

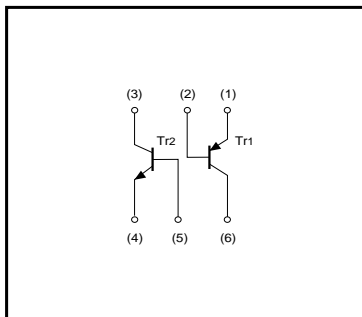
Power management (dual transistors)

EMZ8 / UMZ8N

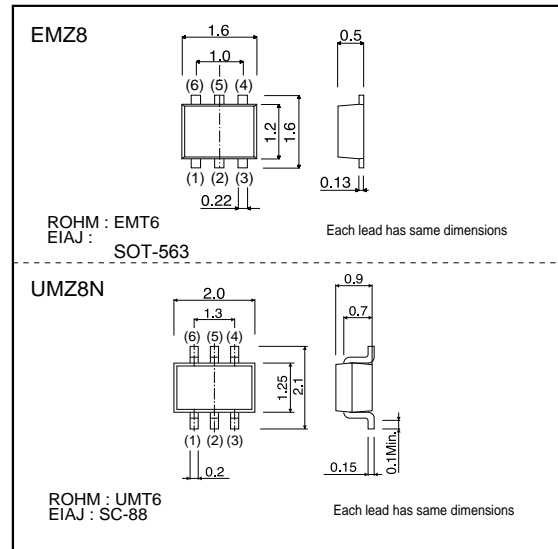
●Feature

- 1) Both a 2SA2018 chip and 2SC2412K chip in a EMT or UMT package.

●Equivalent circuits



●Dimensions(Unit : mm)



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | | Unit |
|-----------------------------|------------------|-------------|-----|------|
| | | Tr1 | Tr2 | |
| Collector-base voltage | V _{CB0} | -15 | 60 | V |
| Collector-emitter voltage | V _{CE0} | -12 | 50 | V |
| Emitter-base voltage | V _{EB0} | -6 | 7 | V |
| Collector current | I _c | -500 | 150 | mA |
| | I _{CP} | -1 | - | A |
| Collector power dissipation | P _c | 150 (TOTAL) | | mW * |
| Junction temperature | T _j | 150 | | °C |
| Storage temperature | T _{stg} | -55 to +150 | | °C |

* 120mW per element must not be exceeded.

●Package, marking, and packaging specifications

| Part No. | EMZ8 | UMZ8N |
|------------------------------|------|-------|
| Package | EMT6 | UMT6 |
| Marking | Z8 | Z8 |
| Code | T2R | TR |
| Basic ordering unit (pieces) | 8000 | 3000 |

Transistors

●Electrical characteristics (Ta=25°C)

Tr1

| 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 _{CBO} | - | - | -0.1 | μA | V _{CB} = -15V |
| Emitter cutoff current | I _{EB0} | - | - | -0.1 | μA | V _{EB} = -6V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | -0.1 | -0.25 | V | I _C /I _B = -200mA/-10mA |
| DC current transfer ratio | h _{FE} | 270 | - | 680 | - | V _{CE} = -2V, I _C = -10mA |
| Transition frequency | f _r | - | 260 | - | MHz | V _{CE} = -2V, I _E = 10mA, f = 100MHz |
| Output capacitance | C _{ob} | - | 6.5 | - | pF | V _{CB} = -10V, I _E = 0A, f = 1MHz |

Tr2

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV _{CB0} | 60 | - | - | V | I _C = 50μA |
| Collector-emitter breakdown voltage | BV _{CEO} | 50 | - | - | V | I _C = 1mA |
| Emitter-base breakdown voltage | BV _{EB0} | 7 | - | - | V | I _E = 50μA |
| Collector cutoff current | I _{CBO} | - | - | 0.1 | μA | V _{CB} = 60V |
| Emitter cutoff current | I _{EB0} | - | - | 0.1 | μA | V _{EB} = 7V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | - | 0.4 | V | I _C /I _B = 50mA/5mA |
| DC current transfer ratio | h _{FE} | 120 | - | 560 | - | V _{CE} = 6V, I _C = 1mA |
| Transition frequency | f _r | - | 180 | - | MHz | V _{CE} = 12V, I _E = -2mA, f = 100MHz |
| Output capacitance | C _{ob} | - | 2 | 3.5 | pF | V _{CB} = 12V, I _E = 0A, f = 1MHz |

