

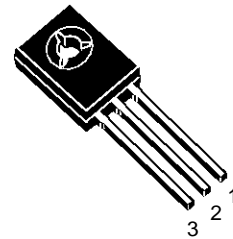
COMPLEMENTARY SILICON POWER TRANSISTORS

■ SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

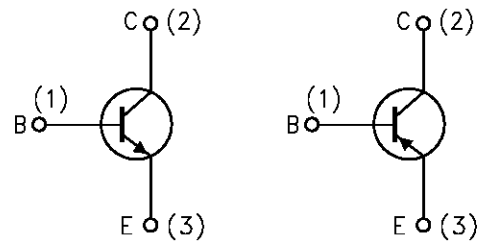
The BD235 and BD237 are silicon epitaxial-base NPN power transistors in Jedec SOT-32 plastic package intended for use in medium power linear and switching applications.

The complementary PNP types are BD236 and BD238 respectively.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit | |
|------------------|--|------------|-------|------|-------|
| | | NPN | BD235 | | BD237 |
| | | PNP | BD236 | | BD238 |
| V _{CBO} | Collector-Base Voltage (I _E = 0) | 60 | 100 | V | |
| V _{CER} | Collector-Base Voltage (R _{BE} = 1KΩ) | 60 | 100 | V | |
| V _{CEO} | Collector-Emitter Voltage (I _B = 0) | 60 | 80 | V | |
| V _{EBO} | Emitter-Base Voltage (I _C = 0) | 5 | | V | |
| I _C | Collector Current | 2 | | A | |
| I _{CM} | Collector Peak Current | 6 | | A | |
| P _{tot} | Total Dissipation at T _c = 25 °C | 25 | | W | |
| T _{stg} | Storage Temperature | -65 to 150 | | °C | |
| T _j | Max. Operating Junction Temperature | 150 | | °C | |

For PNP types voltage and current values are negative.

BD235/BD236/BD237/BD238

THERMAL DATA

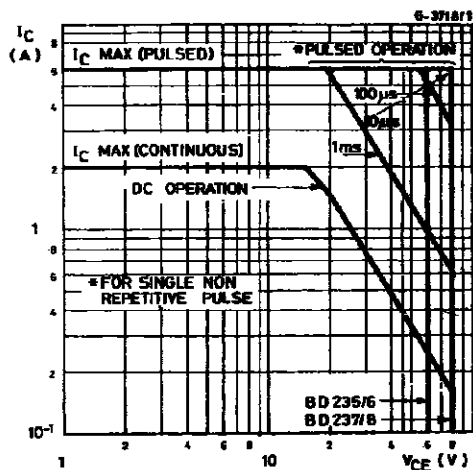
| | | | | |
|-----------------------|----------------------------------|-----|---|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 5 | °C/W |
|-----------------------|----------------------------------|-----|---|------|

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

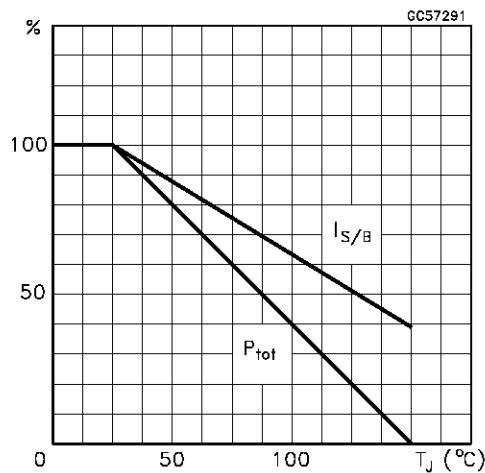
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|--|--|----------|------|----------|----------|
| I _{CBO} | Collector Cut-off Current (I _E = 0) | V _{CE} = rated V _{CEO} V _{CE} = rated V _{CEO} T _C = 150 °C | | | 0.1 2 | mA mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V | | | 1 | mA |
| V _{CEO(sus)*} | Collector-Emitter Sustaining Voltage | I _C = 100 mA for BD235/BD236 for BD237/BD238 | 60 80 | | | V V |
| V _{CE(sat)*} | Collector-Emitter Saturation Voltage | I _C = 1 A I _B = 0.1 A | | | 0.6 | V |
| V _{BE*} | Base-Emitter Voltage | I _C = 1 A V _{CE} = 2 V | | | 1.3 | V |
| h _{FE*} | DC Current Gain | I _C = 150 mA V _{CE} = 2 V I _C = 1 A V _{CE} = 2 V | 40 25 | | | |
| f _T | Transition frequency | I _C = 250 mA V _{CE} = 10 V | 3 | | | MHz |
| h _{FE1} /h _{FE2} * | Matched Pairs | I _C = 150 mA V _{CE} = 2 V | | 1.6 | | |

