

HIGH VOLTAGE NPN POWER TRANSISTOR

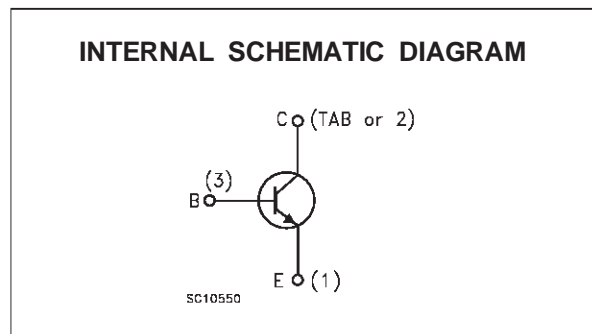
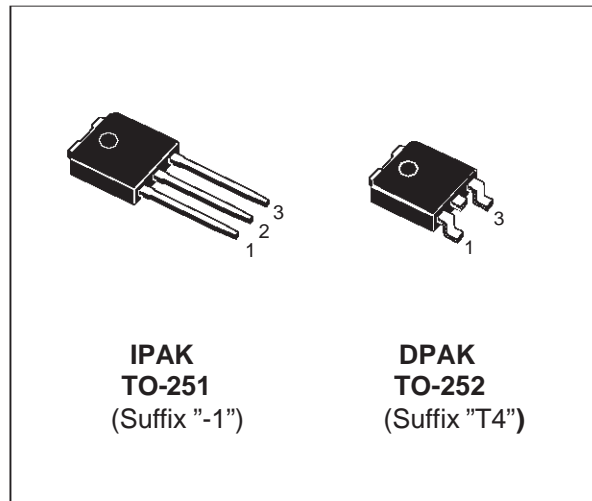
- REVERSE PINS OUT Vs STANDARD IPAK/DPAK PACKAGE
- HIGH VOLTAGE CAPABILITY
- HIGH DC CURRENT GAIN
- THROUGH-HOLE IPAK (TO-251) POWER PACKAGE IN TUBE (SUFFIX "-1")
- SURFACE-MOUNTING DPAK (TO-252) POWER PACKAGE IN TAPE & REEL (SUFFIX "T4")

APPLICATIONS:

- SWITCH MODE POWER SUPPLIES
- GENERAL PURPOSE SWITCHING

DESCRIPTION

The BUXD87 is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage withstand capability.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|--|------------|------|
| V_{CEV} | Collector-Emitter Voltage ($V_{BE} = -1.5V$) | 1000 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 450 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 5 | V |
| I_C | Collector Current | 0.5 | A |
| I_{CM} | Collector Peak Current ($t_p < 5$ ms) | 1 | A |
| I_B | Base Current | 0.3 | A |
| I_{BM} | Base Peak Current ($t_p < 5$ ms) | 0.6 | A |
| P_{tot} | Total Dissipation at $T_c = 25$ °C | 20 | W |
| T_{stg} | Storage Temperature | -65 to 150 | °C |
| T_j | Max. Operating Junction Temperature | 150 | °C |

BUXD87

THERMAL DATA

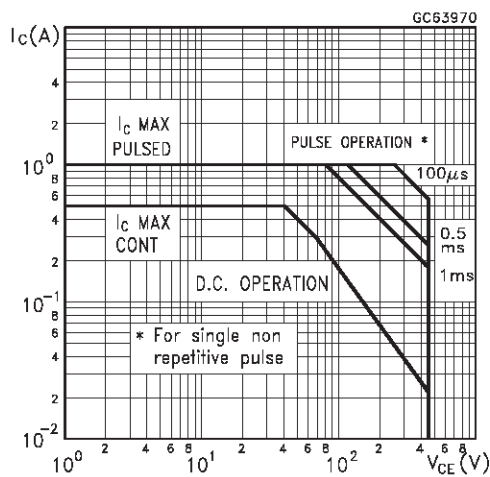
| | | | | |
|-----------------------|-------------------------------------|-----|------|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 6.25 | °C/W |
| R _{thj-amb} | Thermal Resistance Junction-ambient | Max | 100 | °C/W |

