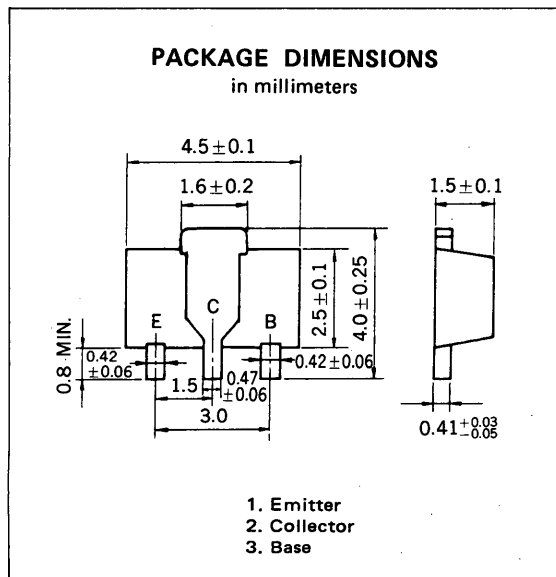


SILICON TRANSISTORS
2SB1115, 2SB1115A

PNP SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

DESCRIPTION

2SB1115, 2SB1115A are designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.



FEATURES

- World Standard Miniature Package
- Low $V_{CE(sat)} \cdot V_{CE(sat)} = -0.2$ V at 1 A
- Complement to 2SD1615, 2SD1615A

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

| | 2SB1115 | 2SB1115A | |
|---|-----------|-------------|-------|
| Collector to Base Voltage | V_{CBO} | -60 | -80 V |
| Collector to Emitter Voltage | V_{CEO} | -50 | -60 V |
| Emitter to Base Voltage | V_{EBO} | -6 | V |
| Collector Current (DC) | I_C | -1 | A |
| Collector Current (Pulse)* | I_C | -2 | A |
| Maximum Power Dissipation | | | |
| Total Power Dissipation at 25 °C Ambient Temperature** | P_T | 2.0 | W |
| Maximum Temperatures | | | |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -55 to +150 | °C |

