

# Power Transistor (400V, 0.1A)

## 2SC4505 / 2SC4620

### ●Features

- 1) High breakdown voltage. ( $V_{CE0} = 400V$ )
- 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.

### ●Absolute maximum ratings ( $T_a = 25^\circ C$ )

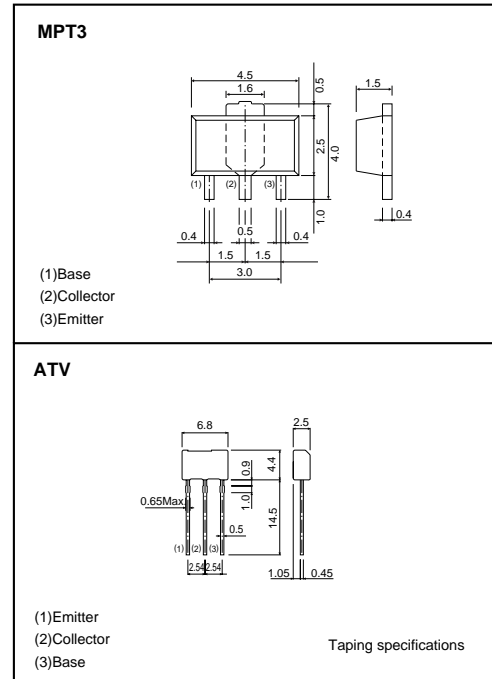
Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	400	V
Collector-emitter voltage	$V_{CEO}$	400	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	0.1	A(DC)
		0.2	A(Pulse) *1
Collector power dissipation	$P_C$	0.5	W
		2	W *2
		1	W *3
Junction temperature	$T_j$	150	$^\circ C$
Storage 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.

\*3 When  $t = 1.7mm$  and the full collector area on the PC board is  $1cm^2$  or greater.

### ●External dimensions (Unit : mm)



### ●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	-	$\mu s$	$V_{CC} = -150V$

### ●Packaging specifications and $h_{FE}$

Type	2SC4505	2SC4620
Package	MPT3	ATV
$h_{FE}$	PQ	PQ
Marking	CE*	-
Code	T100	TV2
Basic ordering unit (pieces)	1000	2500

\* Denotes  $h_{FE}$

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●Electrical characteristics (Ta=25°C)

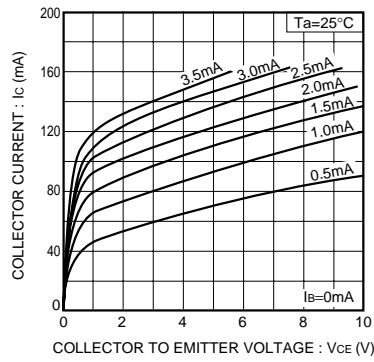


Fig.1 Ground emitter output characteristics

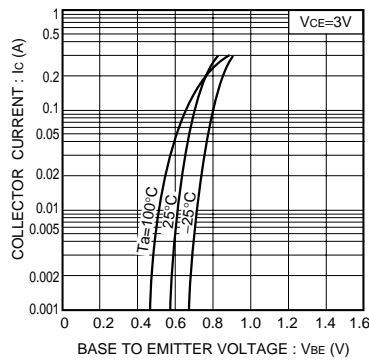


Fig.2 Ground emitter propagation characteristics

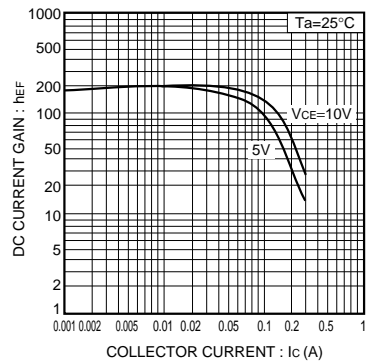


Fig.3 DC current gain vs. collector current ( I )

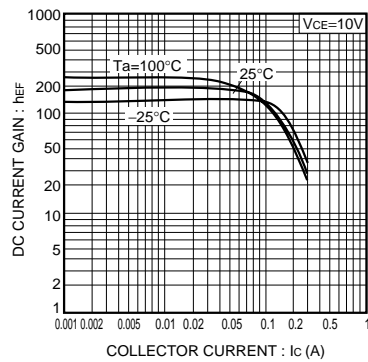


Fig.4 DC current gain vs. collector current ( II )