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

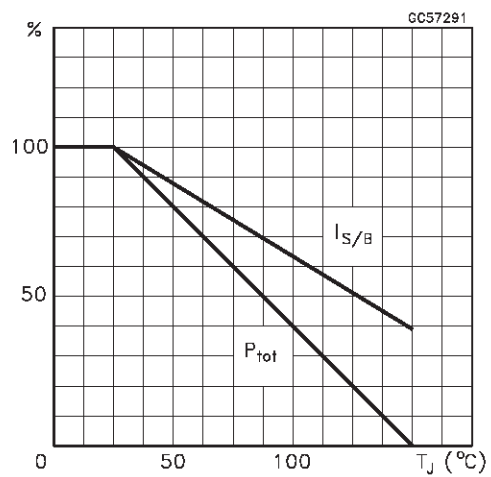
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|---|---|------|------------|----------|----------|
| I _{CEV} | Collector Cut-off Current (V _{BE} = -1.5V) | V _{CE} = 1000 V V _{CE} = 1000 V T _j = 125 °C | | | 100 1 | μA mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V | | | 1 | mA |
| V _{CEO(sus)} | Collector-Emitter Sustaining Voltage | I _C = 100 mA | 450 | | | V |
| V _{BEO} | Collector-Base Sustaining Voltage | I _C = 10 mA | 5 | | | V |
| V _{CE(sat)*} | Collector-Emitter Saturation Voltage | I _C = 0.1 A I _B = 0.01 A I _C = 0.2 A I _B = 0.02 A | | | 0.8 1 | V V |
| V _{BE(sat)*} | Base-Emitter Saturation Voltage | I _C = 0.2 A I _B = 0.02 A | | | 1 | V |
| h _{FE*} | DC Current Gain | I _C = 50 mA V _{CE} = 5 V I _C = 40 mA V _{CE} = 5 V | 12 | 50 | | |
| f _T | Transition Frequency | I _C = 50 mA V _{CE} = 10 V f=1MHz | | 20 | | MHz |
| t _s t _f | RESISTIVE LOAD Storage Time Fall Time | V _{CC} = 250 V I _C = 200 mA I _{B1} = 40 mA I _{B2} = -80 mA t _p = 20 μs | | 4.5 0.5 | | μs μs |

