

Power Transistor (400V, 0.1A)

2SC4505

●Features

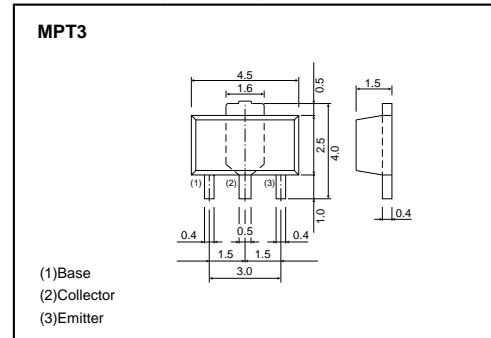
- 1) High breakdown voltage. ($BV_{CEO} = 400V$)
- 2) Low saturation voltage,
typically $V_{CE(sat)} = 0.05V$ at $I_C / I_B = 10mA / 1mA$.
- 3) High switching speed, typically $t_f = 1.7\mu s$ at $I_C = 100mA$.
- 4) Complements the 2SC4505 and the 2SA1759.

●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 | 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)

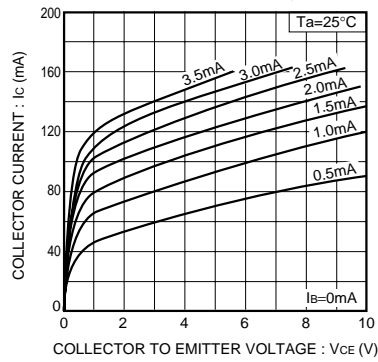


Fig.1 Ground emitter output characteristics

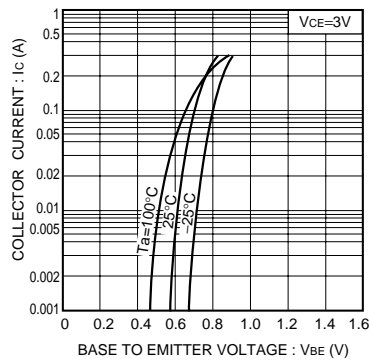


Fig.2 Ground emitter propagation characteristics

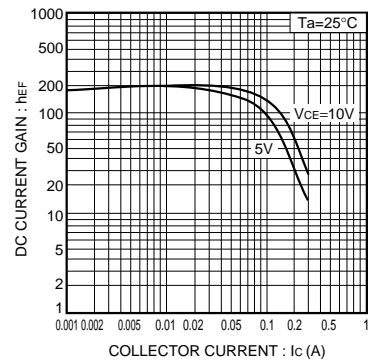


Fig.3 DC current gain vs. collector current (I)

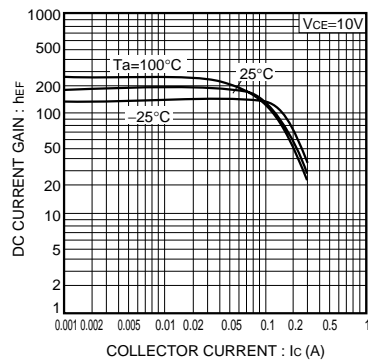


Fig.4 DC current gain vs. collector current (II)

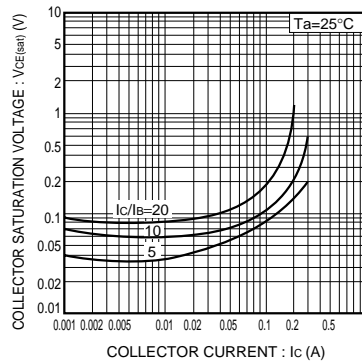


Fig.5 Collector-emitter saturation voltage vs. collector current

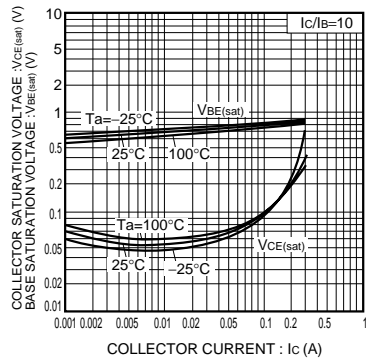


Fig.6 Collector-emitter saturation voltage vs. collector current
Collector-base saturation voltage

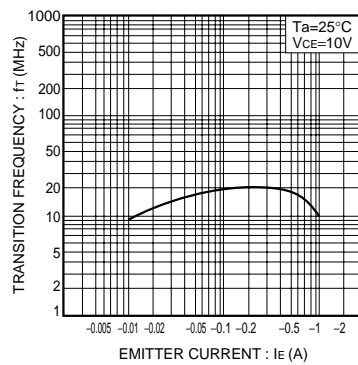


Fig.7 Gain bandwidth product vs. emitter current

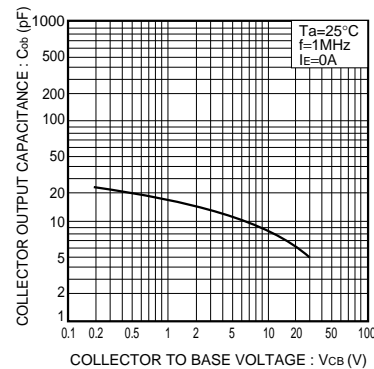


Fig.8 Collector output capacitance vs. collector-base voltage

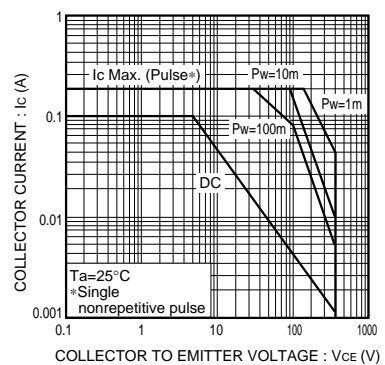


Fig.9 Safe operating area

Transistors

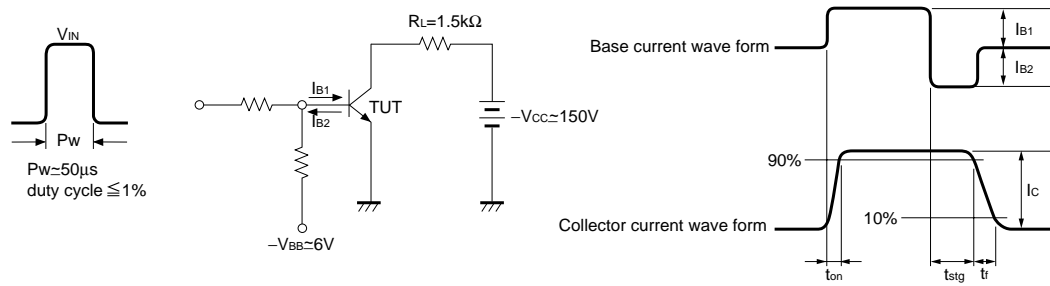


Fig.10 Switching time measurement circuit

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