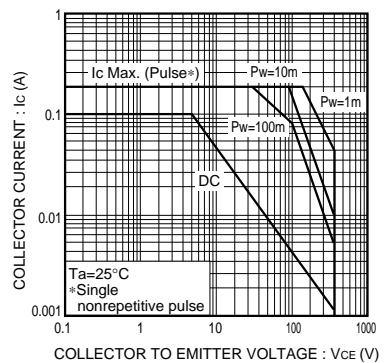


Fig.9 Safe operating area

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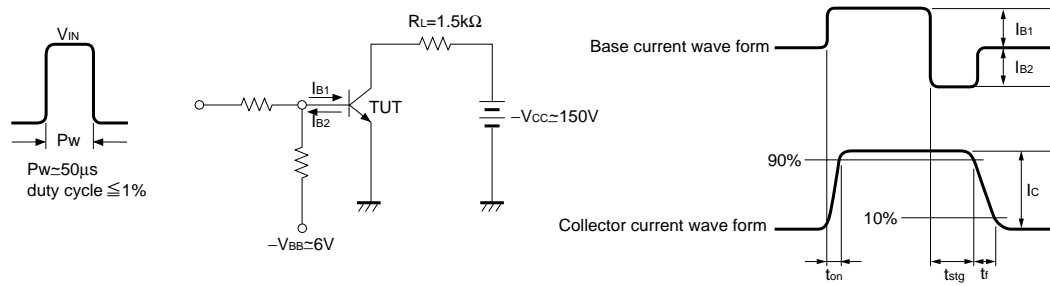


Fig.10 Switching time measurement circuit

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