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

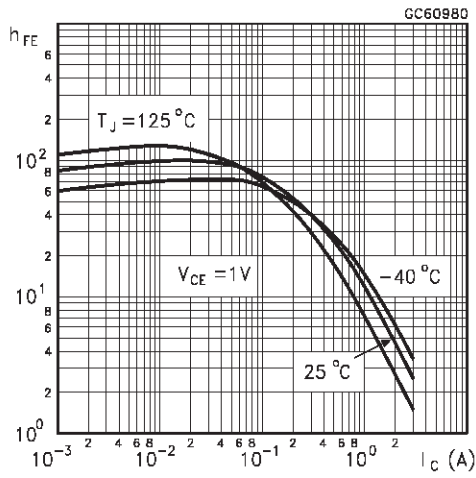
Safe Operating Area



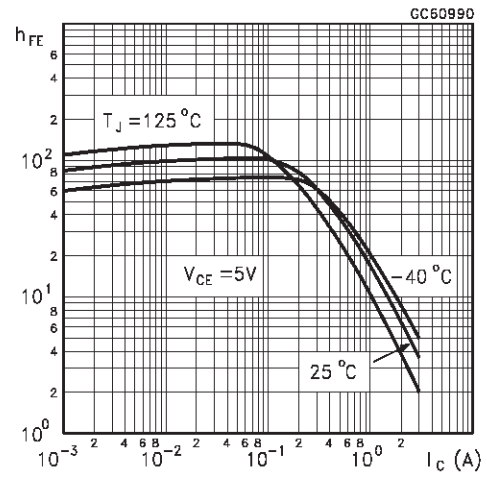
Derating Curves



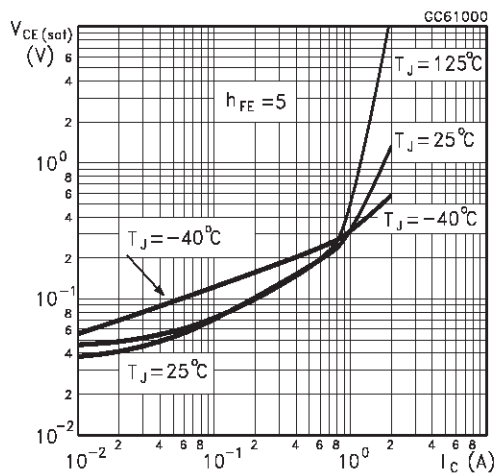
DC Current Gain



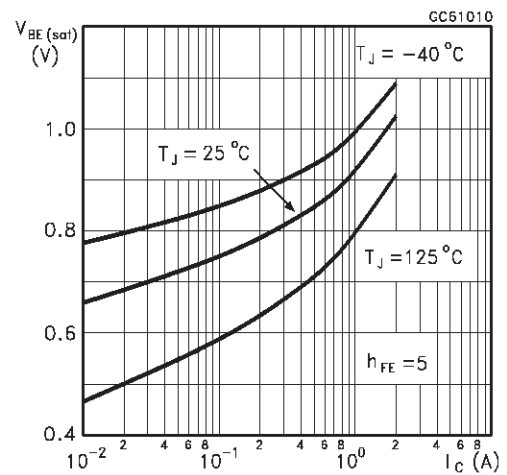
DC Current Gain



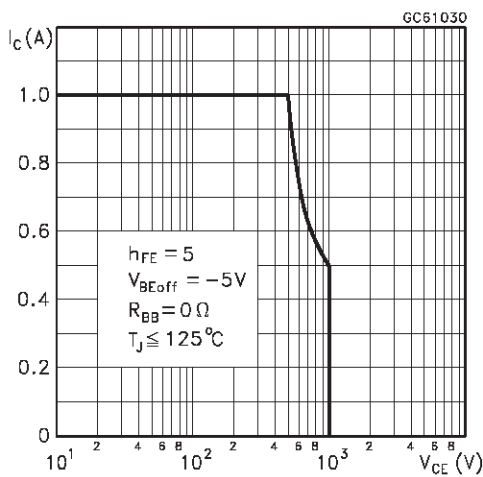
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage

