



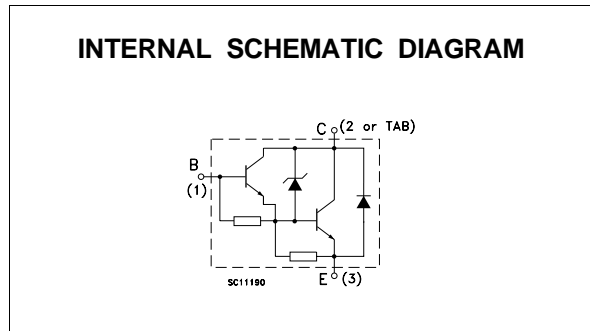
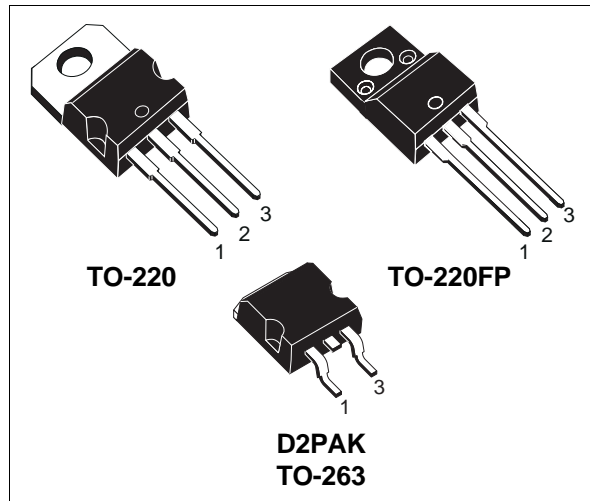
BU941ZT/BU941ZTFP BUB941ZT

HIGH VOLTAGE IGNITION COIL DRIVER NPN POWER DARLINGTON

- VERY RUGGED BIPOLAR TECHNOLOGY
- BUILT IN CLAMPING ZENER
- HIGH OPERATING JUNCTION TEMPERATURE
- WIDE RANGE OF PACKAGES
- SURFACE-MOUNTING D2PAK (TO-263) POWER PACKAGE IN TUBE (NO SUFFIX) OR IN TAPE & REEL (SUFFIX "T4")

APPLICATIONS

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | | Unit |
|-----------|---|----------------|------------------|-----------------|------------------|
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 350 | | | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 5 | | | V |
| I_C | Collector Current | 15 | | | A |
| I_{CM} | Collector Peak Current | 30 | | | A |
| I_B | Base Current | 1 | | | A |
| I_{BM} | Base Peak Current | 5 | | | A |
| | | BU941ZT | BU941ZTFP | BUB941ZT | |
| P_{tot} | Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$ | 150 | 55 | 150 | W |
| T_{stg} | Storage Temperature | -65 to 175 | -65 to 175 | -65 to 175 | $^\circ\text{C}$ |
| T_j | Max. Operating Junction Temperature | 175 | 175 | 175 | $^\circ\text{C}$ |

BU941ZT / BU941ZTFP / BUB941ZT

THERMAL DATA

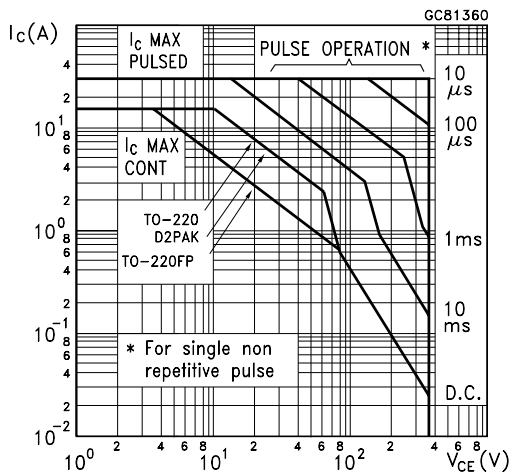
| | | | TO-220 D2PAK | TO-220FP | |
|-----------------------|----------------------------------|-----|-----------------|----------|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 1 | 2.7 | °C/W |

