

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

2SA1037AK / 2SA1576A / 2SA1774 / 2SA2029 / 2SA933AS

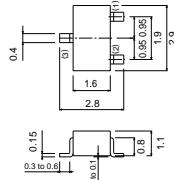
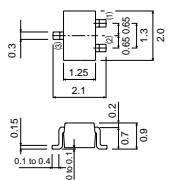
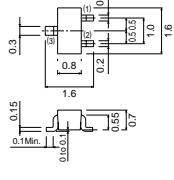
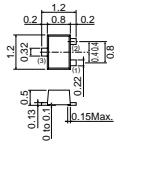
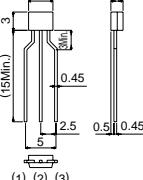
●Features

- 1) Excellent h_{FE} linearity.
- 2) Complements the 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658 / 2SC1740S.

●Structure

Epitaxial planar type.
PNP silicon transistor

●Dimensions (Unit : mm)

| | |
|--|---|
| <p>2SA1037AK</p>  <p>Each lead has same dimensions</p> <p>ROHM : SMT3 EIAJ : SC-59</p> <p>(1) Emitter (2) Base (3) Collector</p> <p>Abbreviated symbol : F *</p> | <p>2SA1576A</p>  <p>Each lead has same dimensions</p> <p>ROHM : UMT3 EIAJ : SC-70</p> <p>(1) Emitter (2) Base (3) Collector</p> <p>Abbreviated symbol : F *</p> |
| <p>2SA1774</p>  <p>ROHM : EMT3 EIAJ : SC-75A</p> <p>(1) Emitter (2) Base (3) Collector</p> <p>Abbreviated symbol : F *</p> | <p>2SA2029</p>  <p>ROHM : VMT3 EIAJ :</p> <p>(1) Base (2) Emitter (3) Collector</p> <p>Abbreviated symbol : F *</p> |
| <p>2SA933AS</p>  <p>Taping specifications</p> <p>ROHM : SPT EIAJ : SC-72</p> <p>(1) Emitter (2) Collector (3) Base</p> | |

* Denotes h_{FE}

Transistors

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|------------------|-------------|--------|
| Collector-base voltage | V _{CBO} | -60 | V |
| Collector-emitter voltage | V _{CEO} | -50 | V |
| Emitter-base voltage | V _{EBO} | -6 | V |
| Collector current | I _C | -0.15 | A (DC) |
| Collector power dissipation | P _C | 0.2 | W |
| 2SA2029, 2SA1774 | | 0.15 | |
| 2SA933AS | | 0.3 | |
| 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 _{CBO} | -60 | - | - | V | I _C = -50μA |
| Collector-emitter breakdown voltage | BV _{CEO} | -50 | - | - | V | I _C = -1mA |
| Emitter-base breakdown voltage | BV _{EBO} | -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 | - | 560 | - | 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 | TP |
| | | Basic ordering unit (pieces) | 3000 | 3000 | 3000 | 8000 | 5000 |
| 2SA2029 | QRS | - | - | - | ○ | - | - |
| 2SA1037AK | QRS | ○ | - | - | - | - | - |
| 2SA1576A | QRS | - | ○ | - | - | - | - |
| 2SA1774 | QRS | - | - | ○ | - | - | - |
| 2SA933AS | QRS | - | - | - | - | - | ○ |

h_{FE} values are classified as follows:

| Item | Q | R | S |
|-----------------|------------|------------|------------|
| h _{FE} | 120 to 270 | 180 to 390 | 270 to 560 |

Transistors

●Electrical characteristic curves

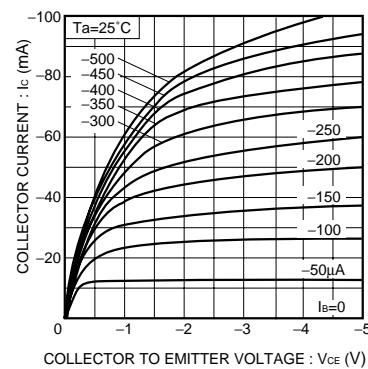
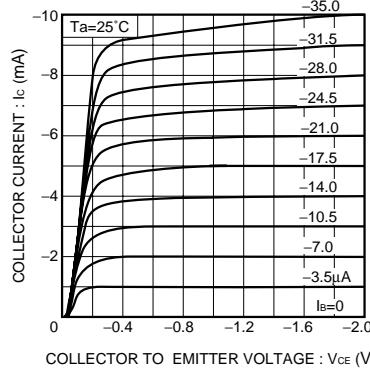
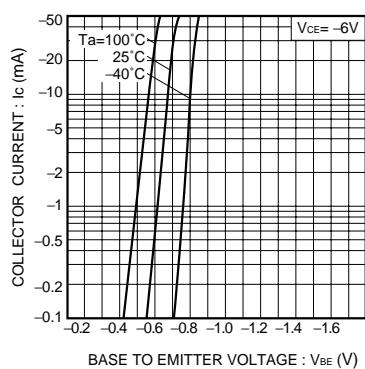


Fig.1 Grounded emitter propagation characteristics

Fig.2 Grounded emitter output characteristics (I)

Fig.3 Grounded emitter output characteristics (II)

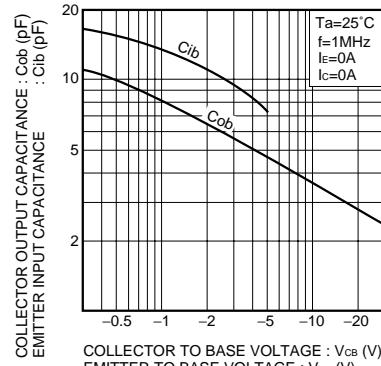
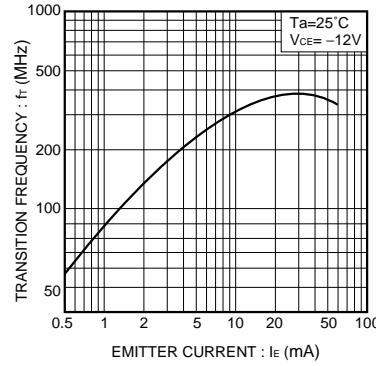
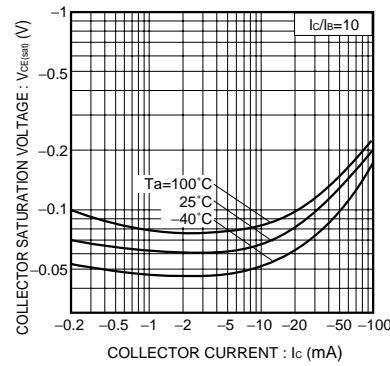
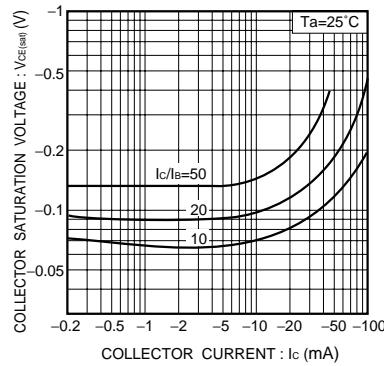
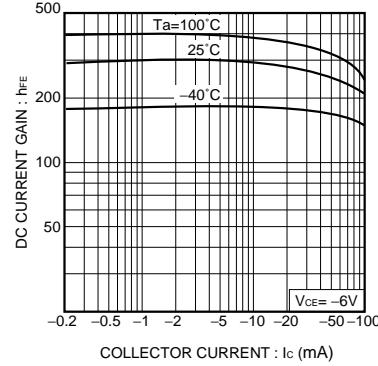
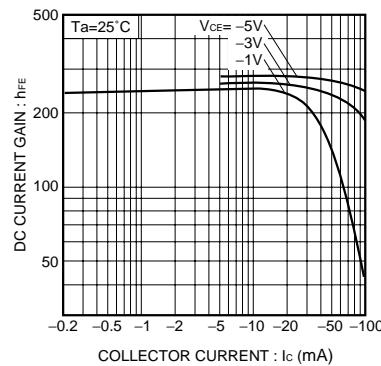


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

Fig.8 Gain bandwidth product vs. emitter current

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

Appendix

Notes

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