●Electrical characteristic curves

<Tr1>

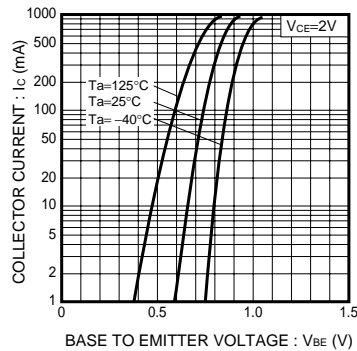


Fig.1 Grounded Emitter Propagation Characteristics

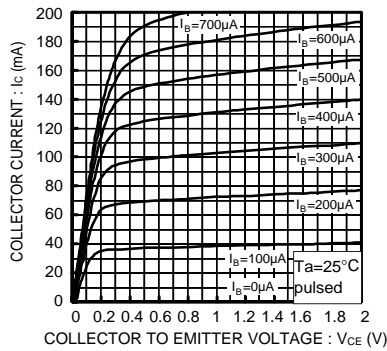


Fig.2 Typical Output Characteristics

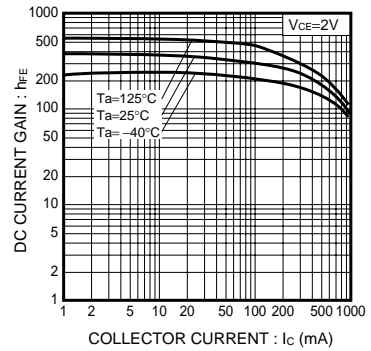


Fig.3 DC Current Gain vs. Collector Current

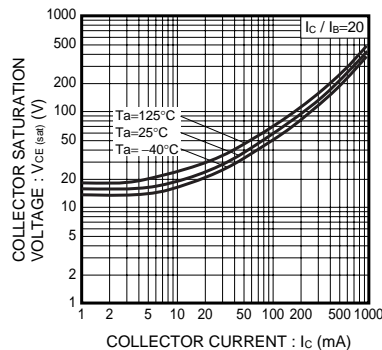


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (I)

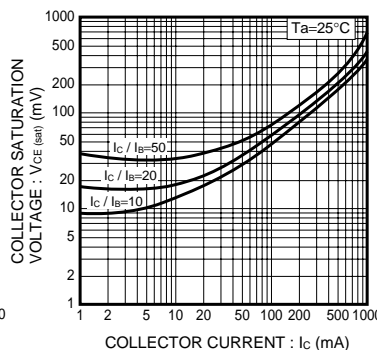


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (II)

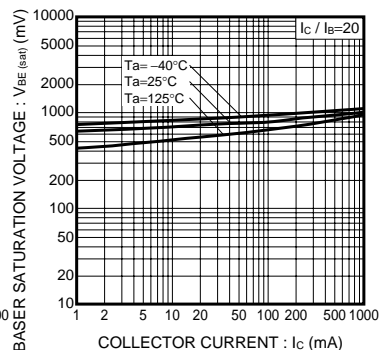


Fig.6 Base-Emitter Saturation Voltage vs. Collector Current

Transistors

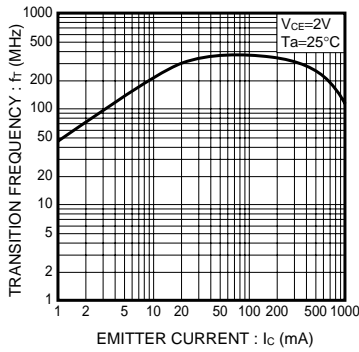


Fig.7 Gain Bandwidth Product vs. Emitter Current

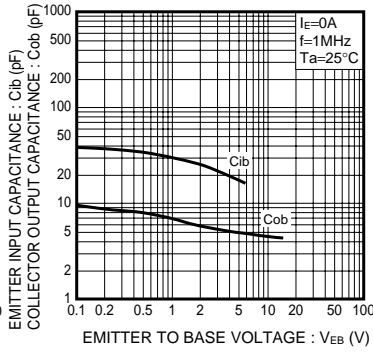


Fig.8 Collector Output Capacitance vs. Collector-Base Voltage
Emitter Input Capacitance vs. Emitter-Base Voltage

<Tr>

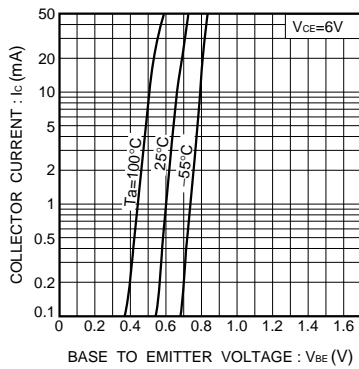


Fig.1 Grounded emitter propagation characteristics

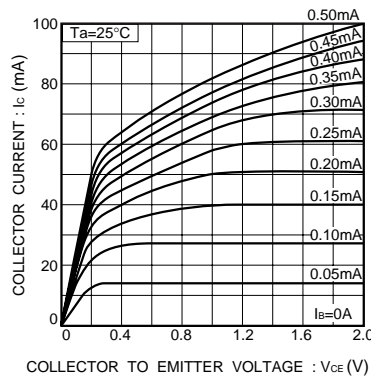


Fig.2 Grounded emitter output characteristics (I)

