

General purpose transistor (dual transistors)

EMZ7 / UMZ7N

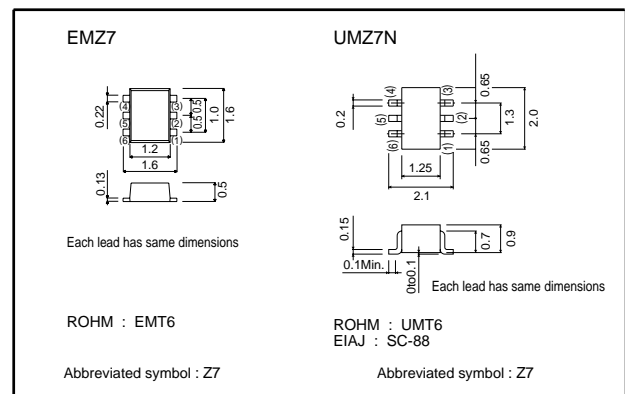
● Features

- 1) Both a 2SA2018 chip and 2SC5585 chip in a EMT or UMT package.
- 2) Mounting possible with EMT3 or UMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.
- 5) Low $V_{CE(sat)}$

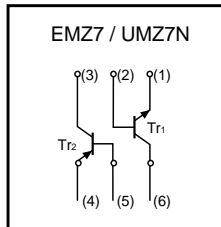
● Structure

NPN / PNP epitaxial planar silicon transistor

● External dimensions (Units : mm)



● Equivalent Circuit



● Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | | Unit |
|-----------------------------|-----------|------------|------|-------|
| | | Tr1 | Tr2 | |
| Collector-base voltage | V_{CBO} | 15 | -15 | V |
| Collector-emitter voltage | V_{CEO} | 12 | -12 | V |
| Emitter-base voltage | V_{EBO} | 6 | -6 | V |
| Collector current | I_C | 500 | -500 | mA |
| Collector power dissipation | P_C | 150(TOTAL) | | mW *1 |
| Junction temperature | T_J | 150 | | °C |
| Storage temperature | T_{stg} | -55-+150 | | °C |

*1 120mW per element must not be exceeded.

Transistors

● Electrical characteristics (Ta = 25°C)

Tr1 (NPN)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage | BV _{CB0} | 15 | – | – | V | I _C =10μA |
| Collector-emitter breakdown voltage | BV _{CEO} | 12 | – | – | V | I _C =1mA |
| Emitter-base breakdown voltage | BV _{EB0} | 6 | – | – | V | I _E =10μA |
| Collector cutoff current | I _{CB0} | – | – | 0.1 | μA | V _{CB} =15V |
| Emitter cutoff current | I _{EB0} | – | – | 0.1 | μA | V _{EB} =6V |
| Collector-emitter saturation voltage | V _{CE(sat)} | – | 90 | 250 | mV | I _C /I _B =200mA/10mA |
| DC current transfer ratio | h _{FE} | 270 | – | 680 | – | V _{CE} /I _C =2V/10mA |
| Transition frequency | f _T | – | 320 | – | MHz | V _{CE} =2V, I _C =10mA, f=100MHz |
| Output capacitance | C _{ob} | – | 7.5 | – | pF | V _{CB} =10V, I _E =0A, f=1MHz |

Tr2 (PNP)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV _{CB0} | –15 | – | – | V | I _C =–10μA |
| Collector-emitter breakdown voltage | BV _{CEO} | –12 | – | – | V | I _C =–1mA |
| Emitter-base breakdown voltage | BV _{EB0} | –6 | – | – | V | I _E =–10μA |
| Collector cutoff current | I _{CB0} | – | – | –0.1 | μA | V _{CB} =–15V |
| Emitter cutoff current | I _{EB0} | – | – | –0.1 | μA | V _{EB} =–6V |
| Collector-emitter saturation voltage | V _{CE(sat)} | – | –100 | –250 | mV | I _C /I _B =–200mA/–10mA |
| DC current transfer ratio | h _{FE} | 270 | – | 680 | – | V _{CE} /I _C =–2V/–10mA |
| Transition frequency | f _T | – | 260 | – | MHz | V _{CE} =–2V, I _C =10mA, f=100MHz |
| Output capacitance | C _{ob} | – | 6.5 | – | pF | V _{CB} =–10V, I _E =0A, f=1MHz |