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

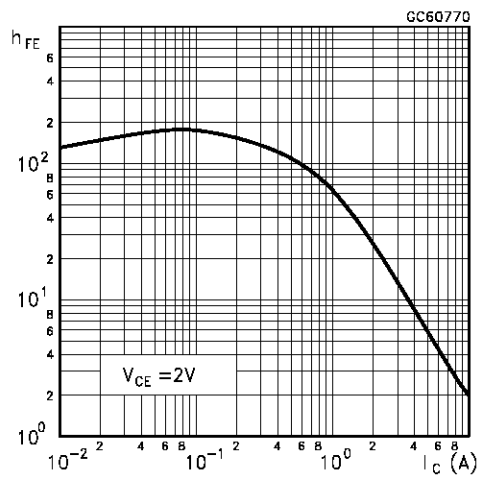
Safe Operating Area



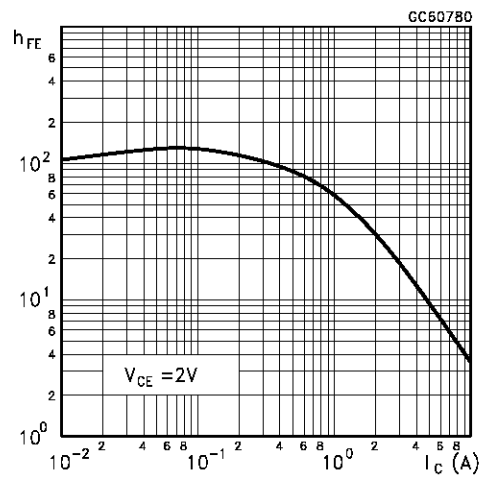
Derating Curves



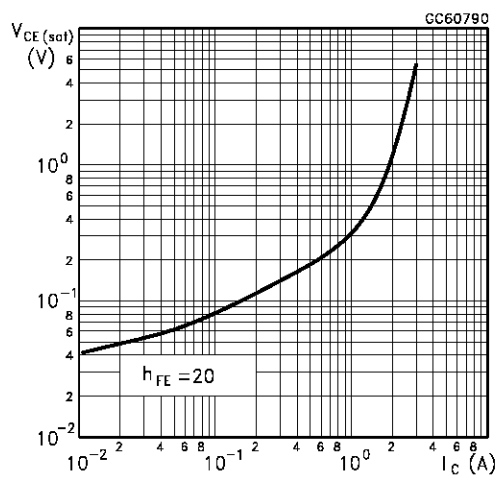
DC Current Gain (NPN type)



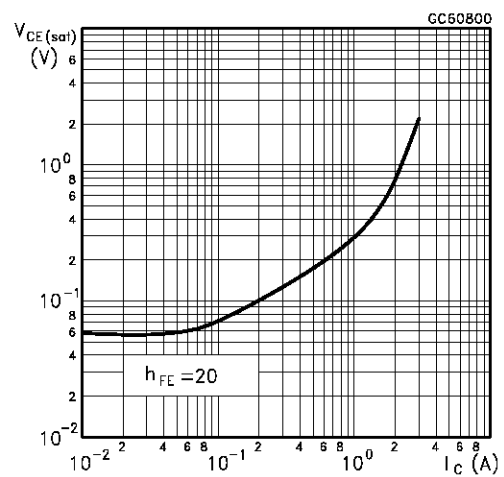
DC Current Gain (PNP type)



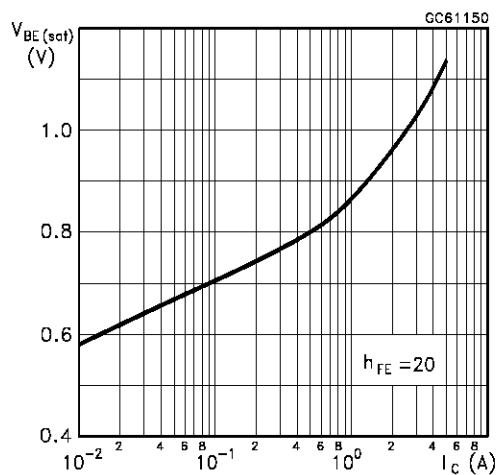
Collector-Emitter Saturation Voltage (NPN type)



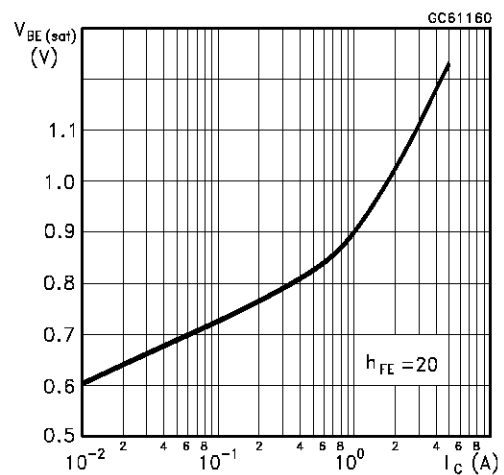
Collector-Emitter Saturation Voltage (PNP type)



