

File Number **667**

BD277

HARRIS SEMICONDUCTOR SECTOR

27E D ■ 4302271 0020133 3 ■ HAS

T-33-21

7-A, 70-W, Epitaxial-Base, Silicon P-N-P VERSAWATT Transistors

For Applications in Series and Shunt Regulators

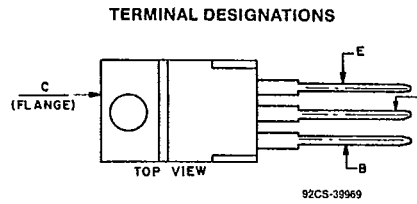
Features:

- Maximum safe-area-of-operation curves
- Low saturation voltage
- High power-dissipation capability



Type BD277 is an epitaxial-base silicon p-n-p transistor supplied in the JEDEC TO-220AB (VERSAWATT) plastic package.

The BD277 is useful in series regulators and shunt regulators because of its low saturation voltage and high power-dissipation capability.



JEDEC TO-220AB

MAXIMUM RATINGS, Absolute-Maximum Values:

| | | | |
|--|-----------|---|----|
| COLLECTOR-TO-BASE VOLTAGE: | | | |
| With emitter open | V_{CBO} | -45 | V |
| COLLECTOR-TO-EMITTER VOLTAGE: | | | |
| With base open | V_{CEO} | -45 | V |
| EMITTER-TO-BASE VOLTAGE: | | | |
| With collector open | V_{EBO} | -4 | V |
| COLLECTOR CURRENT (Continuous) | I_C | -7 | A |
| BASE CURRENT (Continuous) | I_B | -3 | A |
| TRANSISTOR DISSIPATION: | | | |
| At case temperatures up to 25°C | P_T | 70 | W |
| At case temperatures above 25°C | | Derate linearly at 0.56 W/°C (see Fig. 2.) | |
| TEMPERATURE RANGE: | | | |
| Storage & Operating (Junction) | | -65 to 150 | °C |
| LEAD TEMPERATURE (During Soldering): | | | |
| At distance \geq 1/8 in. (3.17 mm) from case for 10 s max. | | 235 | °C |

BD277

T-33-21

ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C unless specified otherwise

| CHARACTERISTIC | SYMBOL | TEST CONDITIONS | | | | | | LIMITS | | UNITS |
|---|----------------------|------------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|-------|
| | | VOLTAGE V dc | | | CURRENT A dc | | | MIN. | MAX. | |
| | | V _{CE} | V _{CB} | V _{EB} | I _C | I _B | I _E | | | |
| Collector Cutoff Current: With emitter open | I _{CBO} | | -45 | | | | 0 | - | -0.1 | mA |
| With emitter open and $T_C = 150^\circ\text{C}$ | | | -40 | | | | 0 | - | -2.0 | |
| With base open | | I _{CEO} | -30 | | | | 0 | - | -1.0 | |
| Emitter Cutoff Current: With collector open | I _{EBO} | | | -4 | 0 | | | - | -1.0 | mA |
| Collector-to-Emitter Breakdown Voltage: With base open | V _{(BR)CEO} | | | | -0.1* | 0 | | -45 | - | V |
| Base-to-Emitter Voltage | V _{BE} | -2 | | | -1.75* | | | - | 1.2 | V |
| DC Forward-Current Transfer Ratio | h _{FE} | -2 | | | -1.75* | | | 30 | 150 | |
| Collector-to-Emitter Saturation Voltage | V _{CE(sat)} | | | | -1.75* | -0.1 | | - | -0.5 | V |
| Gain-Bandwidth Product | f _T | -4 | | | -0.5 | | | 10 | - | MHz |
| Thermal Resistance: | | | | | | | | | | |
| Junction-to-Case | R _{θJC} | | | | | | | - | 1.78 | °C/W |
| Junction-to-Ambient | R _{θJA} | | | | | | | - | 70 | |

* Pulsed: Pulse duration = 300 μs, duty factor ≤ 2%.

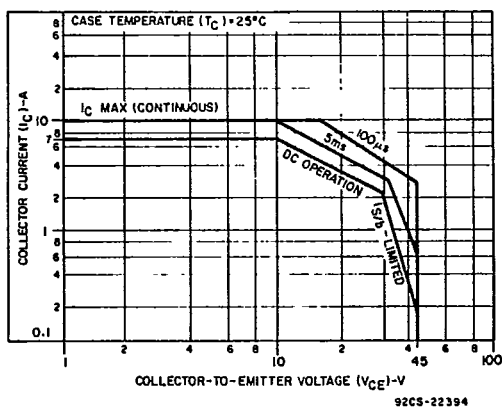


Fig.1 -- Maximum operating area.

HARRIS SEMICONDUCTOR SECTOR 27E D 430227J 0020134 5 HAS

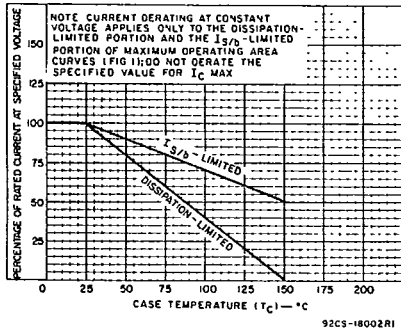


Fig. 2 — Derating curves.

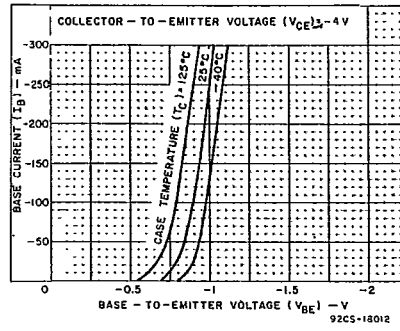


Fig. 3 — Typical input characteristics.

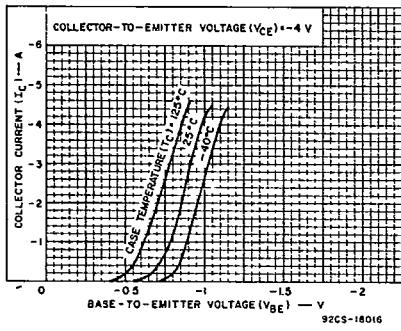


Fig. 4 — Typical transfer characteristics.

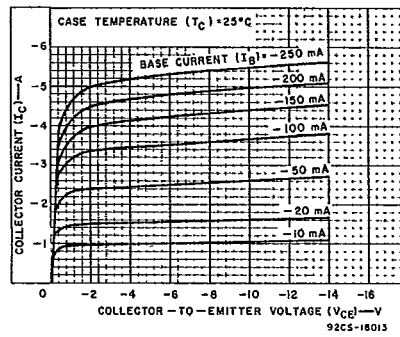


Fig. 5 — Typical output characteristics.

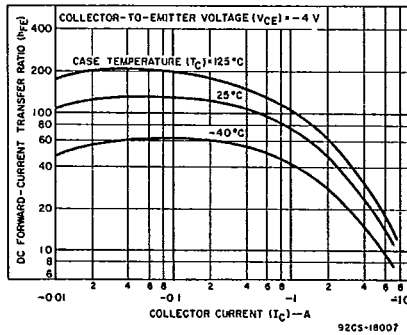


Fig. 6 — Typical dc beta characteristics.

