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HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

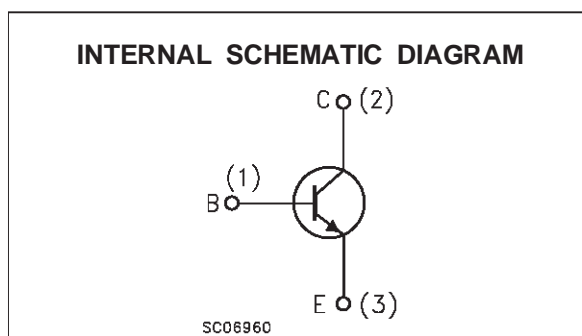
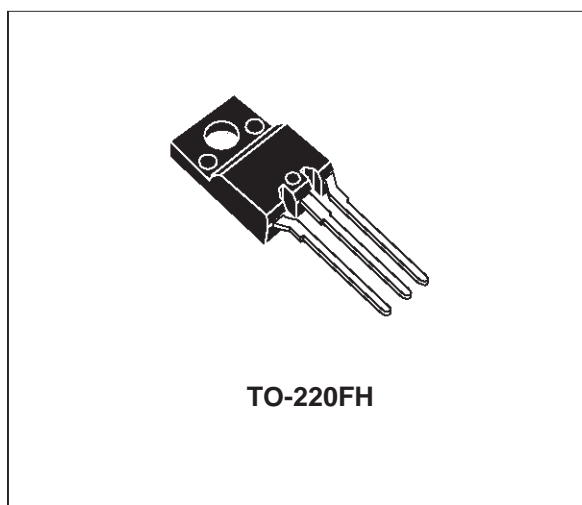
- NEW Fully Plastic TO-220 for HIGH VOLTAGE APPLICATIONS
- NEW SERIES, ENHANCED PERFORMANCE
- EASY MOUNTING
- HIGH VOLTAGE CAPABILITY (> 1500 V)
- HIGH SWITCHING SPEED
- TIGHTER hfe CONTROL
- IMPROVED RUGGEDNESS
- FULLY MOLDED INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING
- CREEPAGE DISTANCE PATH > 4 mm

APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOR TVs UP TO 21 INCHES

DESCRIPTION

The device is manufactured using Diffused Collector Technology for more stable operation Vs base drive circuit variations resulting in very low worst case dissipation.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|------------|--|------------|------|
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 1500 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 600 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 7 | V |
| I_C | Collector Current | 10 | A |
| I_{CM} | Collector Peak Current ($t_p < 5$ ms) | 15 | A |
| I_B | Base Current | 4 | A |
| P_{tot} | Total Dissipation at $T_c = 25$ °C | 40 | W |
| V_{isol} | Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink | 2500 | V |
| T_{stg} | Storage Temperature | -65 to 150 | °C |
| T_j | Max. Operating Junction Temperature | 150 | °C |

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THERMAL DATA

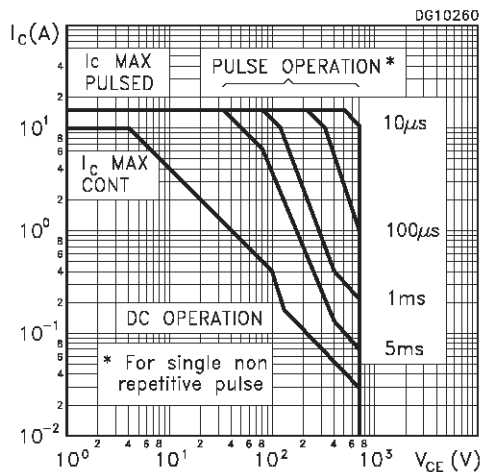
| | | | | |
|-----------------------|----------------------------------|-----|-------|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 3.125 | °C/W |
|-----------------------|----------------------------------|-----|-------|------|

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

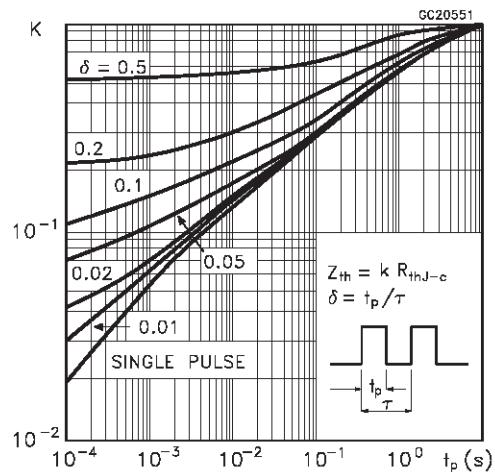
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|---|--|------|------------|----------|----------|
| I _{CES} | Collector Cut-off Current (V _{BE} = 0) | V _{CE} = 1500 V V _{CE} = 1500 V T _C = 125 °C | | | 1 2 | mA mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 7 V | | | 1 | mA |
| V _{CEO(sus)*} | Collector-Emitter Sustaining Voltage (I _B = 0) | I _C = 100 mA L = 25 mH | 600 | | | V |
| V _{CE(sat)*} | Collector-Emitter Saturation Voltage | I _C = 4 A I _B = 0.8 A I _C = 4 A I _B = 1.2 A | | | 5 1.5 | V V |
| V _{BE(sat)*} | Base-Emitter Saturation Voltage | I _C = 4.5 A I _B = 1 A | | | 1.2 | V |
| h _{FE*} | DC Current Gain | I _C = 1 A V _{CE} = 5 V I _C = 5 A V _{CE} = 1 V I _C = 5 A V _{CE} = 5 V | 4 | 25 4.5 | 9 | |
| t _s t _f | INDUCTIVE LOAD Storage Time Fall Time | I _C = 4 A I _{Bon(END)} = 1 A L _B = 5 μH V _{BB(off)} = -2.5 V f = 16 KHz (see figure 1) | | 2.6 0.2 | 4 0.6 | μs μs |

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

Safe Operating Area

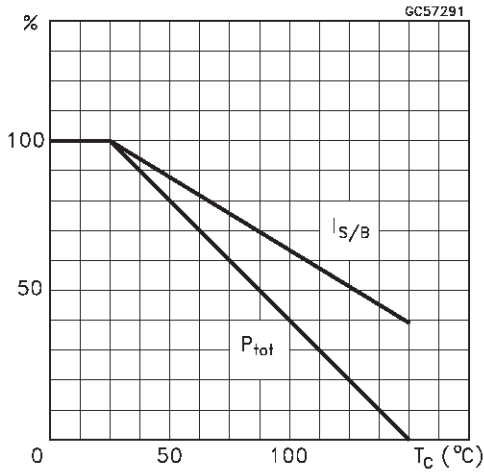


Thermal Impedance

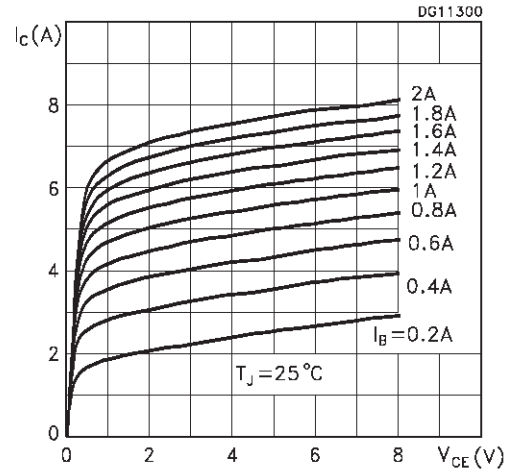


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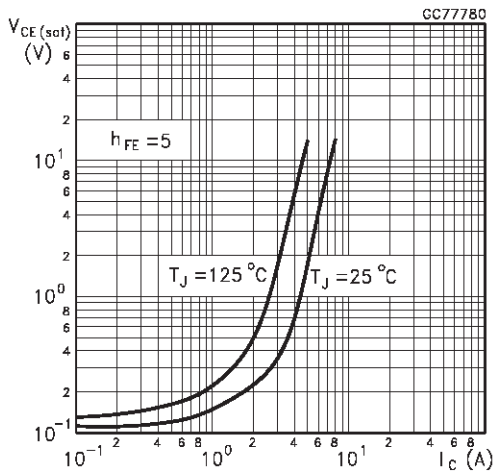
Derating Curve



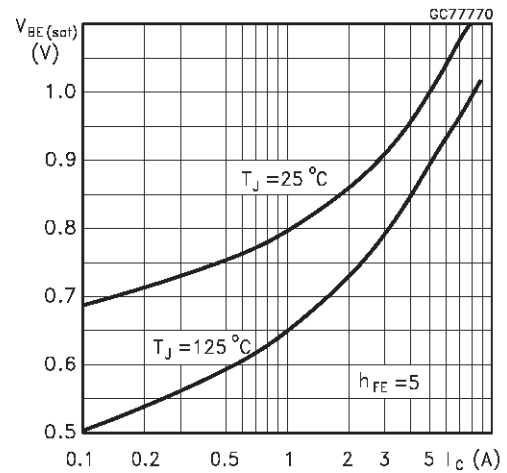
Output Characteristics



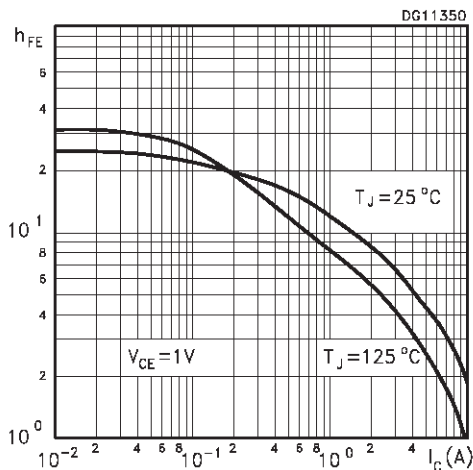
Collector Emitter Saturation Voltage



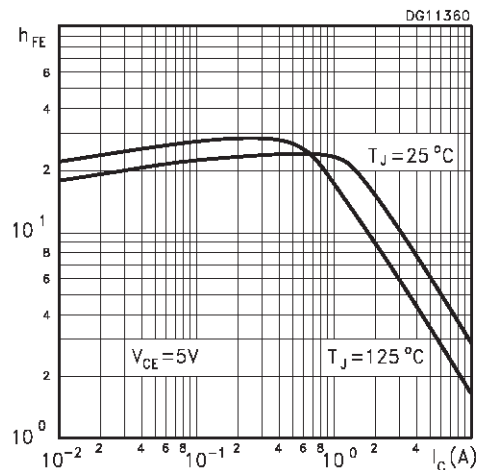
Base Emitter Saturation Voltage



DC Current Gain

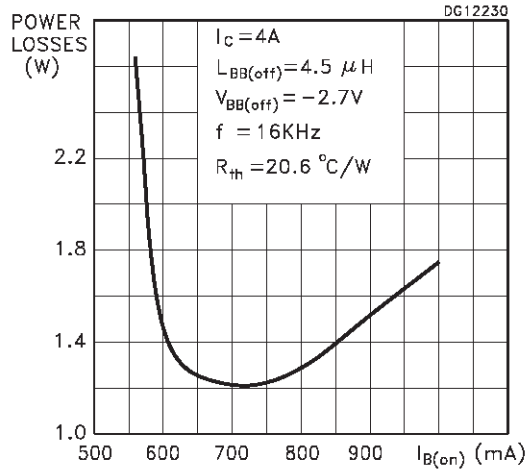


DC Current Gain

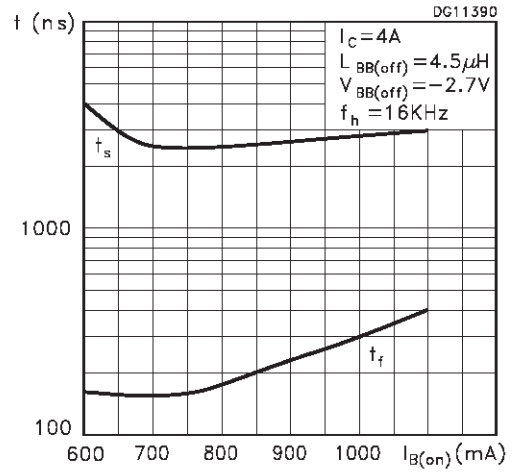


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Power Losses At 16 KHz



Switching Time Inductive Load



Reverse Biased SOA

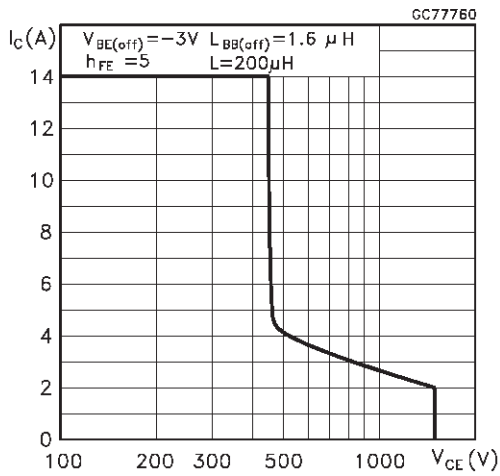
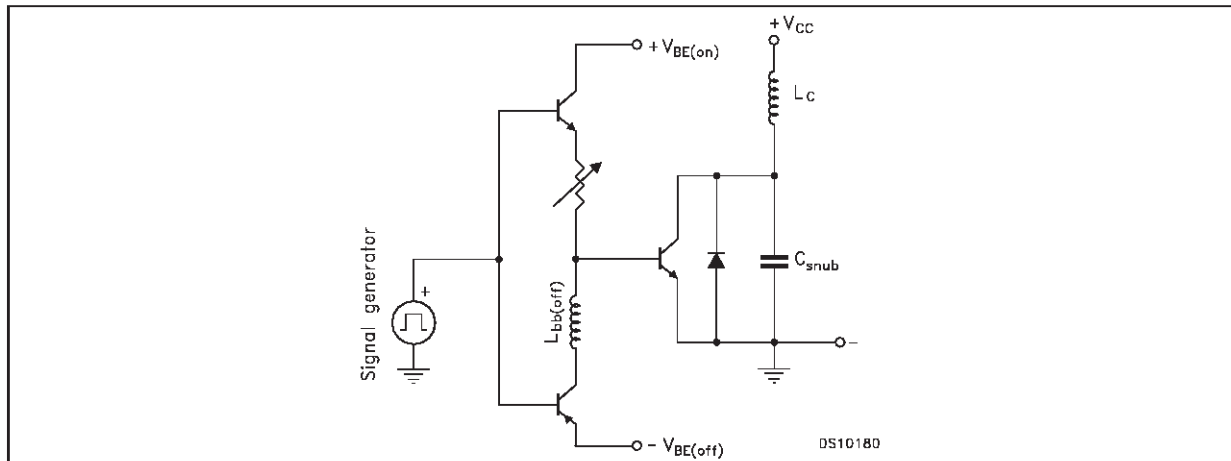


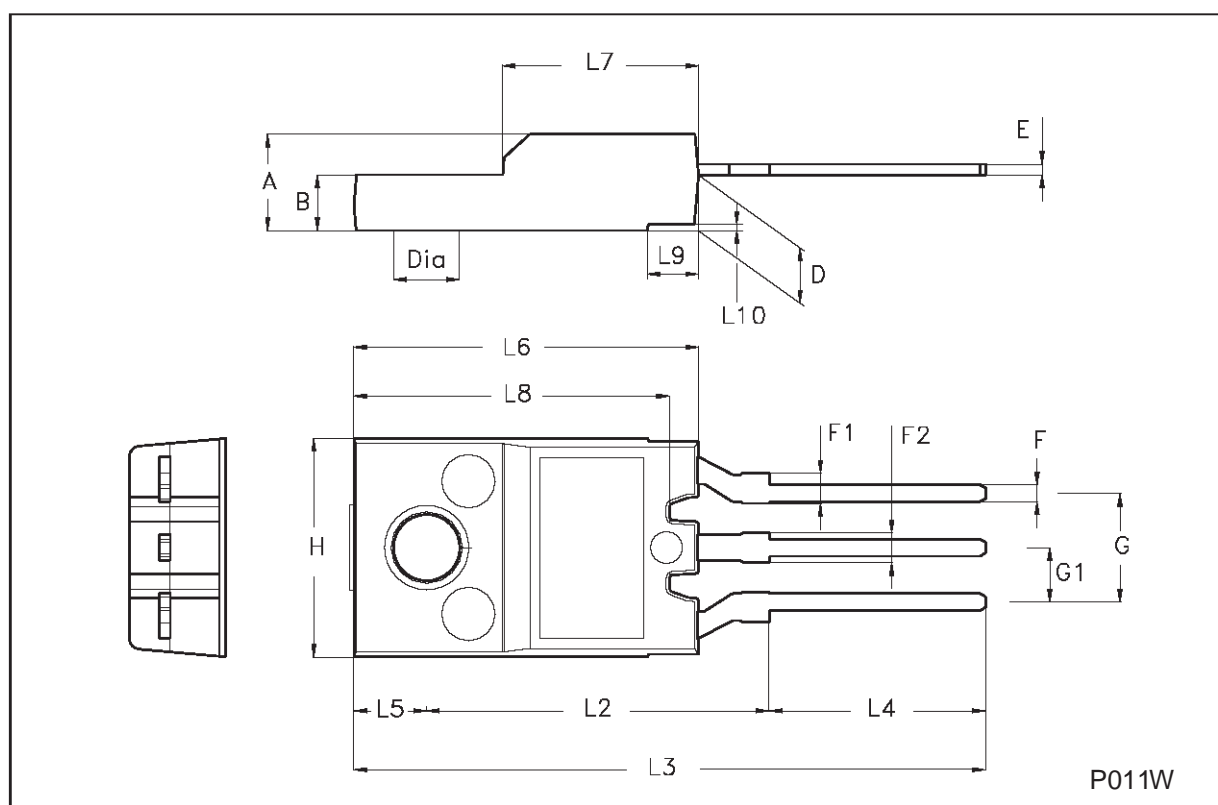
Figure 1: Inductive Load Switching Test Circuit.



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TO-220FH (Fully plastic High voltage) 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 | 1.3 | | 1.8 | 0.051 | | 0.070 |
| F2 | 1.3 | | 1.8 | 0.051 | | 0.070 |
| 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 |
| L5 | | 3.4 | | | 0.134 | |
| L6 | 15.9 | | 16.4 | 0.626 | | 0.645 |
| L7 | 9 | | 9.3 | 0.354 | | 0.366 |
| L8 | 14.5 | | 15 | 0.570 | | 0.590 |
| L9 | | 2.4 | | | 0.094 | |



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