● Packaging specifications

| Part No. | Packaging type | Taping | |
|----------|------------------------------|--------|------|
| | Code | TR | T2R |
| | Basic ordering unit (pieces) | 3000 | 8000 |
| UMZ7N | | ○ | – |
| EMZ7 | | – | ○ |

● Electrical characteristic curves

Tr1 (NPN)

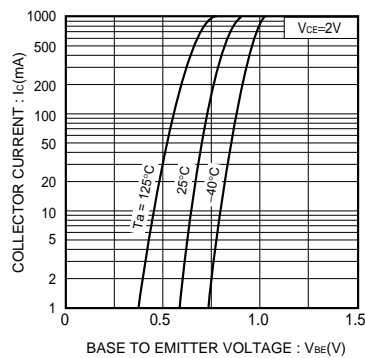


Fig.1 Grounded emitter propagation characteristics

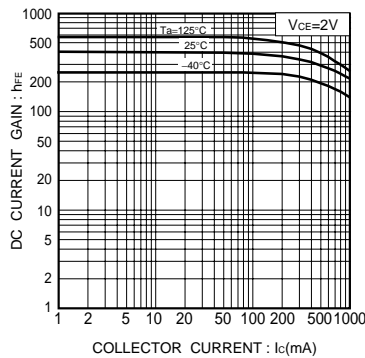


Fig.2 DC current gain vs. collector current

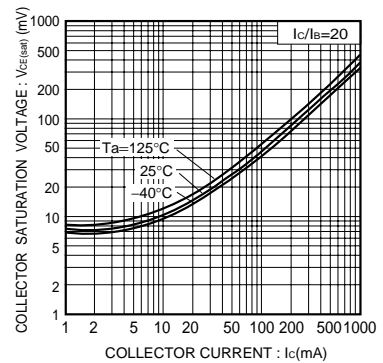


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

Transistors

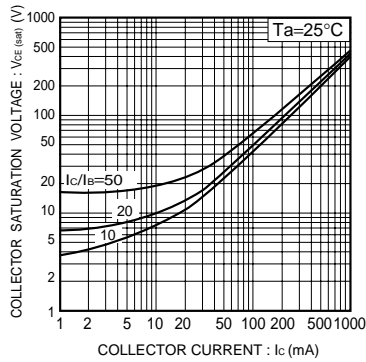


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

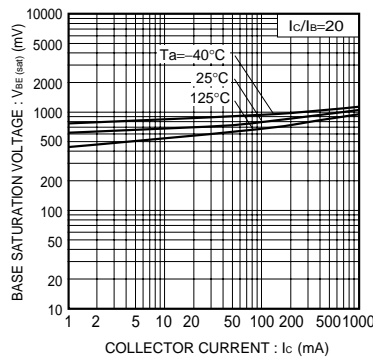


Fig.5 Base-emitter saturation voltage vs. collector current

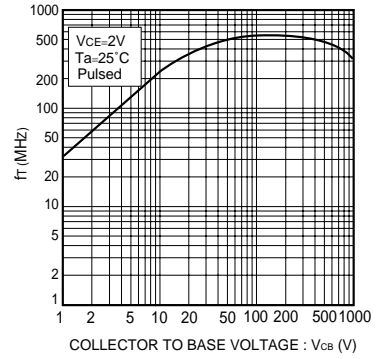


Fig.6 Collector output capacitance Emitter input capacitance vs. base voltage

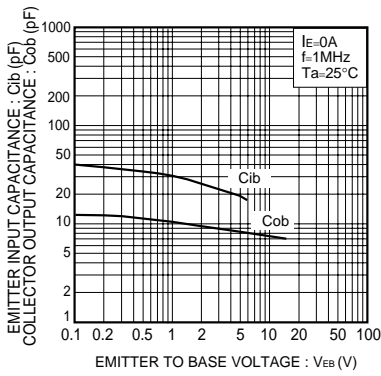


Fig.7 Collector output capacitance vs collector-base voltage Emitter input capacitance vs emitter-base voltage

