

General Purpose Transistor ($-50V$, $-0.15A$)

2SA1037AK / 2SA1576A / 2SA1774 / 2SA2029

●Features

- 1) Excellent h_{FE} linearity.
- 2) Complements the 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658.

●Structure

Epitaxial planar type.
PNP silicon transistor

●Dimensions (Unit : mm)



* Denotes h_{FE}

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|---------------------|-------------|--------|
| Collector-base voltage | V _{CB0} | -60 | V |
| Collector-emitter voltage | V _{CE0} | -50 | V |
| Emitter-base voltage | V _{EB0} | -6 | V |
| Collector current | I _c | -0.15 | A (DC) |
| Collector power dissipation | 2SA1037AK, 2SA1576A | 0.2 | W |
| | 2SA2029, 2SA1774 | 0.15 | |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage | BV _{CB0} | -60 | - | - | V | I _c = -50μA |
| Collector-emitter breakdown voltage | BV _{CE0} | -50 | - | - | V | I _c = -1mA |
| Emitter-base breakdown voltage | BV _{EB0} | -6 | - | - | V | I _E = -50μA |
| Collector cutoff current | I _{cBO} | - | - | -0.1 | μA | V _{CB} = -60V |
| Emitter cutoff current | I _{EBO} | - | - | -0.1 | μA | V _{EB} = -6V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | - | -0.5 | V | I _c /I _B = -50mA/-5mA |
| DC current transfer ratio | h _{FE} | 120 | - | 390 | - | V _{CE} = -6V, I _c = -1mA |
| Transition frequency | f _T | - | 140 | - | MHz | V _{CE} = -12V, I _E =2mA, f=100MHz |
| Output capacitance | C _{ob} | - | 4.0 | 5.0 | pF | V _{CB} = -12V, I _E =0A, f=1MHz |

●Packaging specifications and h_{FE}

| Type | h _{FE} | Package | Taping | | | |
|-----------|-----------------|------------------------------|--------|------|------|------|
| | | Code | T146 | T106 | TL | T2L |
| | | Basic ordering unit (pieces) | 3000 | 3000 | 3000 | 8000 |
| 2SA2029 | QR | - | - | - | ○ | |
| 2SA1037AK | QR | ○ | - | - | - | |
| 2SA1576A | QR | - | ○ | - | - | |
| 2SA1774 | QR | - | - | ○ | - | |

h_{FE} values are classified as follows:

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

●Electrical characteristic curves

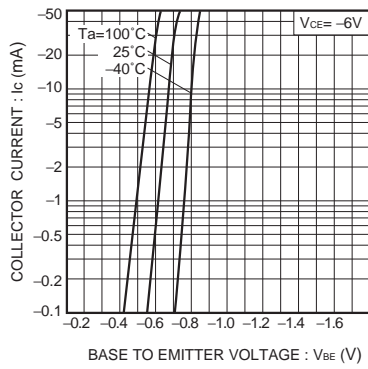


Fig.1 Grounded emitter propagation characteristics

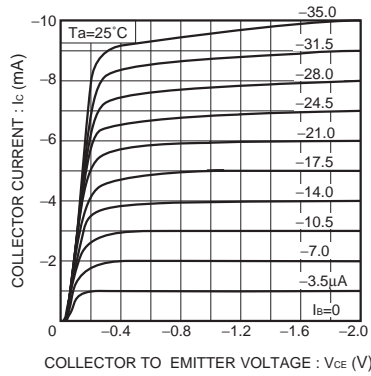


Fig.2 Grounded emitter output characteristics (I)

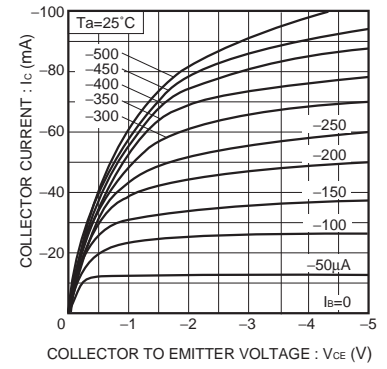


Fig.3 Grounded emitter output characteristics (II)



Fig.4 DC current gain vs. collector current (I)



Fig.5 DC current gain vs. collector current (II)

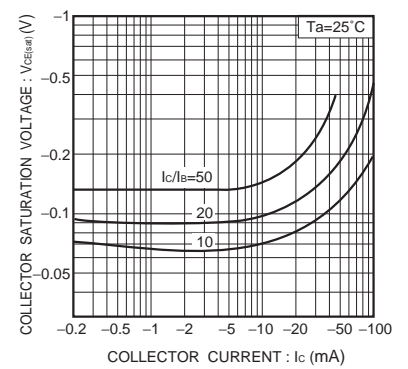


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

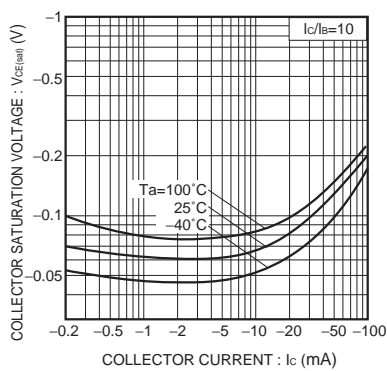


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

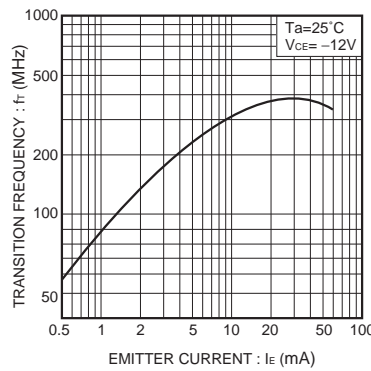


Fig.8 Gain bandwidth product vs. emitter current

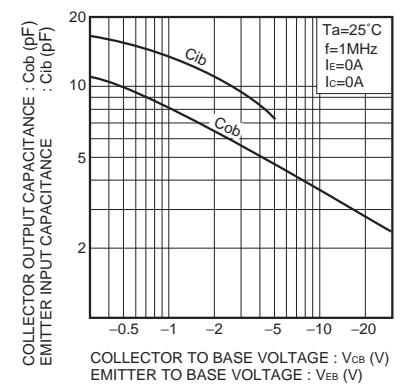


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Notes

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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331