Base-Emitter Saturation Voltage (NPN type)

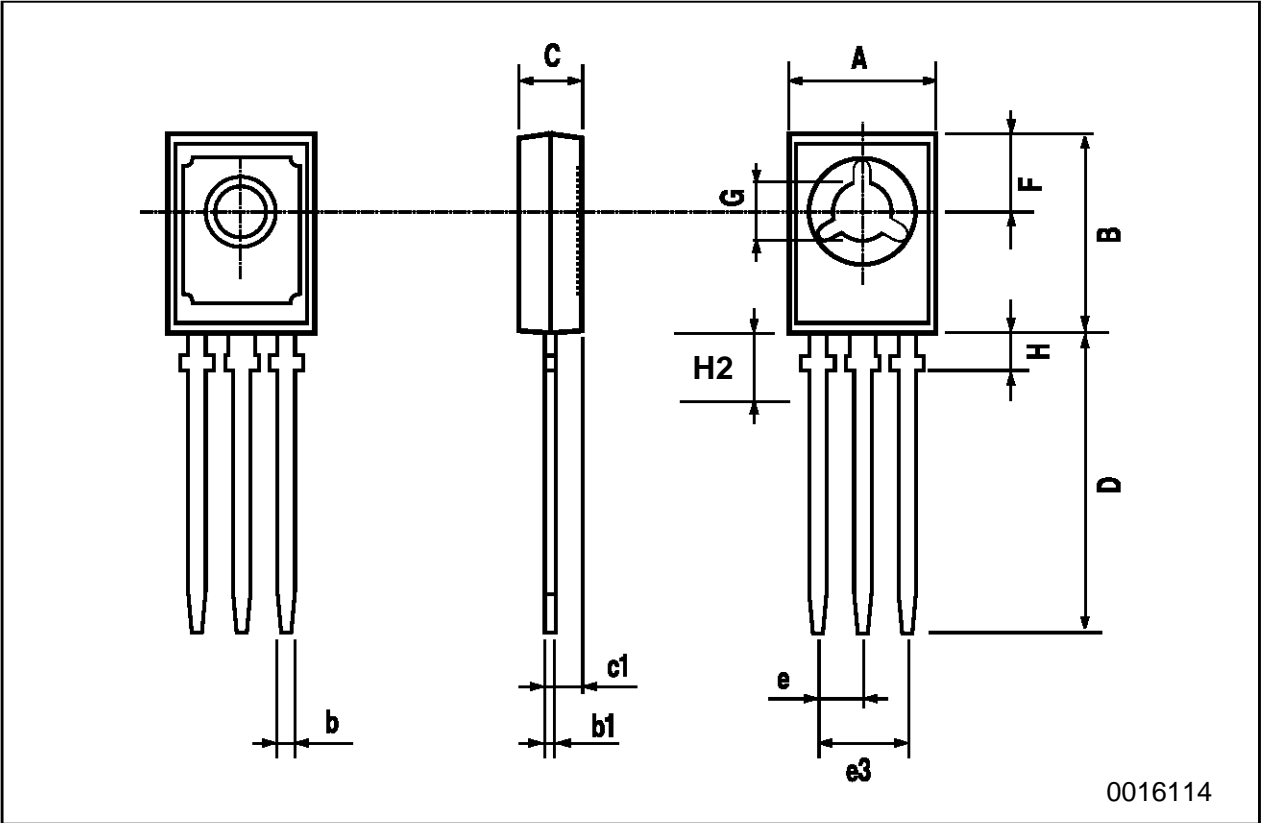


Collector-Base Capacitance (PNP type)



SOT-32 (TO-126) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 7.4 | | 7.8 | 0.291 | | 0.307 |
| B | 10.5 | | 10.8 | 0.413 | | 0.445 |
| b | 0.7 | | 0.9 | 0.028 | | 0.035 |
| b1 | 0.49 | | 0.75 | 0.019 | | 0.030 |
| C | 2.4 | | 2.7 | 0.040 | | 0.106 |
| c1 | 1.0 | | 1.3 | 0.039 | | 0.050 |
| D | 15.4 | | 16.0 | 0.606 | | 0.629 |
| e | | 2.2 | | | 0.087 | |
| e3 | 4.15 | | 4.65 | 0.163 | | 0.183 |
| F | | 3.8 | | | 0.150 | |
| G | 3 | | 3.2 | 0.118 | | 0.126 |
| H | | | 2.54 | | | 0.100 |
| H2 | | 2.15 | | | 0.084 | |



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