

High voltage switching transistor (400V, 2A)

2SC5161

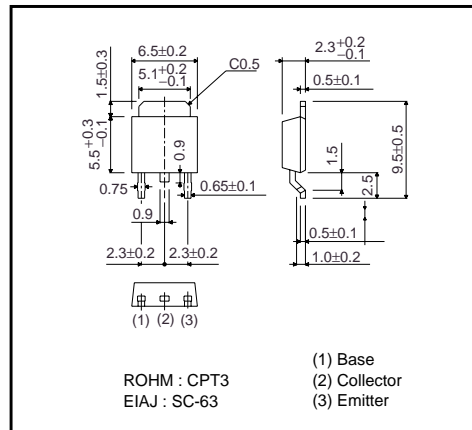
●Features

- 1) Low $V_{CE(sat)}$.
 $V_{CE(sat)}=0.15V$ (Typ.)
 $(I_C/I_B=1A/0.2A)$
- 2) High breakdown voltage.
 $V_{CEO}=400V$
- 3) Fast switching.
 $t_r \leq 1.0\mu s$
 $(I_C=0.8A)$

●Structure

Three-layer, diffused planar type
 NPN silicon transistor

●External dimensions (Units : 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 | 2 | A(DC) |
| | I_{CP} | 4 | A(Pulse) * |
| Collector power dissipation | P_C | 1 | W |
| | | 10 | W($T_C=25^\circ C$) |
| Junction temperature | T_J | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55~+150 | $^\circ C$ |

* Single pulse $P_w=10ms$

Transistors

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV _{CB0} | 400 | - | - | V | I _C =50μA |
| Collector-emitter breakdown voltage | BV _{CEO} | 400 | - | - | V | I _C =1mA |
| Emitter-base breakdown voltage | BV _{EB0} | 7 | - | - | V | I _E =50μA |
| Collector cutoff current | I _{CB0} | - | - | 10 | μA | V _{CB} =400V |
| Emitter cutoff current | I _{EBO} | - | - | 10 | μA | V _{EB} =7V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | - | 1 | V | I _C /I _B =1A/0.2A |
| Base-emitter saturation voltage | V _{BE(sat)} | - | - | 1.5 | V | I _C /I _B =1A/0.2A |
| DC current transfer ratio | h _{FE} | 25 | - | 50 | - | V _{CE} =5V, I _C =0.1A |
| Transition frequency | f _T | - | 10 | - | MHz | V _{CE} =10V, I _E =-0.1A, f=5MHz *1 |
| Output capacitance | C _{ob} | - | 30 | - | pF | V _{CB} =10V, I _E =0A, f=1MHz |
| Turn-on time | t _{ON} | - | - | 1 | μs | I _C =0.8A, R _L =250Ω |
| Storage time | t _{stg} | - | - | 2.5 | μs | I _{B1} =-I _{B2} =0.08A V _{CC} ≒ 200V |
| Fall time | t _f | - | - | 1 | μs | Refer to measurement circuit diagram |

*1 Measured using pulse current

●Packaging specifications and h_{FE}

| Type | h _{FE} | Package name | Taping |
|---------|-----------------|------------------------------|--------|
| | | Code | TL |
| | | Basic ordering unit (pieces) | 2500 |
| 2SC5161 | B | | ○ |

h_{FE} values are classified as follows :

| Item | B |
|-----------------|-------|
| h _{FE} | 25~50 |

●Electrical characteristic curves

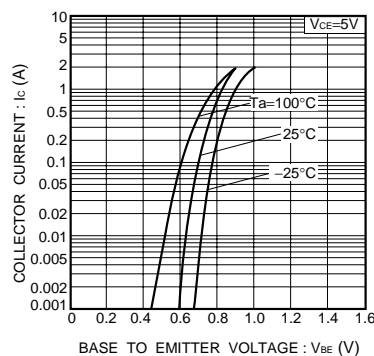


Fig.1 Grounded emitter propagation characteristics

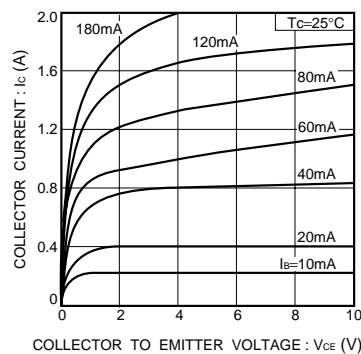


Fig.2 Grounded emitter output characteristics

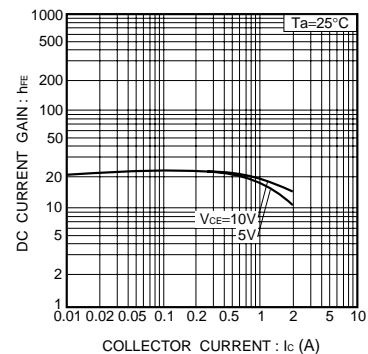


Fig.3 DC current gain vs. collector current (I)

Transistors

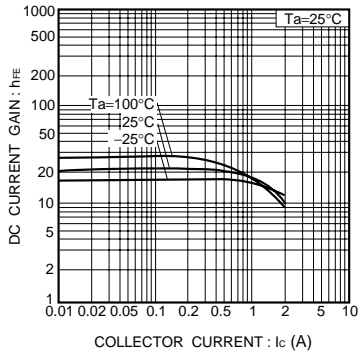


Fig.4 DC current gain vs. collector current (II)

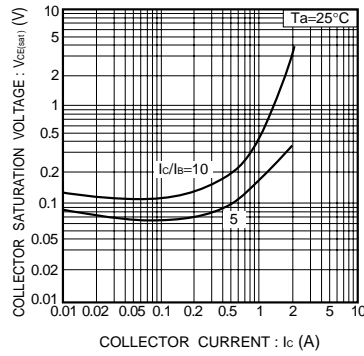


Fig.5 Collector-emitter saturation voltage vs. collector current

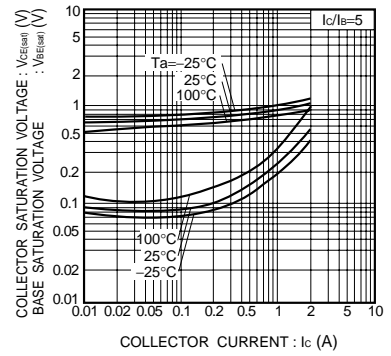


Fig.6 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

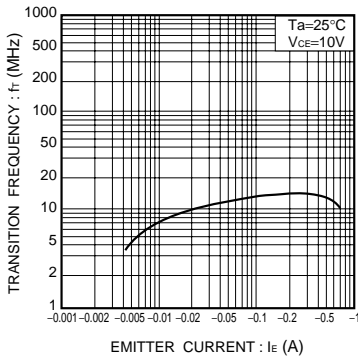


Fig.7 Gain bandwidth product vs. emitter current

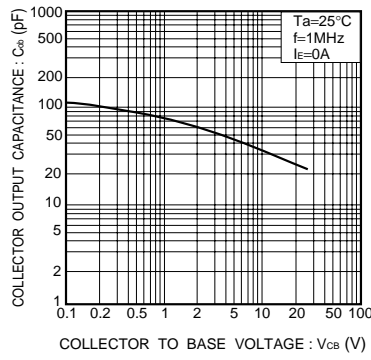


Fig.8 Collector output capacitance vs. collector-base voltage

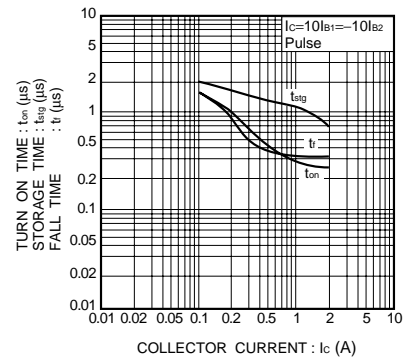


Fig.9 Switching time vs. collector current

●Switching characteristic measurement circuit