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

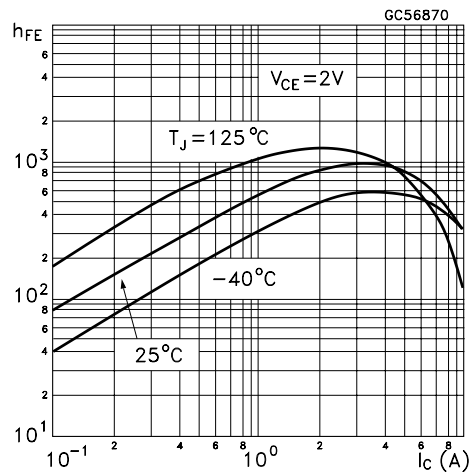
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|---|--|------|-----------|------------|----------|
| I _{CEO} | Collector Cut-off Current (I _B = 0) | V _{CE} = 300 V V _{CE} = 300 V T _J = 125 °C | | | 100 0.5 | μA mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V | | | 20 | mA |
| V _{CL} * | Clamping Voltage | I _C = 100 mA | 350 | | 500 | V |
| V _{CE(sat)} * | Collector-Emitter Saturation Voltage | I _C = 8 A I _B = 100 mA I _C = 10 A I _B = 250 mA | | | 1.8 1.8 | V V |
| V _{BE(sat)} * | Base-Emitter Saturation Voltage | I _C = 8 A I _B = 100 mA I _C = 10 A I _B = 250 mA | | | 2.2 2.5 | V V |
| h _{FE} * | DC Current Gain | I _C = 5 A V _{CE} = 10 V | 300 | | | |
| V _F | Diode Forward Voltage | I _F = 10 A | | | 2.5 | V |
| | Functional Test (see fig. 1) | V _{CC} = 24 V L = 7 mH | 10 | | | A |
| t _s t _r | INDUCTIVE LOAD Storage Time Fall Time (see fig. 3) | V _{CC} = 12 V L = 7 mH V _{clamp} = 300V I _C = 7 A I _B = 70 mA V _{BE} = 0 R _{BE} = 47 Ω | | 15 0.5 | | μs μs |

