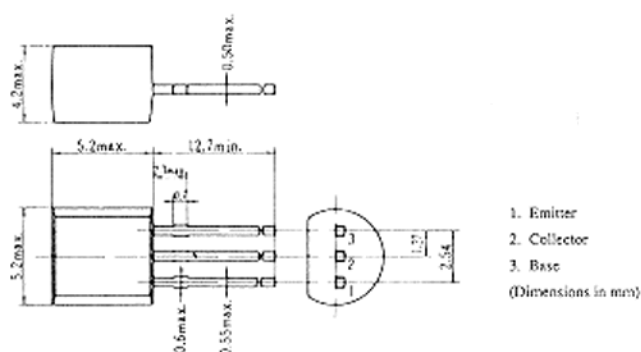


2SD2030, 2SD2031

SILICON NPN EPITAXIAL

LOW FREQUENCY HIGH VOLTAGE AMPLIFIER

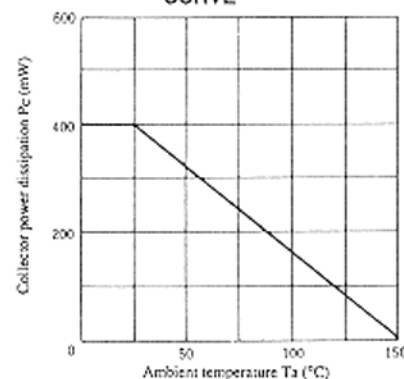


(JEDEC TO-92)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| Item | Symbol | 2SD2030 | 2SD2031 | Unit |
|------------------------------|-----------|-------------|-------------|------|
| Collector to base voltage | V_{CBO} | 160 | 200 | V |
| Collector to emitter voltage | V_{CEO} | 160 | 200 | V |
| Emitter to base voltage | V_{EBO} | 5 | 5 | V |
| Collector current | I_C | 100 | 100 | mA |
| Collector power dissipation | P_C | 400 | 400 | mW |
| Junction temperature | T_j | 150 | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | -55 to +150 | °C |

MAXIMUM COLLECTOR DISSIPATION CURVE



■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

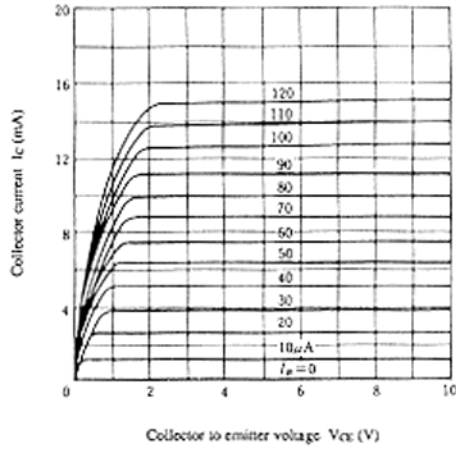
| Item | Symbol | Test Condition | min. | typ. | max. | Unit | |
|---|---------------|-----------------------------------|--------------------------|------|------|---------|---|
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | $I_C = 10\mu A, I_E = 0$ | 2SD2030 | 160 | — | — | V |
| | | | 2SD2031 | 200 | — | — | V |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = 1mA, R_{BE} = \infty$ | 2SD2030 | 160 | — | — | V |
| | | | 2SD2031 | 200 | — | — | V |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | $I_E = 10\mu A, I_C = 0$ | 5 | — | — | V | |
| Collector cutoff current | I_{CBO} | 2SD2030 | $V_{CB} = 140V, I_E = 0$ | | 10 | μA | |
| | | 2SD2031 | $V_{CB} = 160V, I_E = 0$ | | 10 | μA | |
| DC current transfer ratio | h_{FE1}^* | $V_{CE} = 5V, I_C = 10mA$ | 60 | — | 200 | | |
| | h_{FE2} | $V_{CE} = 5V, I_C = 1mA$ | 30 | — | — | | |
| Base to emitter voltage | V_{BE} | $V_{CB} = 5V, I_C = 10mA$ | — | — | 1.5 | V | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 30mA, I_B = 3mA$ | — | — | 0.5 | V | |
| Gain bandwidth product | f_T | $V_{CE} = 5V, I_C = 10mA$ | — | 140 | — | MHz | |
| Collector output capacitance | C_{ob} | $V_{CB} = 10V, I_E = 0, f = 1MHz$ | — | 3.8 | — | pF | |

* The 2SD2030 and 2SD2031 are grouped by h_{FE1} as follows.

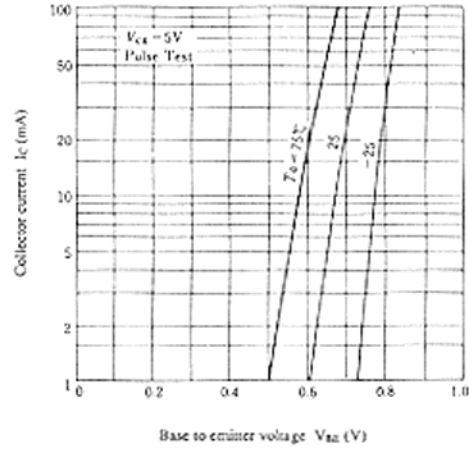
| Grade | B | C |
|-----------|-----------|------------|
| h_{FE1} | 60 to 120 | 100 to 200 |

2SD2030, 2SD2031

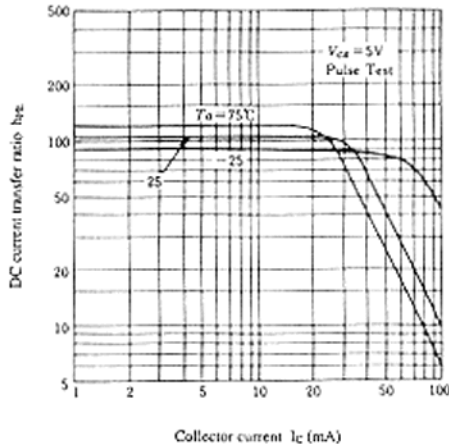
TYPICAL OUTPUT CHARACTERISTICS



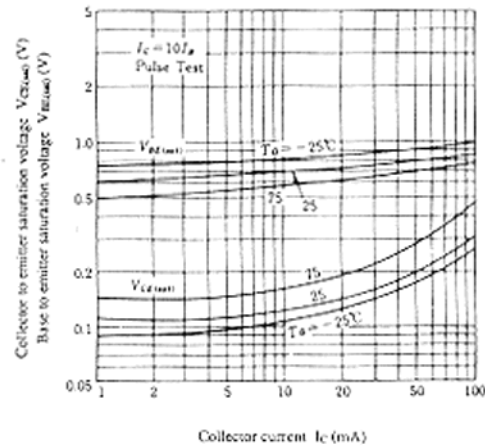
TYPICAL TRANSFER CHARACTERISTICS



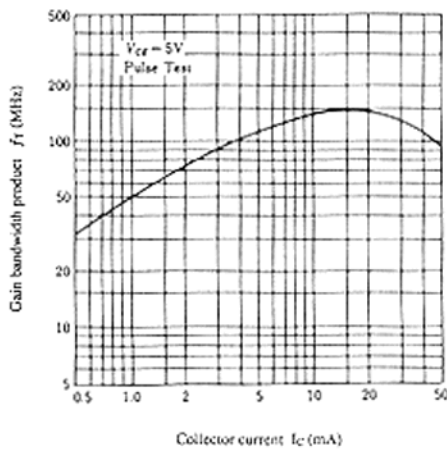
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



SATURATION VOLTAGE VS. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE

