

Medium power transistor (−30V, −0.5A)

2SA2047

●Features

- 1) High speed switching. (T_f : Typ. : 40ns at $I_c = -500\text{mA}$)
- 2) Low saturation voltage, typically
(Typ. : -150mV at $I_c = -100\text{A}$, $I_B = -100\text{mA}$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SC5729

●Applications

Small signal low frequency amplifier
High speed switching

●Structure

PNP Silicon epitaxial planar transistor

●Packaging specifications

| Type | Package | Taping |
|---------|------------------------------|--------|
| | Code | T106 |
| | Basic ordering unit (pieces) | 3000 |
| 2SA2047 | | ○ |

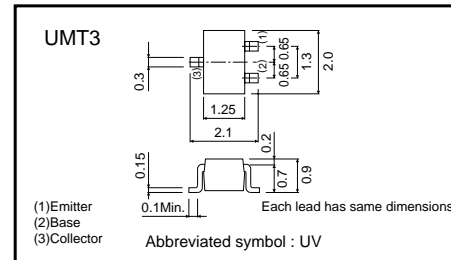
●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Limits | Unit |
|------------------------------|-----------|----------|-------|
| Collector-base voltage | V_{CB0} | −30 | V |
| Collector-emitter voltage | V_{CE0} | −30 | V |
| Emitter-base voltage | V_{EB0} | −6 | V |
| Collector current | I_c | −0.5 | A |
| | I_{CP} | −1.0 | A *1 |
| Power dissipation | P_C | 200 | mW *2 |
| Junction temperature | T_j | 150 | °C |
| Range of storage temperature | T_{stg} | −55~+150 | °C |

*1 $P_w = 10\text{ms}$

*2 Each terminal mounted on a recommended land

●External dimensions (Units : mm)



Transistor

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage | BV _{CB0} | -30 | - | - | V | I _C =-100μA |
| Collector-emitter breakdown voltage | BV _{CEO} | -30 | - | - | V | I _C =-1mA |
| Emitter-base breakdown voltage | BV _{EB0} | -6 | - | - | V | I _E =-100μA |
| Collector cut-off current | I _{CBO} | - | - | -1.0 | μA | V _{CB} =-20V |
| Emitter cut-off current | I _{EBO} | - | - | -1.0 | μA | V _{EB} =-4V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | -150 | -300 | mV | I _C =-100mA, I _B =-10mA |
| DC current gain | h _{FE} | 120 | - | 390 | - | V _{CE} =-2V, I _C =-50mA |
| Transition frequency | f _r | - | 400 | - | MHz | V _{CE} =-10V, I _E =100mA, f=10MHz |
| Collector output capacitance | C _{ob} | - | 10 | - | pF | V _{CB} =-10V, I _E =0A, f=1MHz |
| Turn-on time | T _{on} | - | 40 | - | ns | I _C =-500mA |
| Storage time | T _{stg} | - | 100 | - | ns | I _{B1} =-50mA |
| Fall time | T _f | - | 40 | - | ns | I _{B2} =-50mA |
| | | | | | | V _{CC} =-25V |