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

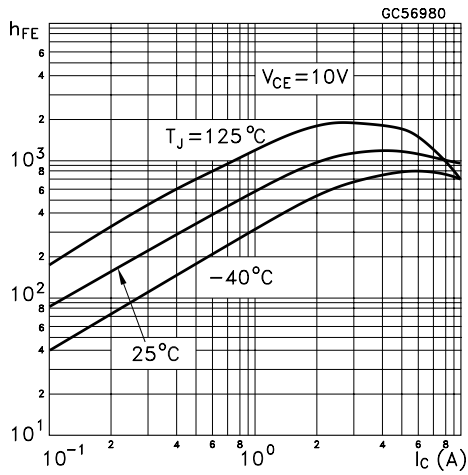
Safe Operating Area



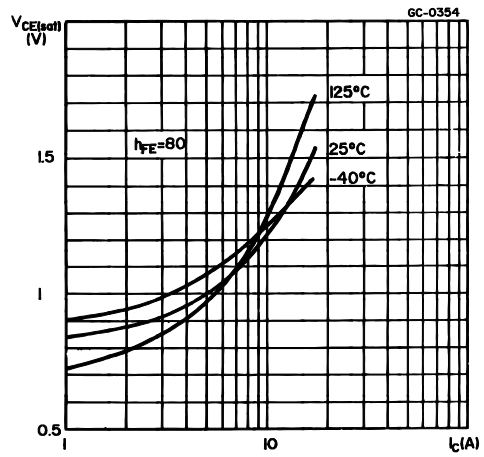
DC Current Gain



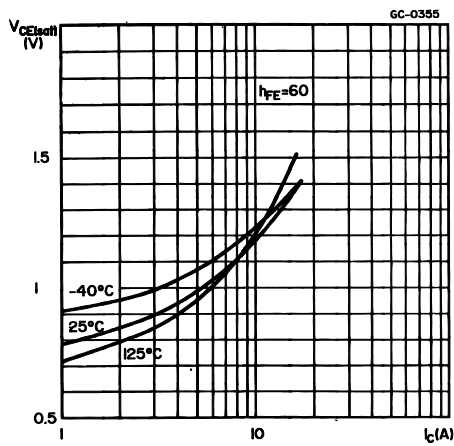
DC Current Gain



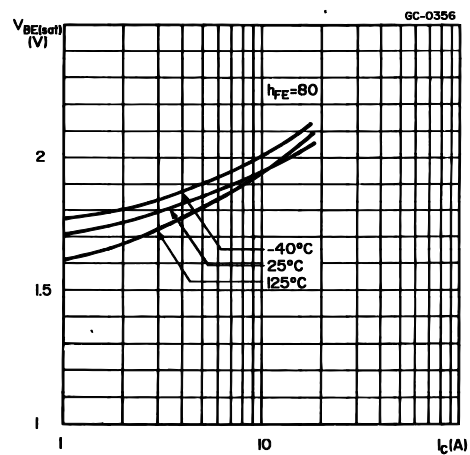
Collector-emitter Saturation Voltage



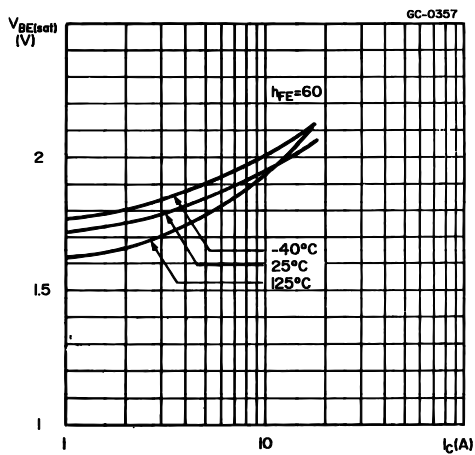
Collector-emitter Saturation Voltage



Base-emitter Saturation Voltage



Base-emitter Saturation Voltage



Collector-emitter Saturation Voltage

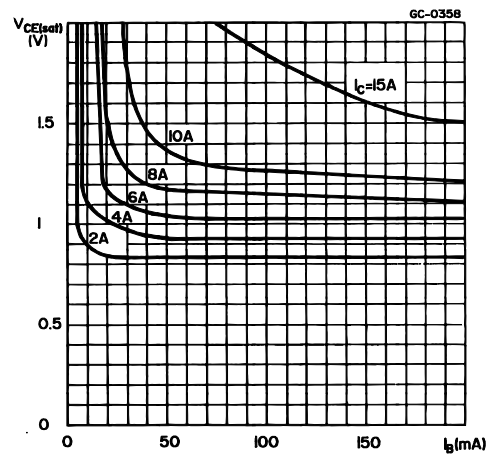


FIGURE 1: Functional Test Circuit

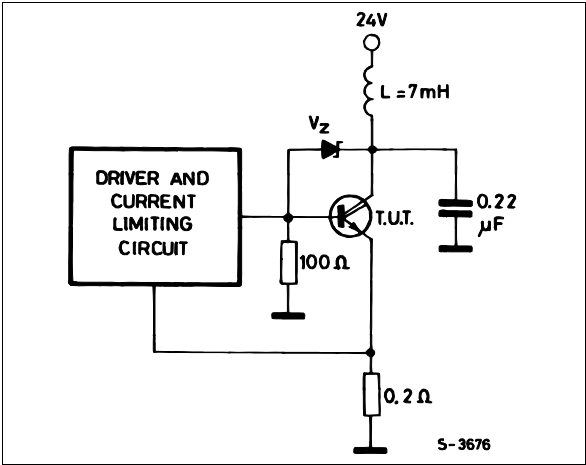


FIGURE 2: Functional Test Waveforms

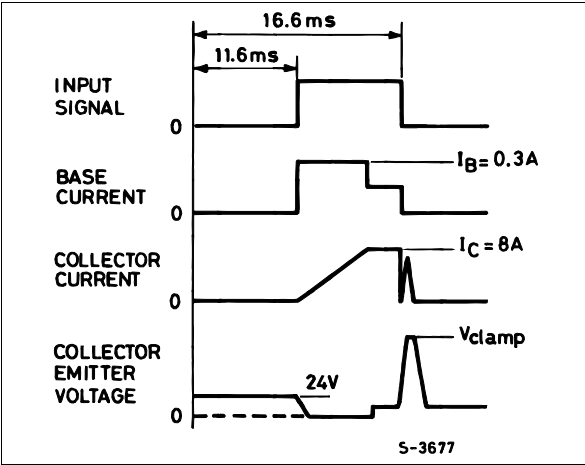
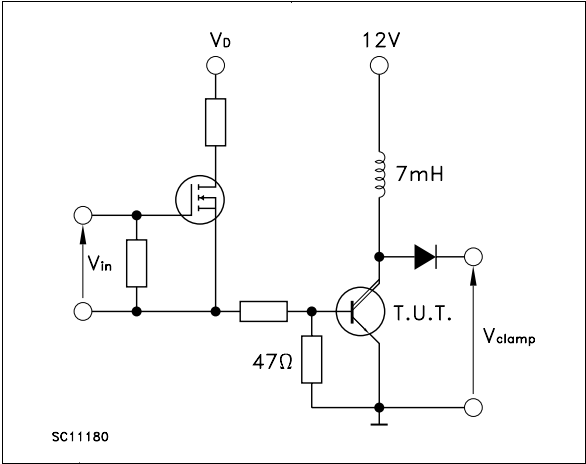
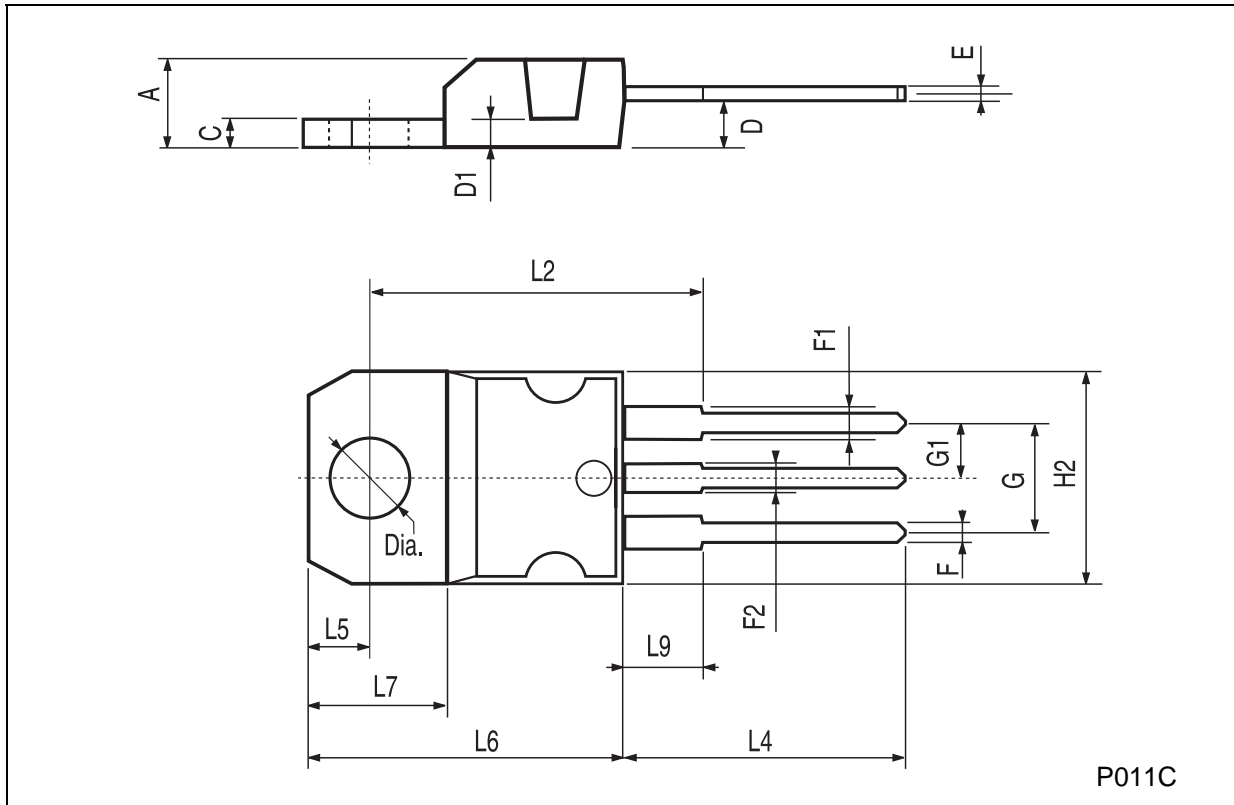


FIGURE 3: Switching Time Test Circuit



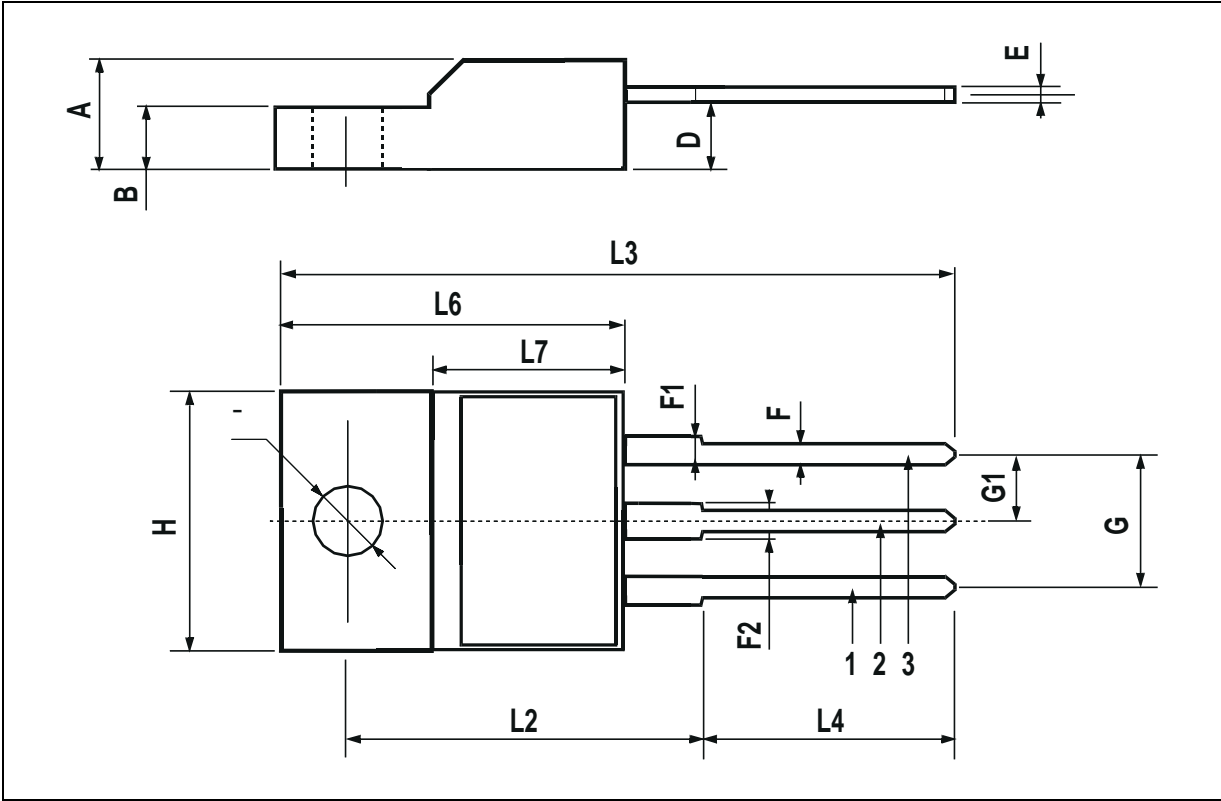
TO-220 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| C | 1.23 | | 1.32 | 0.048 | | 0.051 |
| D | 2.40 | | 2.72 | 0.094 | | 0.107 |
| D1 | | 1.27 | | | 0.050 | |
| E | 0.49 | | 0.70 | 0.019 | | 0.027 |
| F | 0.61 | | 0.88 | 0.024 | | 0.034 |
| F1 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| F2 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| G | 4.95 | | 5.15 | 0.194 | | 0.203 |
| G1 | 2.4 | | 2.7 | 0.094 | | 0.106 |
| H2 | 10.0 | | 10.40 | 0.393 | | 0.409 |
| L2 | | 16.4 | | | 0.645 | |
| L4 | 13.0 | | 14.0 | 0.511 | | 0.551 |
| L5 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| L6 | 15.25 | | 15.75 | 0.600 | | 0.620 |
| L7 | 6.2 | | 6.6 | 0.244 | | 0.260 |
| L9 | 3.5 | | 3.93 | 0.137 | | 0.154 |
| DIA. | 3.75 | | 3.85 | 0.147 | | 0.151 |