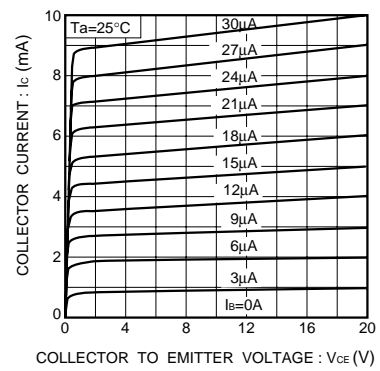


Fig.3 Grounded emitter output characteristics (II)

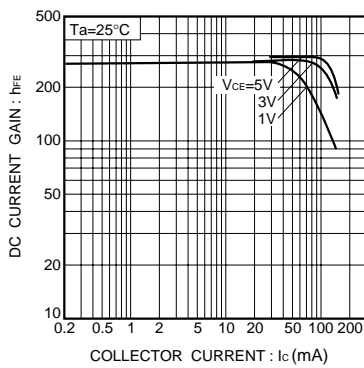


Fig.4 DC current gain vs. collector current (I)

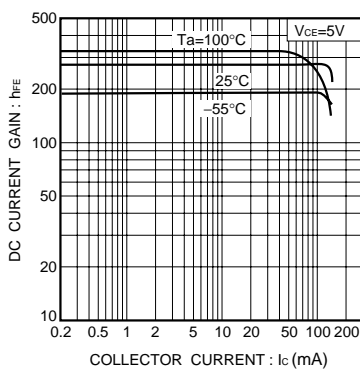


Fig.5 DC current gain vs. collector current (II)

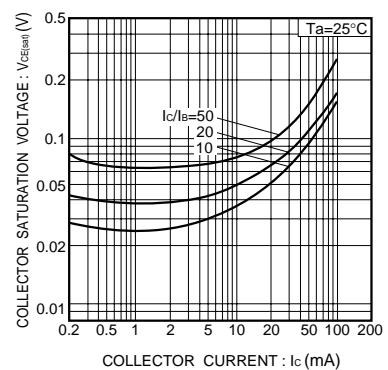


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistors

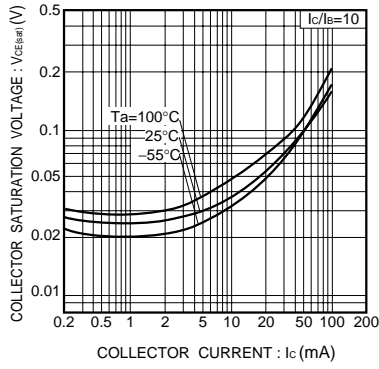


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

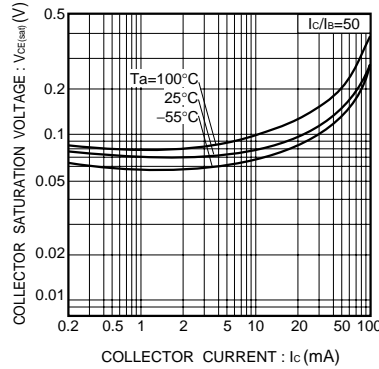


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

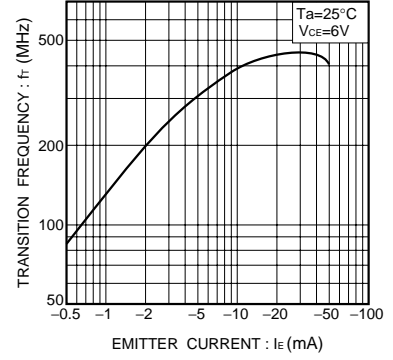


Fig.9 Gain bandwidth product vs. emitter current

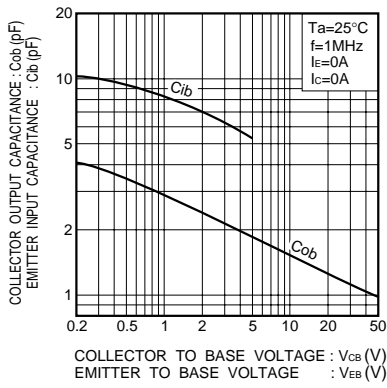


Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

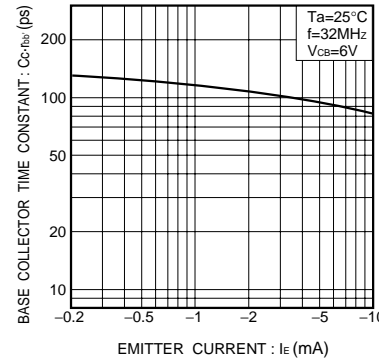


Fig.11 Base-collector time constant vs. emitter current

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