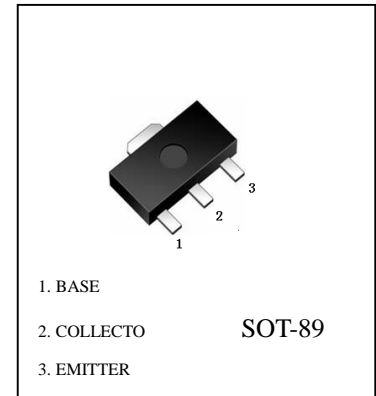


FEATURES

- Low $V_{CE(sat)}$. $V_{CE(sat)}=0.16V(Typ.) (I_C/I_B=2A/0.2A)$
- Complements to 2SB1188

2SD1766 (NPN)
Maximum Ratings (Ta=25 °C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|-------------------------------|-----------|------------|------|
| Collector-Base Voltage | V_{CBO} | 40 | V |
| Collector-Emitter Voltage | V_{CEO} | 32 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Collector Current -Continuous | I_C | 2 | A |
| Collector Power dissipation | P_C | 0.5 | W |
| Junction Temperature | T_J | 150 | °C |
| Storage Temperature | T_{stg} | -55to +150 | °C |


ELECTRICAL CHARACTERISTICS (@ Ta=25 °C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Uni |
|--------------------------------------|---------------|---------------------------------|-----|-----|-----|---------|
| Collector-base breakdown voltage | V_{CBO} | $I_C=50\mu A, I_E=0$ | 40 | | | V |
| Collector-emitter breakdown voltage | V_{CEO} | $I_C=1mA, I_B=0$ | 32 | | | V |
| Emitter-base breakdown voltage | V_{EBO} | $I_E=50\mu A, I_C=0$ | 5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=20V, I_E=0$ | | | 1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=4V, I_C=0$ | | | 1 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=3V, I_C=500mA$ | 82 | | 390 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=2A, I_B=0.2A$ | | | 0.8 | V |
| Transition frequency | f_T | $V_{CE}=5V, I_C=50mA, f=100MHz$ | | 100 | | MHz |
| Collector output capacitance | C_{ob} | $V_{CB}=10V, I_E=0, f=1MHz$ | | 30 | | pF |

CLASSIFICATION OF h_{FE}

| Rank | P | Q | R |
|---------|--------|---------|---------|
| Range | 82-180 | 120-270 | 180-390 |
| Marking | DBP | DBQ | DBR |

2SD1766 Typical Characteristics

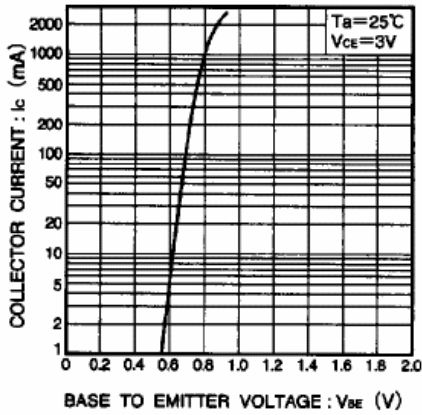


Fig.1 Grounded emitter propagation characteristics

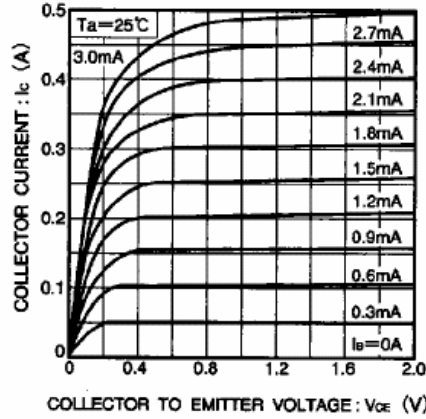


Fig.2 Grounded emitter output characteristics

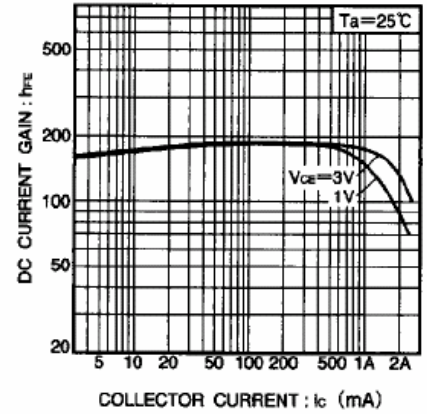


Fig.3 DC current gain vs. collector current

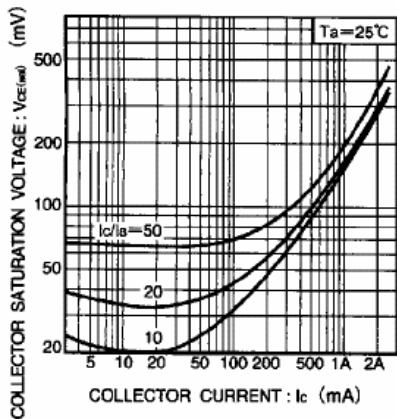


Fig.4 Collector-emitter saturation voltage vs. collector current

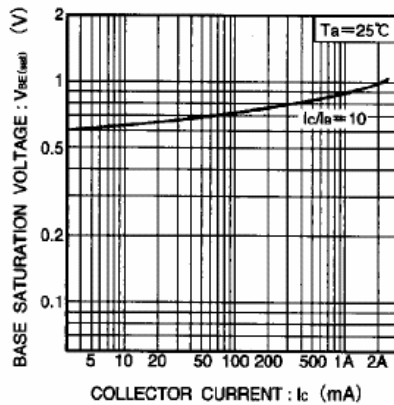


Fig.5 Collector-emitter saturation voltage vs. collector current

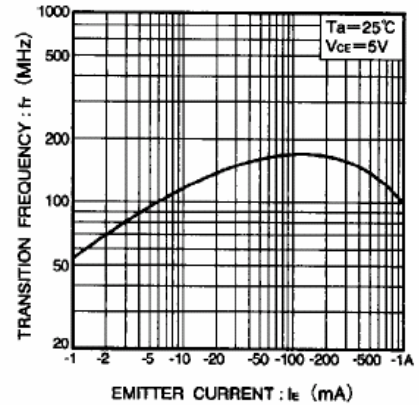


Fig.6 Transition frequency vs. emitter current

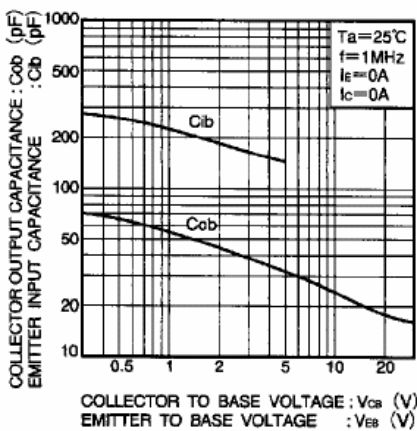


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

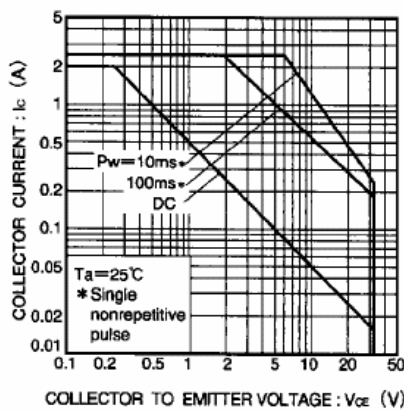


Fig.8 Safe operating area (2SD1766)