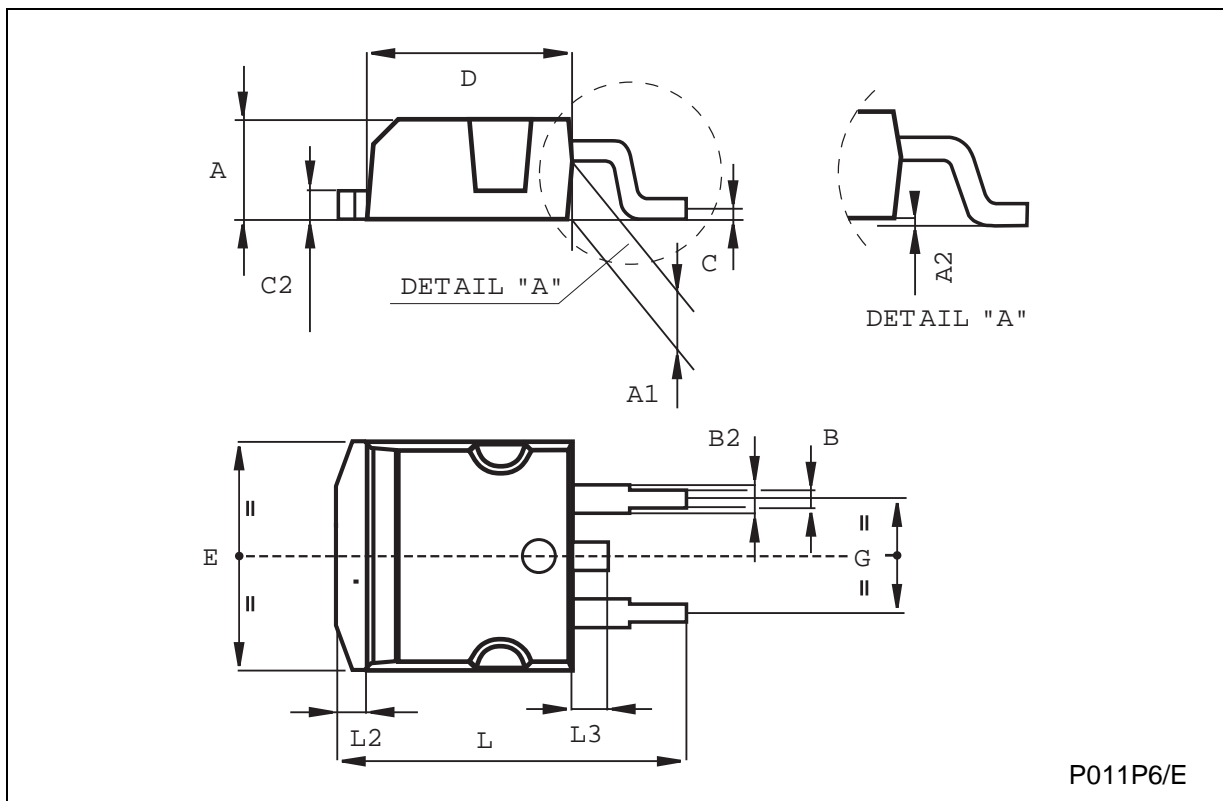
TO-220FP MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.4 | | 4.6 | 0.173 | | 0.181 |
| B | 2.5 | | 2.7 | 0.098 | | 0.106 |
| D | 2.5 | | 2.75 | 0.098 | | 0.108 |
| E | 0.45 | | 0.7 | 0.017 | | 0.027 |
| F | 0.75 | | 1 | 0.030 | | 0.039 |
| F1 | 1.15 | | 1.7 | 0.045 | | 0.067 |
| F2 | 1.15 | | 1.7 | 0.045 | | 0.067 |
| G | 4.95 | | 5.2 | 0.195 | | 0.204 |
| G1 | 2.4 | | 2.7 | 0.094 | | 0.106 |
| H | 10 | | 10.4 | 0.393 | | 0.409 |
| L2 | | 16 | | | 0.630 | |
| L3 | 28.6 | | 30.6 | 1.126 | | 1.204 |
| L4 | 9.8 | | 10.6 | 0.385 | | 0.417 |
| L6 | 15.9 | | 16.4 | 0.626 | | 0.645 |
| L7 | 9 | | 9.3 | 0.354 | | 0.366 |
| Ø | 3 | | 3.2 | 0.118 | | 0.126 |



TO-263 (D²PAK) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|-------|-------|------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.4 | | 4.6 | 0.173 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| B | 0.7 | | 0.93 | 0.027 | | 0.036 |
| B2 | 1.14 | | 1.7 | 0.044 | | 0.067 |
| C | 0.45 | | 0.6 | 0.017 | | 0.023 |
| C2 | 1.21 | | 1.36 | 0.047 | | 0.053 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| E | 10 | | 10.4 | 0.393 | | 0.409 |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15 | | 15.85 | 0.590 | | 0.624 |
| L2 | 1.27 | | 1.4 | 0.050 | | 0.055 |
| L3 | 1.4 | | 1.75 | 0.055 | | 0.068 |



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