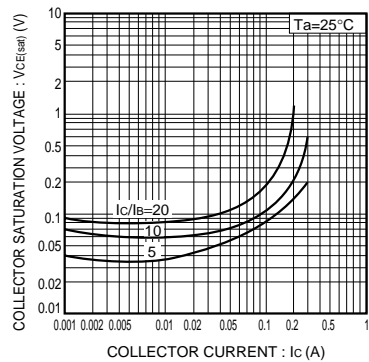


Fig.5 Collector-emitter saturation voltage vs. collector current

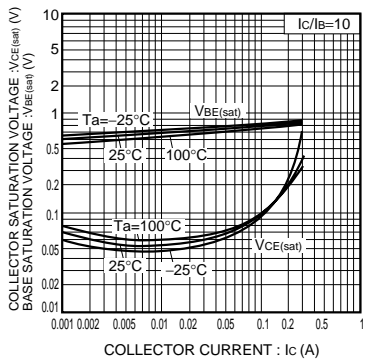


Fig.6 Collector-emitter saturation voltage vs. collector current  
Collector-base saturation voltage

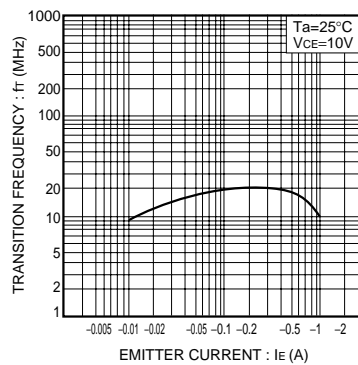


Fig.7 Gain bandwidth product vs. emitter current

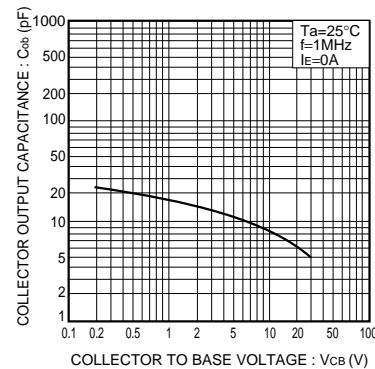


Fig.8 Collector output capacitance vs. collector-base voltage

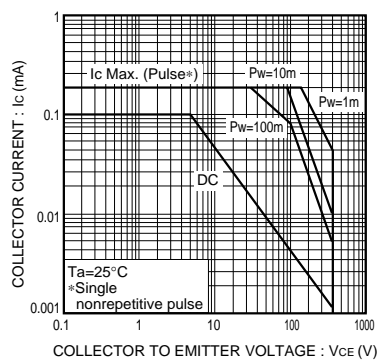


Fig.9 Safe operating area (2SC4505)

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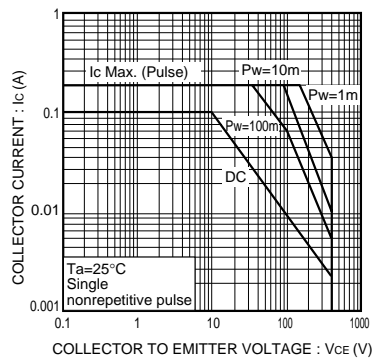


Fig.10 Safe operating area (2SC4620)

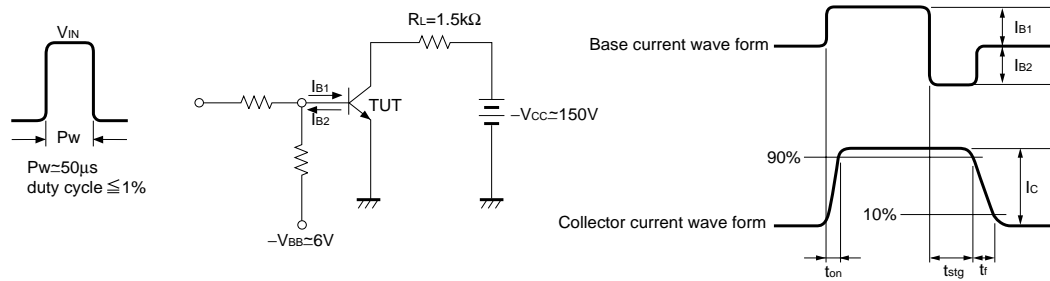


Fig.11 Switching time measurement circuit

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