

Medium Power Transistor (32V, 0.8A)

2SD1781K

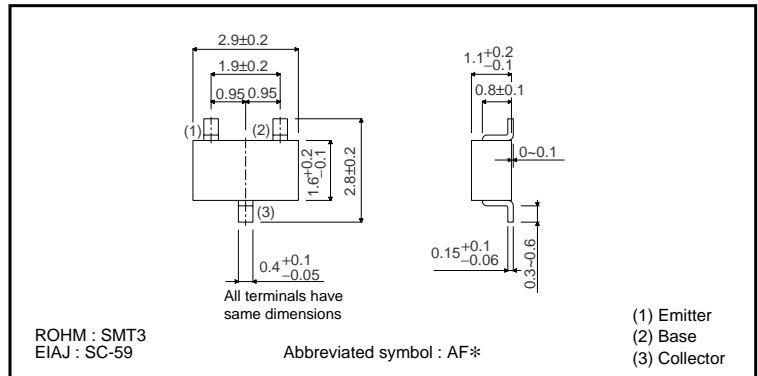
●Features

- 1) Very Low $V_{CE(sat)}$.
 $V_{CE(sat)} = -0.1V(\text{Typ.})$
 $(I_c / I_B = 500mA / 50mA)$
- 2) High current capacity in compact package.
- 3) Complements the 2SB1197K.

●Structure

Epitaxial planar type
 NPN silicon transistor

●External dimensions (Unit : mm)



* Denotes hFE

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|-------------|
| Collector-base voltage | V_{CB0} | 40 | V |
| Collector-emitter voltage | V_{CE0} | 32 | V |
| Emitter-base voltage | V_{EB0} | 5 | V |
| Collector current | I_c | 0.8 | A (DC) |
| | I_{cP} | 1.5 | A (Pulse) * |
| Collector power dissipation | P_c | 200 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

* Single pulse $P_w=100ms$

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●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV _{CB0} | 40 | – | – | V | I _C =50μA |
| Collector-emitter breakdown voltage | BV _{CE0} | 32 | – | – | V | I _C =1mA |
| Emitter-base breakdown voltage | BV _{EB0} | 5 | – | – | V | I _E =50μA |
| Collector cutoff current | I _{CB0} | – | – | 0.5 | μA | V _{CB} =20V |
| Emitter cutoff current | I _{EB0} | – | – | 0.5 | μA | V _{EB} =4V |
| Collector-emitter saturation voltage | V _{CE(sat)} | – | 0.1 | 0.4 | V | I _C /I _B =500mA/50mA |
| DC current transfer ratio | h _{FE} | 120 | – | 390 | – | V _{CE} =3V, I _C =100mA |
| Transition frequency | f _T | – | 150 | – | MHz | V _{CE} =5V, I _E =–50mA, f=100MHz |
| Output capacitance | C _{ob} | – | 15 | – | pF | V _{CB} =10V, I _E =0A, f=1MHz |

●Packaging specifications and h_{FE}

| Type | h _{FE} | Package | Taping |
|----------|-----------------|------------------------------|--------|
| | | Code | T146 |
| | | Basic ordering unit (pieces) | 3000 |
| 2SD1781K | QR | | ○ |

h_{FE} values are classified as follows :

| Item | Q | R |
|-----------------|------------|------------|
| h _{FE} | 120 to 270 | 180 to 390 |

●Electrical characteristic curves

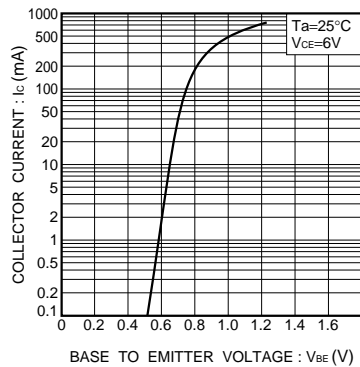


Fig.1 Grounded emitter propagation characteristics

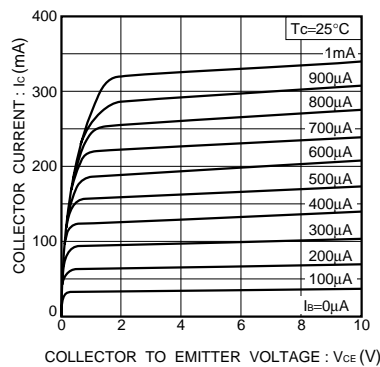


Fig.2 Grounded emitter output characteristics

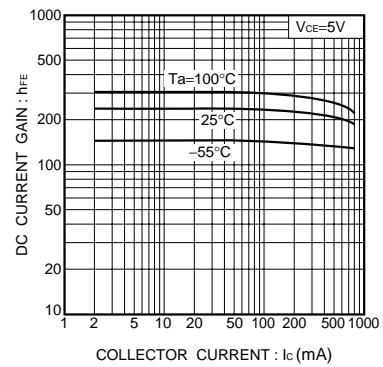


Fig.3 DC current gain vs. collector current

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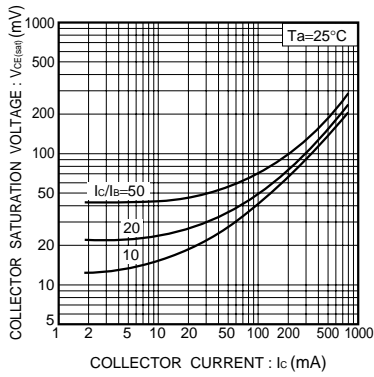


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

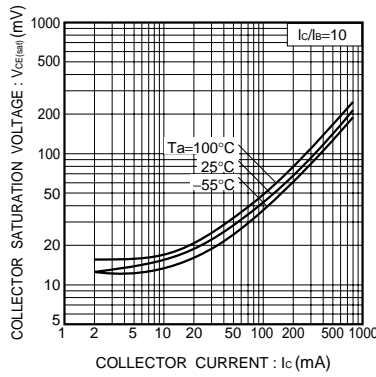


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

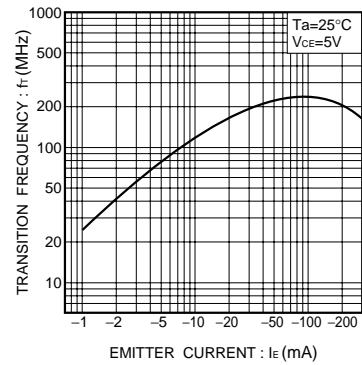


Fig.6 Gain bandwidth product vs. emitter current

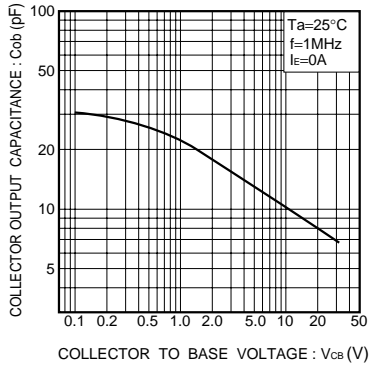


Fig.7 Collector output capacitance vs. collector-base voltage

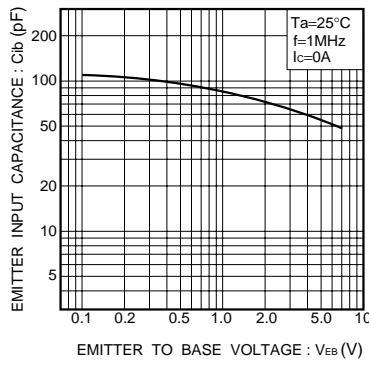


Fig.8 Emitter input capacitance vs. emitter-base voltage

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