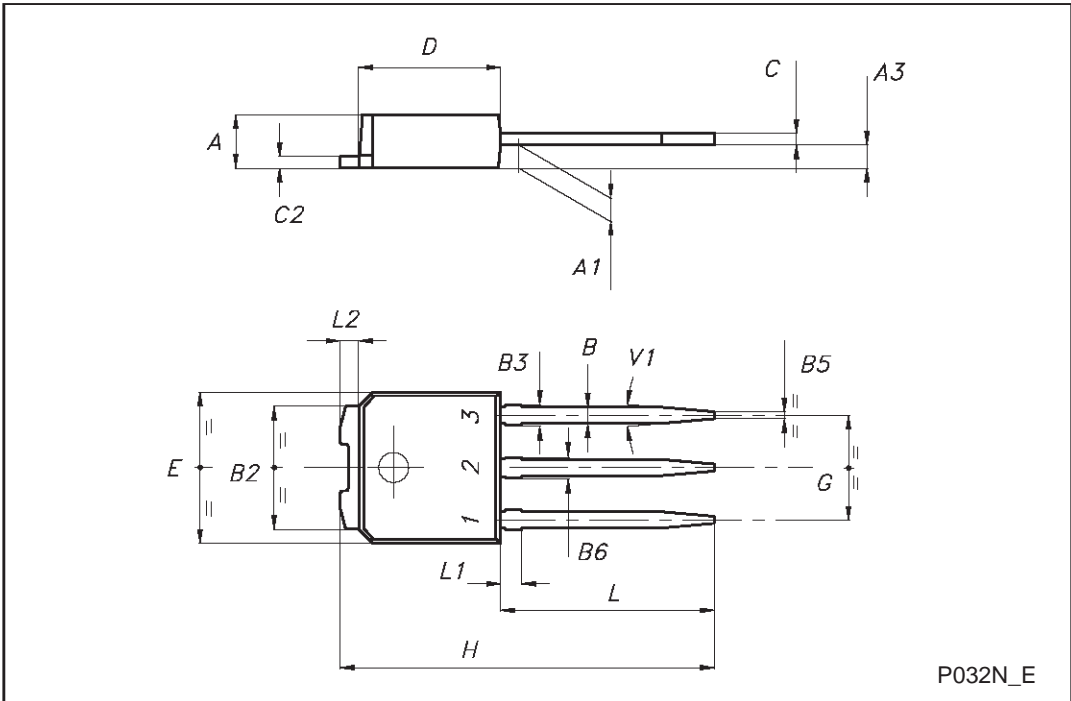


Reverse Biased SOA



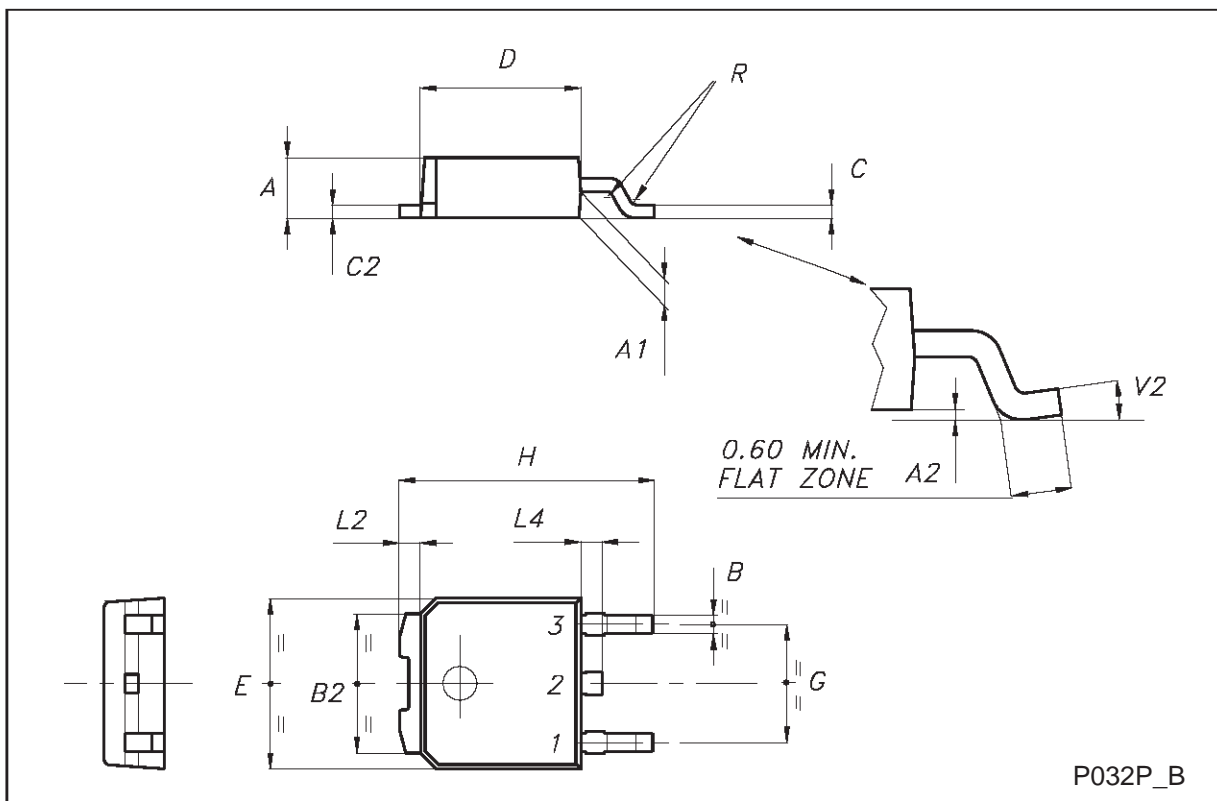
TO-251 (IPAK) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 2.20 | | 2.40 | 0.087 | | 0.094 |
| A1 | 0.90 | | 1.10 | 0.035 | | 0.043 |
| A3 | 0.70 | | 1.30 | 0.028 | | 0.051 |
| B | 0.64 | | 0.90 | 0.025 | | 0.035 |
| B2 | 5.20 | | 5.40 | 0.204 | | 0.213 |
| B3 | | | 0.85 | | | 0.033 |
| B5 | | 0.30 | | | 0.012 | |
| B6 | | | 0.95 | | | 0.037 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.60 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.237 | | 0.244 |
| E | 6.40 | | 6.60 | 0.252 | | 0.260 |
| G | 4.40 | | 4.60 | 0.173 | | 0.181 |
| H | 15.90 | | 16.30 | 0.626 | | 0.642 |
| L | 9.00 | | 9.40 | 0.354 | | 0.370 |
| L1 | 0.80 | | 1.20 | 0.031 | | 0.047 |
| L2 | | 0.80 | 1.00 | | 0.031 | 0.039 |
| V1 | | 10° | | | 10° | |



TO-252 (DPAK) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 2.20 | | 2.40 | 0.087 | | 0.094 |
| A1 | 0.90 | | 1.10 | 0.035 | | 0.043 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.64 | | 0.90 | 0.025 | | 0.035 |
| B2 | 5.20 | | 5.40 | 0.204 | | 0.213 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.60 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.236 | | 0.244 |
| E | 6.40 | | 6.60 | 0.252 | | 0.260 |
| G | 4.40 | | 4.60 | 0.173 | | 0.181 |
| H | 9.35 | | 10.10 | 0.368 | | 0.398 |
| L2 | | 0.8 | | | 0.031 | |
| L4 | 0.60 | | 1.00 | 0.024 | | 0.039 |
| V2 | 0° | | 8° | 0° | | 0° |



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