*PW ≤ 10 ms, Duty Cycle ≤ 50 %

**When mounted on ceramic substrate of 16 cm² x 0.7 mm

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

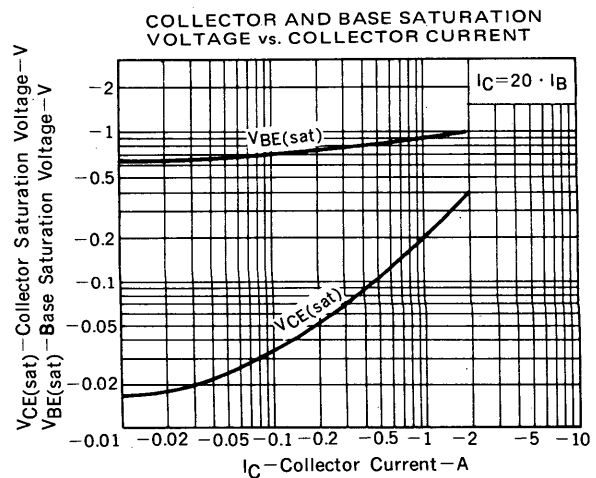
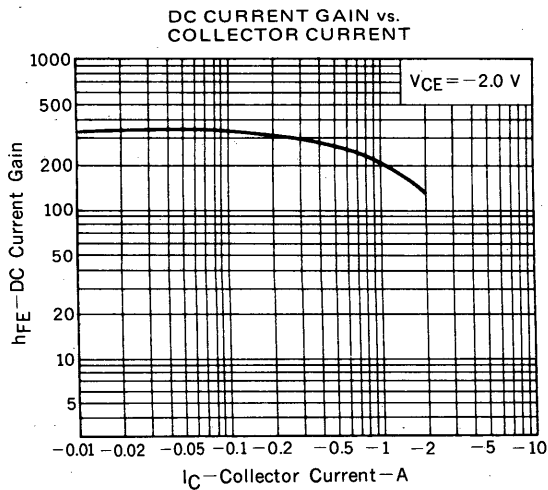
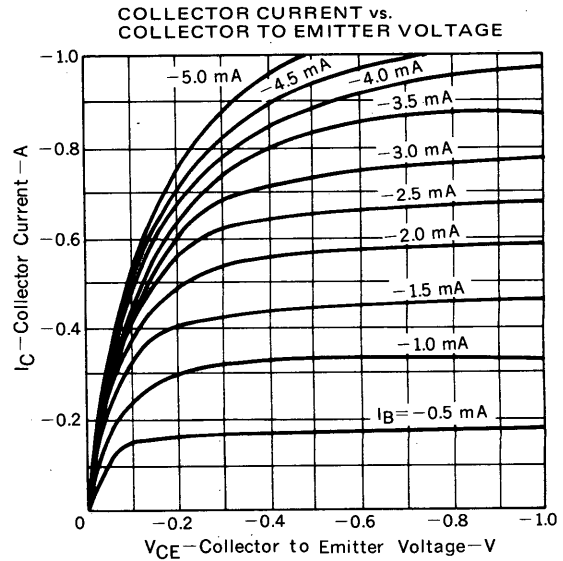
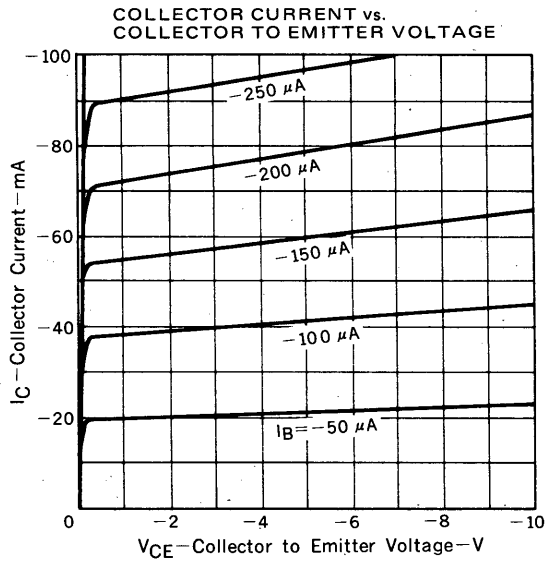
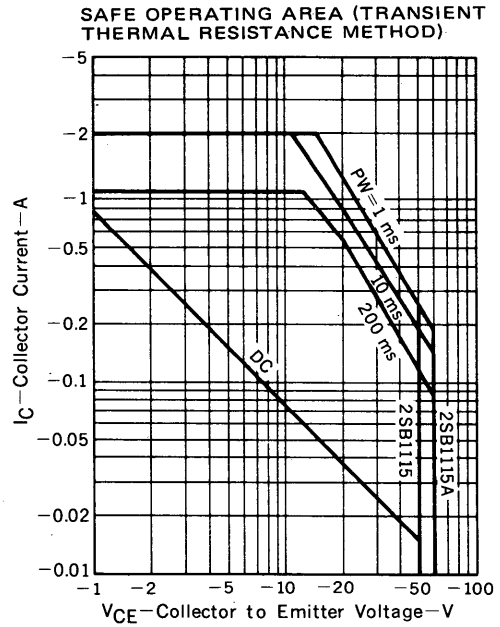
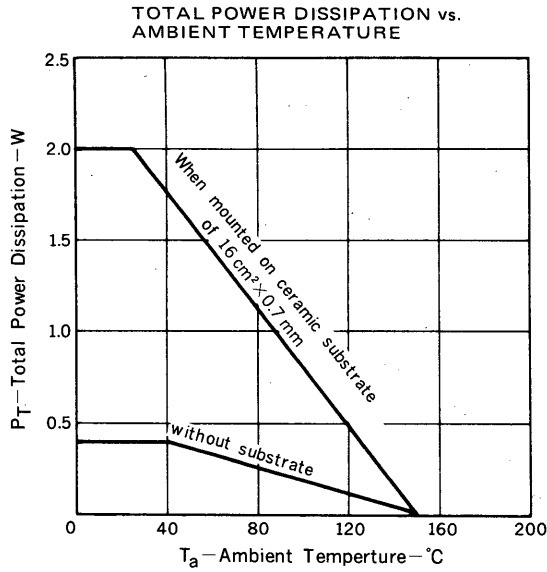
| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS | |
|------------------------------|-------------------|------|------|------|------|---|------------------------------------|
| Collector Cutoff Current | I_{CBO} | | | -100 | nA | 2SB1115 | $V_{CB} = -60$ V, $I_E = 0$ |
| | | | | -100 | nA | 2SB1115A | $V_{CB} = -80$ V, $I_E = 0$ |
| Emitter Cutoff Current | I_{EBO} | | | -100 | nA | $V_{EB} = -6.0$ V, $I_C = 0$ | |
| DC Current Gain | h_{FE1} *** | 135 | 340 | 600 | | 2SB1115 | $V_{CE} = -2.0$ V, $I_C = -100$ mA |
| | | 135 | 340 | 400 | | 2SB1115A | |
| DC Current Gain | h_{FE2} *** | 100 | 200 | | | $V_{CE} = -2.0$ V, $I_C = -1.0$ A | |
| Collector Saturation Voltage | $V_{CE(sat)}$ *** | | -0.2 | -0.3 | V | $I_C = -1.0$ A, $I_B = -50$ mA | |
| Base Saturation Voltage | $V_{BE(sat)}$ *** | | -0.9 | -1.2 | V | $I_C = -1.0$ A, $I_B = -50$ mA | |
| Base to Emitter Voltage | V_{BE} *** | -600 | | -700 | mV | $V_{CE} = -2.0$ V, $I_C = -50$ mA | |
| Gain Bandwidth Product | f_T | 80 | 120 | | MHz | $V_{CE} = -2.0$ V, $I_E = -100$ mA | |
| Output Capacitance | C_{ob} | | 25 | | pF | $V_{CB} = -10$ V, $I_E = 0$, $f = 1.0$ MHz | |

***Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

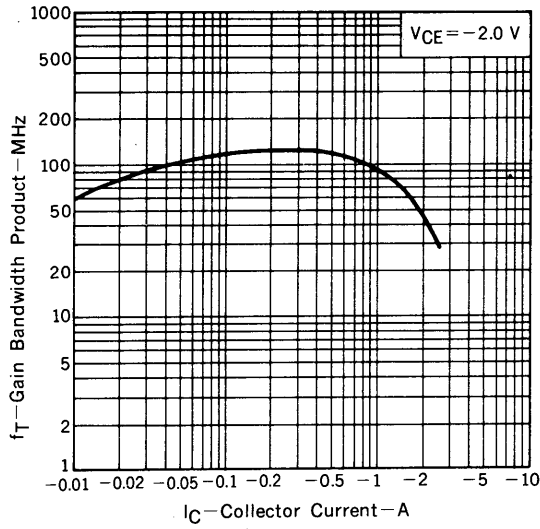
h_{FE} Classification

| MARKING | 2SB1115 | YM | YL | YK |
|----------|----------|------------|------------|------------|
| | 2SB1115A | YQ | YP | |
| h_{FE} | | 135 to 270 | 200 to 400 | 300 to 600 |

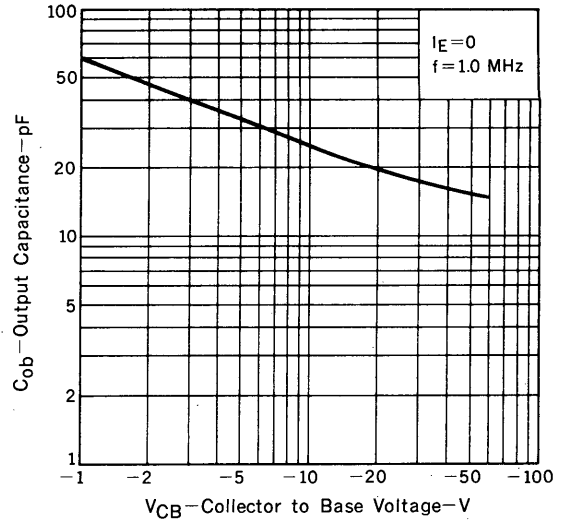
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



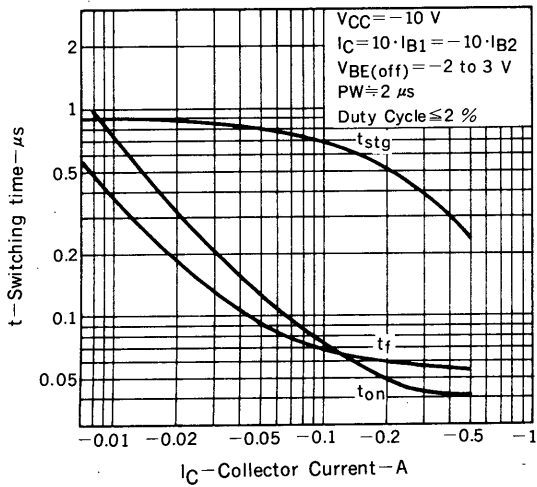
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



REFERENCE

| Document Name | Document No. |
|--|--------------|
| NEC semiconductor device reliability/quality control system. | TEI-1202 |
| Quality grade on NEC semiconductor devices. | IEI-1209 |
| Semiconductor device mounting technology manual. | IEI-1207 |
| Semiconductor device package manual. | IEI-1213 |
| Guide to quality assurance for semiconductor devices. | MEI-1202 |
| Semiconductor selection guide. | MF-1134 |

[MEMO]

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