

Power transistor (60V, 3A)

2SC5825

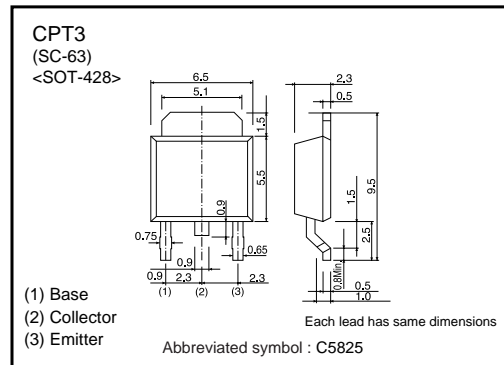
●Features

- 1) High speed switching.
(Tf : Typ. : 30ns at Ic = 3A)
- 2) Low saturation voltage, typically
(Typ. : 200mV at Ic = 2A, Ib = 0.2mA)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2073

●Applications

Low frequency amplifier
High speed switching

●Dimensions (Unit : mm)



●Structure

NPN Silicon epitaxial planar transistor

●Packaging specifications

| Type | Package | Taping |
|---------|------------------------------|--------|
| | Code | TL |
| | Basic ordering unit (pieces) | 2500 |
| 2SC5825 | | ○ |

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|------------------------------|------------------|-----------------|--------|
| Collector-base voltage | V _{CB0} | 60 | V |
| Collector-emitter voltage | V _{CE0} | 60 | V |
| Emitter-base voltage | V _{EB0} | 6 | V |
| Collector current | Continuous | I _c | 3 A |
| | Pulsed | I _{cP} | 6 A *1 |
| Power dissipation | P _c | 1.0 | W *2 |
| | | 10.0 | W *3 |
| Junction temperature | T _j | 150 | °C |
| Range of storage temperature | T _{stg} | -55 to 150 | °C |

*1 P_w=10ms

*2 Each terminal mounted on a recommended land

*3 T_c=25°C

Transistors

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-emitter breakdown voltage | BV _{CEO} | 60 | – | – | V | I _C =1mA |
| Collector-base breakdown voltage | BV _{CBO} | 60 | – | – | V | I _C =100μA |
| Emitter-base breakdown voltage | BV _{EBO} | 6 | – | – | V | I _E =100μA |
| Collector cut-off current | I _{CBO} | – | – | 1.0 | μA | V _{CB} =40V |
| Emitter cut-off current | I _{EBO} | – | – | 1.0 | μA | V _{EB} =4V |
| Collector-emitter saturation voltage | V _{CE(sat)} | – | 200 | 500 | mV | I _C =2A I _B =200mA |
| DC current gain | h _{FE} | 120 | – | 390 | – | V _{CE} =2V I _C =100mA |
| Transition frequency | f _r | – | 200 | – | MHz | V _{CE} =10V I _E =–100mA f=10MHz |
| Corrector output capacitance | C _{ob} | – | 20 | – | pF | V _{CB} =10V I _E =0mA f=1MHz |
| Turn-on time | T _{on} | – | 50 | – | ns | I _C =3A I _{B1} =300mA I _{B2} =–300mA V _{CC} ≒25V |
| Storage time | T _{stg} | – | 150 | – | ns | |
| Fall time | T _f | – | 30 | – | ns | |

*1 Non repetitive pulse
*2 See Switching characteristics measurement circuits

●h_{FE} RANK

| Q | R |
|---------|---------|
| 120–270 | 180–390 |

●Electrical characteristic curves

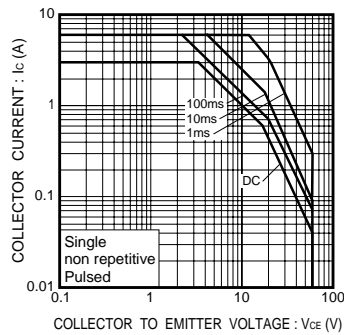


Fig.1 Safe Operating Area

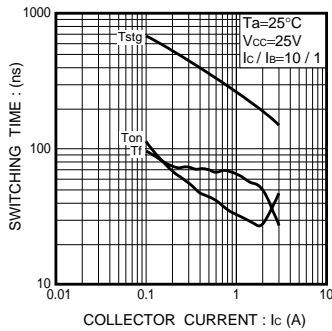


Fig.2 Switching Time

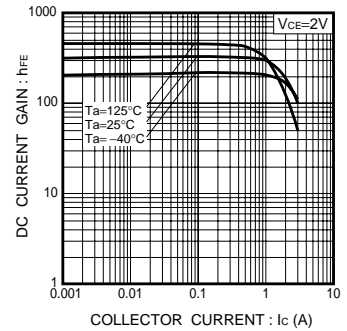


Fig.3 DC Current Gain vs. Collector Current (I)