●h_{FE} RANK

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

●Electrical characteristic curves

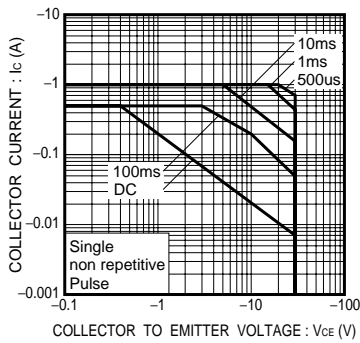


Fig.1 Safe Operating Area

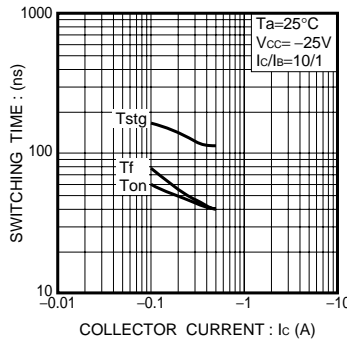


Fig.2 Switching Time

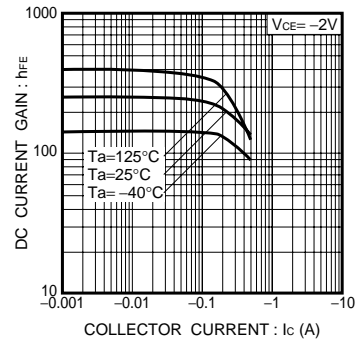


Fig.3 DC Current Gain vs. Collector Current (I)

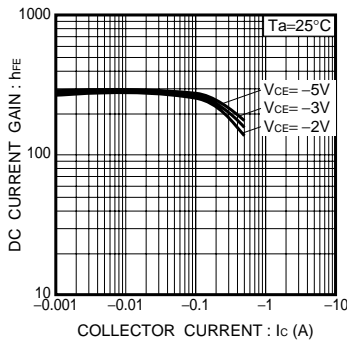


Fig.4 DC Current Gain vs. Collector Current (II)

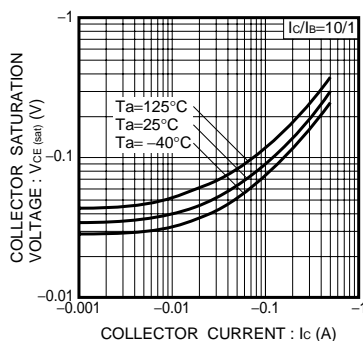


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

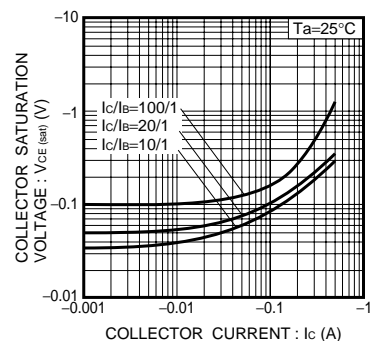


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistor

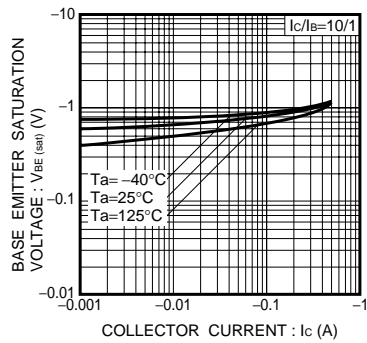


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

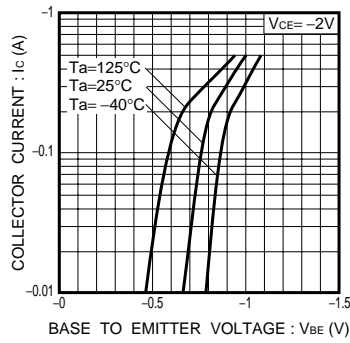


Fig.8 Grounded Emitter Propagation Characteristics

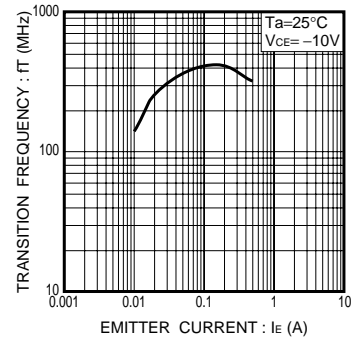


Fig.9 Transition Frequency

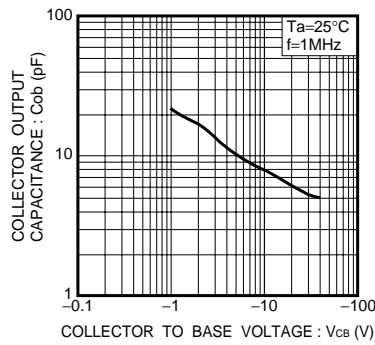


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits

