

Medium power transistor (32V, 2A)

2SD1758 / 2SD1862

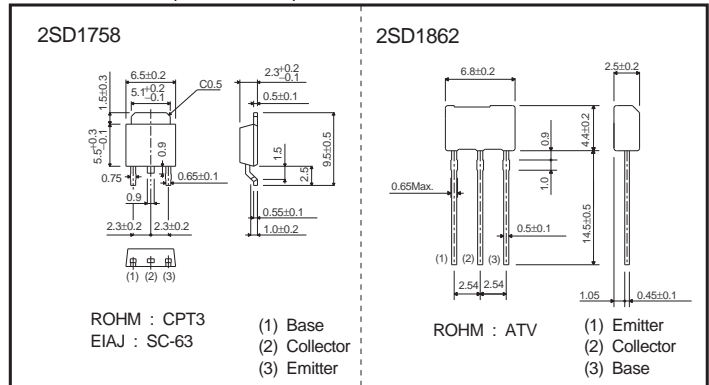
●Features

- 1) Low $V_{CE(sat)}$.
 $V_{CE(sat)} = 0.5V$ (Typ.)
($I_C/I_B = 2A / 0.2A$)
- 2) Complements the 2SB1182 / 2SB1240

●Structure

Epitaxial planar type NPN silicon transistor

●Dimensions (Units : mm)



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|--------------|
| Collector-base voltage | V_{CBO} | 40 | V |
| Collector-emitter voltage | V_{CEO} | 32 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 2 | A (DC) |
| | | 2.5 | A (Pulse) *1 |
| Collector power dissipation | 2SD1758 | 10 | W (Tc=25°C) |
| | 2SD1862 | 1 | W *2 |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

*1 Single pulse, $P_W=20ms$

*2 Printed circuit board: 1.7 mm thick, collector copper plating 1 cm² or larger.

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|---------|------------------------------------|
| Collector-base breakdown voltage | BV_{CBO} | 40 | - | - | V | $I_C=50\mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | 32 | - | - | V | $I_C=1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | 5 | - | - | V | $I_E=50\mu A$ |
| Collector cutoff current | I_{CBO} | - | - | 1 | μA | $V_{CB}=20V$ |
| Emitter cutoff current | I_{EBO} | - | - | 1 | μA | $V_{EB}=4V$ |
| DC current transfer ratio | h_{FE} | 120 | - | 390 | - | $V_{CE}=3V, I_C=0.5A$ * |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | 0.5 | 0.8 | V | $I_C/I_B=2A/0.2A$ * |
| Transition frequency | f_T | - | 100 | - | MHz | $V_{CE}=5V, I_E=-50mA, f=100MHz$ * |
| Output capacitance | C_{ob} | - | 30 | - | pF | $V_{CB}=10V, I_E=0A, f=1MHz$ |

* Measured using pulse current.

●Packaging specifications and hFE

| | | | | |
|---------|-----|------------------------------|--------|------|
| Type | hFE | Package | Taping | |
| | | Code | TL | TV2 |
| | | Basic ordering unit (pieces) | 2500 | 2500 |
| 2SD1758 | QR | | ○ | - |
| 2SD1862 | QR | | - | ○ |

hFE values are classified as follows :

| | | |
|------|------------|------------|
| Item | Q | R |
| hFE | 120 to 270 | 180 to 390 |

●Electrical characteristic curves

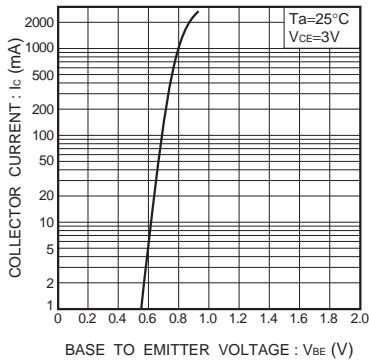


Fig.1 Grounded emitter propagation characteristics

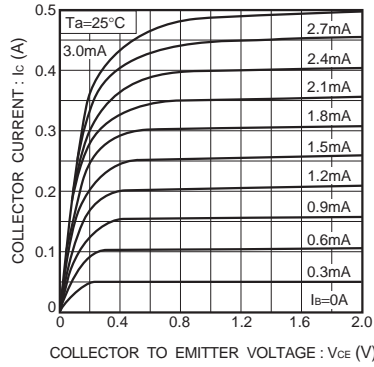


Fig.2 Grounded emitter output characteristics

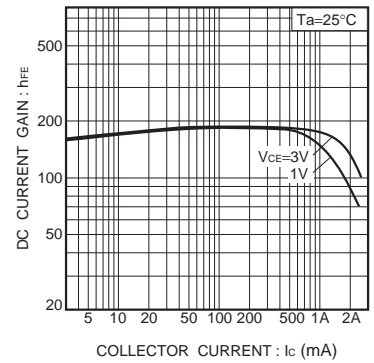


Fig.3 DC current gain vs. collector current

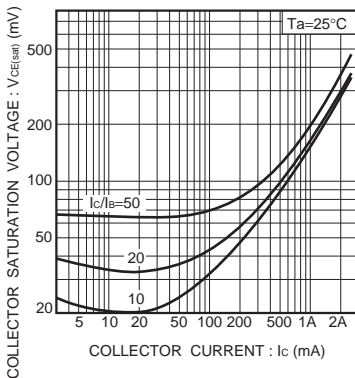


Fig.4 Collector-emitter saturation voltage vs. collector current

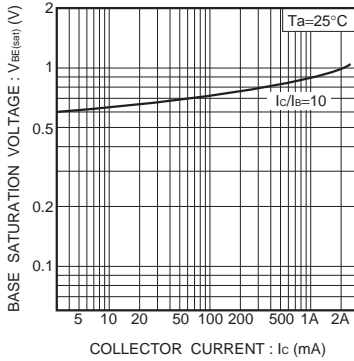


Fig.5 Collector-emitter saturation voltage vs. collector current

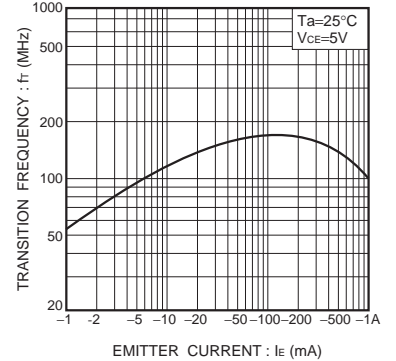


Fig.6 Transition frequency vs. emitter current

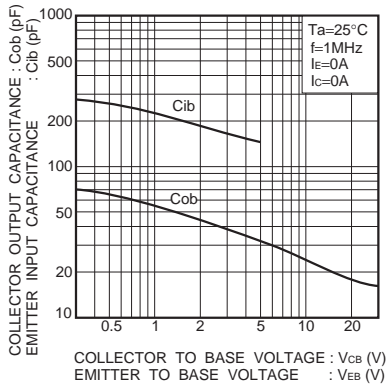


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

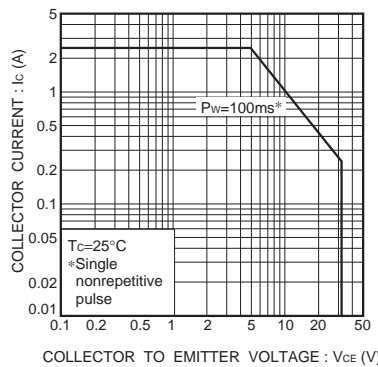


Fig.8 Safe operating area (2SD1758)

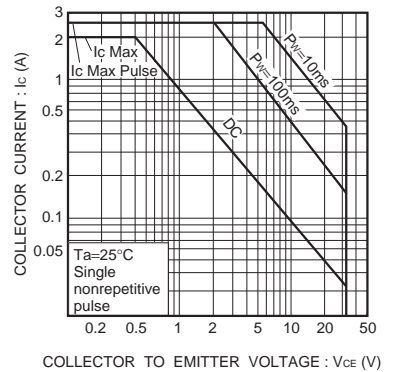


Fig.9 Safe operating area (2SD1862)

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