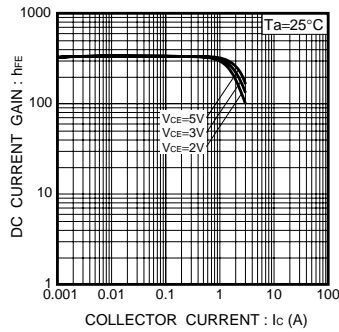


Fig.4 DC Current Gain vs. Collector Current (II)

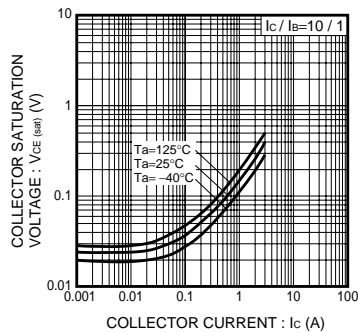


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

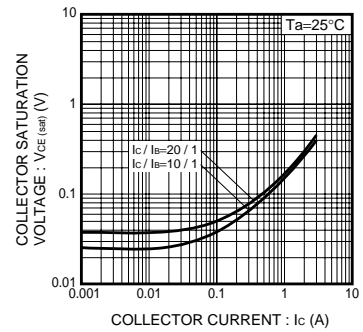


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

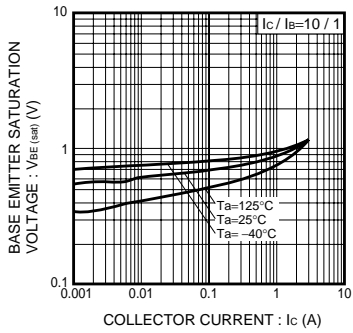


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

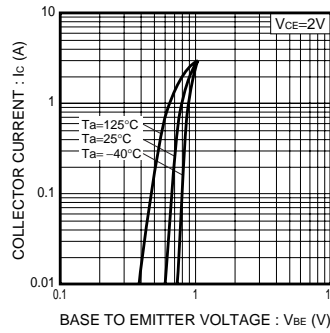


Fig.8 Grounded Emitter Propagation Characteristics

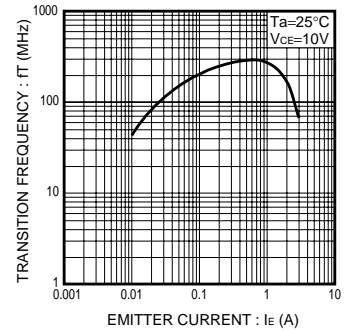


Fig.9 Transition Frequency

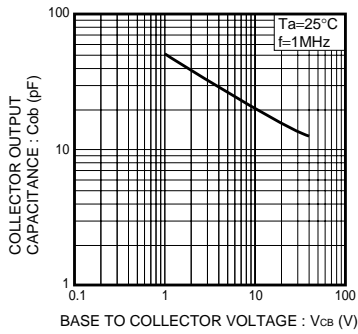
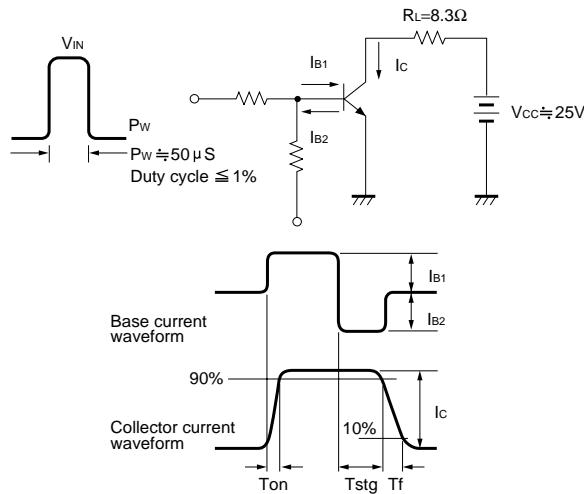


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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