Tr2 (PNP)

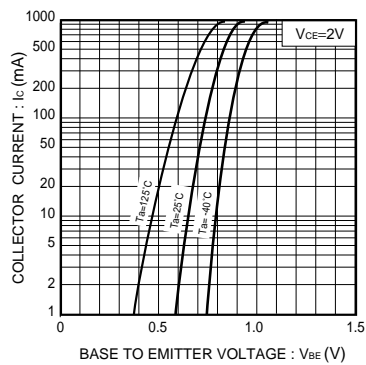


Fig.8 Grounded emitter propagation characteristics

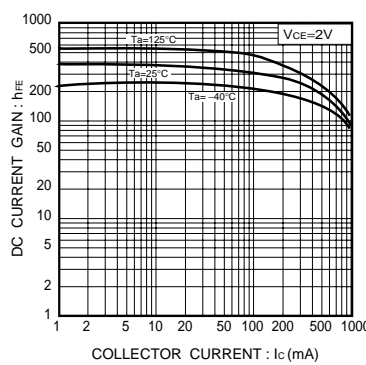


Fig.9 DC current gain vs. collector current

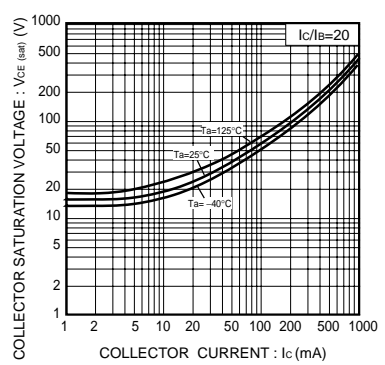


Fig.10 Collector-emitter saturation voltage vs. collector current (I)

Transistors

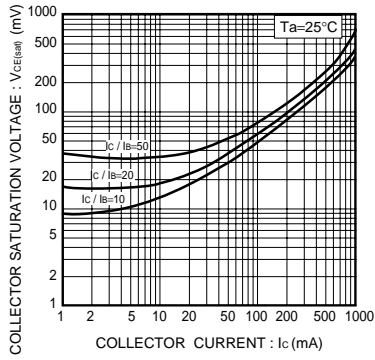


Fig.11 Collector-emitter saturation voltage vs. collector current

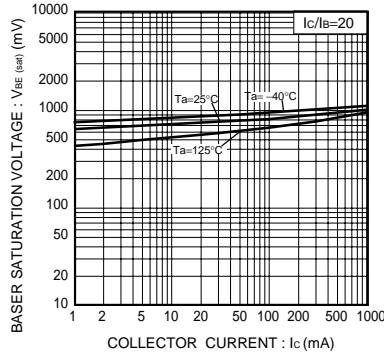


Fig.12 Base-emitter saturation voltage vs. collector current

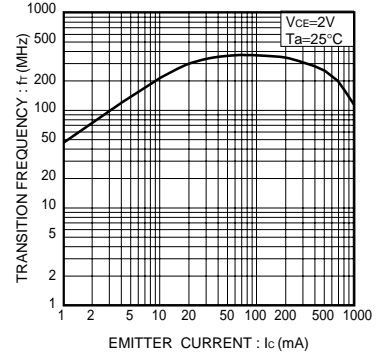


Fig.13 Gain bandwidth product vs. emitter current

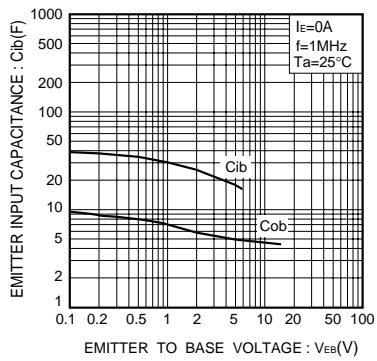


Fig.14 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage