



ST1803DHI

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

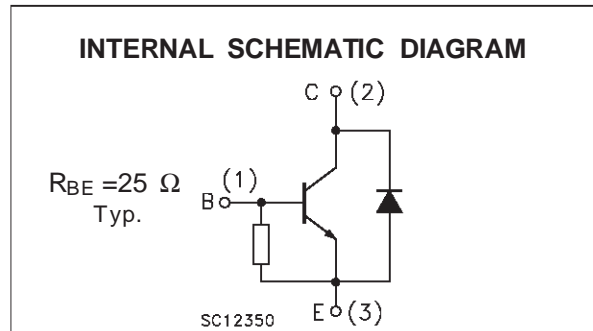
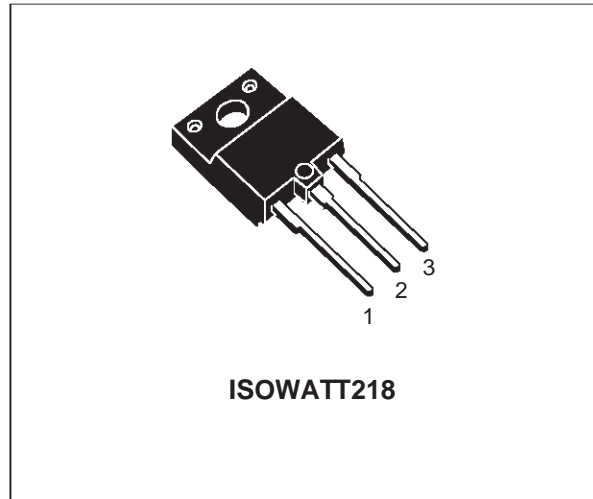
- NEW SERIES, ENHANCED PERFORMANCE
- FULLY INSULATED PACKAGE FOR EASY MOUNTING
- INTEGRATED FREE WHEELING DIODE
- HIGH VOLTAGE CAPABILITY
- HIGH SWITCHING SPEED
- TIGHTER h_{fe} CONTROL
- IMPROVED RUGGEDNESS

APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOR TV

DESCRIPTION

The ST1803DHI 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 | 50 | W |
| T_{stg} | Storage Temperature | -65 to 150 | °C |
| T_j | Max. Operating Junction Temperature | 150 | °C |

ST1803DHI

THERMAL DATA

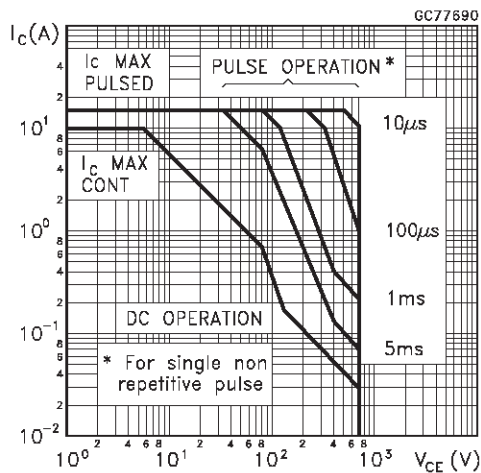
| | | | | |
|-----------------------|----------------------------------|-----|-----|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 2.5 | °C/W |
|-----------------------|----------------------------------|-----|-----|------|

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

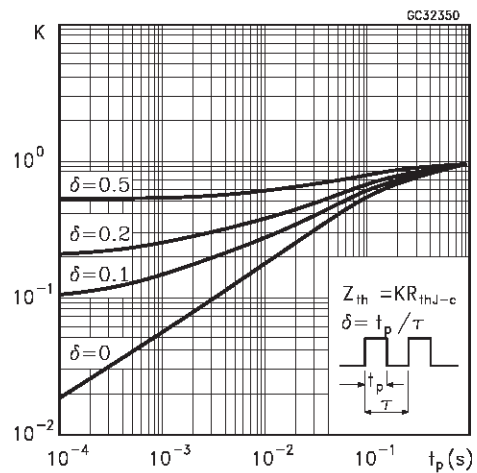
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|---|--|---------|----------|----------|----------|
| I _{CES} | Collector Cut-off Current (V _{BE} = 0) | V _{CE} = 1500 V V _{CE} = 1500 V T _j = 125 °C | | | 1 2 | mA mA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 4 V | 130 | | 400 | mA |
| 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 | | 3 | 5 1.5 | V |
| V _{BE(sat)*} | Base-Emitter Saturation Voltage | I _C = 4 A I _B = 0.8 A | | | 1.2 | V |
| h _{FE*} | DC Current Gain | I _C = 1 A V _{CE} = 5 V I _C = 4.5 A V _{CE} = 5 V | 10 4 | 15 | 20 9 | |
| V _F | Diode Forward Voltage | I _F = 5 A | | 1.5 | 2 | V |
| BV _{EB0} | Emitter-Breakdown Voltage | I _E = 700 mA | 7 | | | V |
| t _s t _f | INDUCTIVE LOAD Storage Time Fall Time | I _C = 4 A I _{Bon(END)} = 0.8 A L _B = 5 μH V _{BB} = -2.5 V f = 16 KHZ | | 5 0.3 | 6 0.6 | μs μs |

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

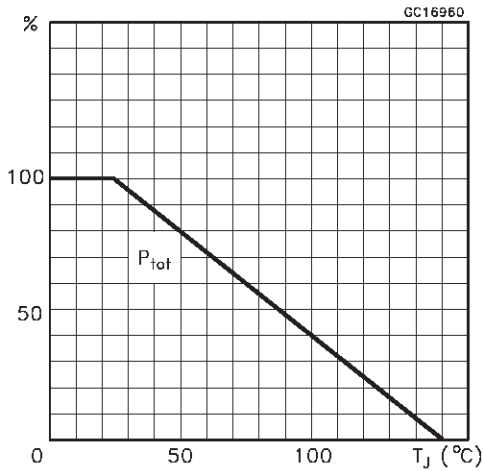
Safe Operating Area



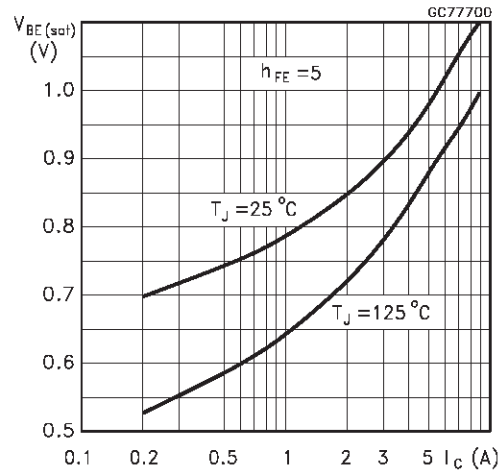
Thermal Impedance



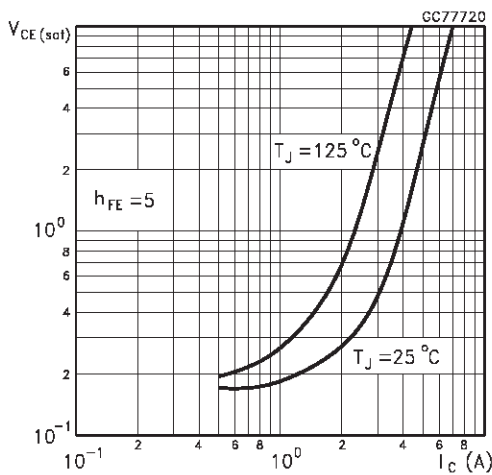
Derating Curve



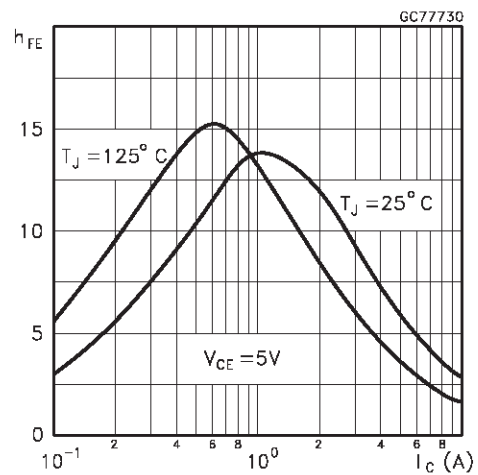
Base Emitter Saturation Voltage



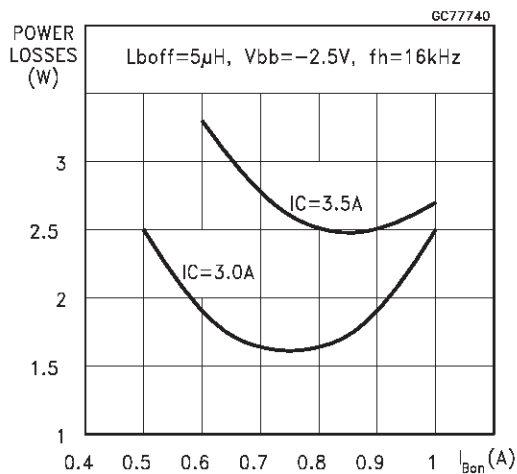
Collector Emitter Saturation Voltage



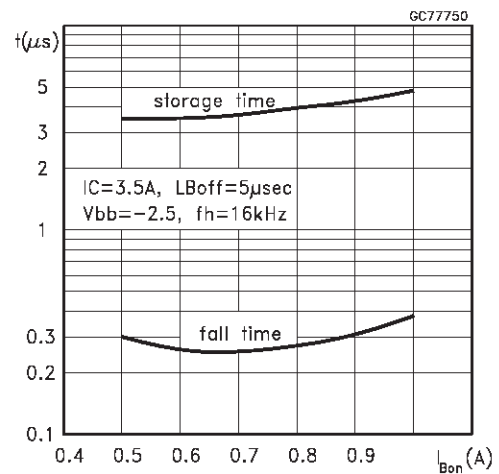
DC Current Gain



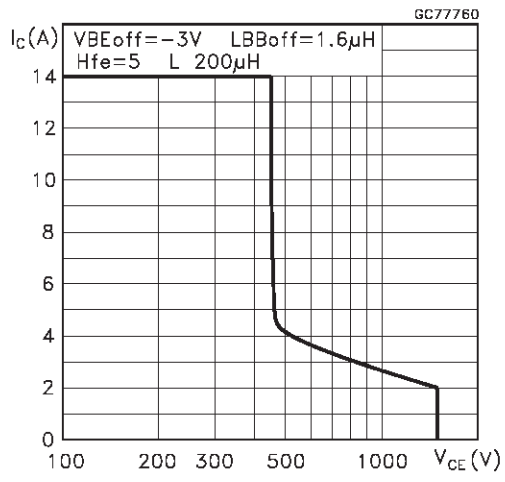
Power Losses At 16 KHz



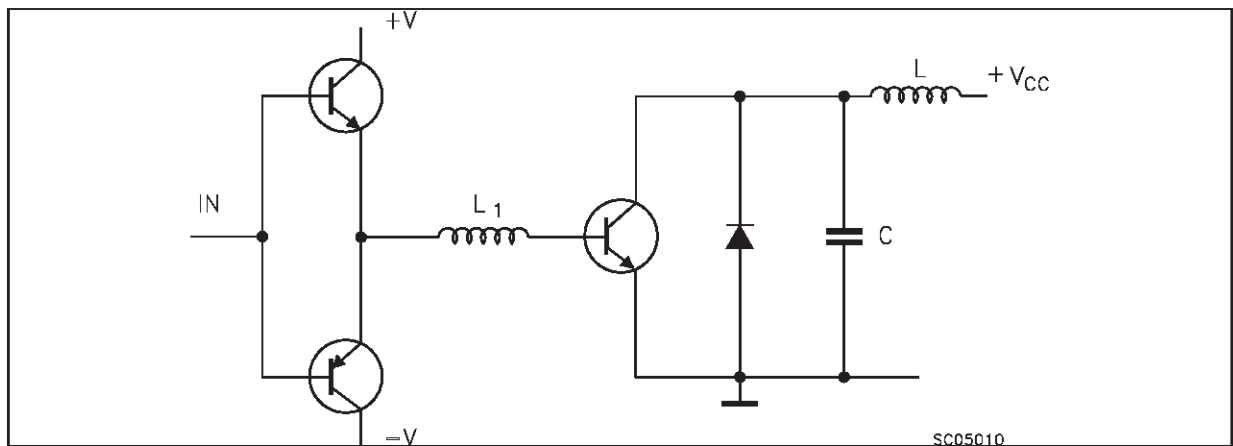
Switching Time Inductive Load



Reverse Biased SOA

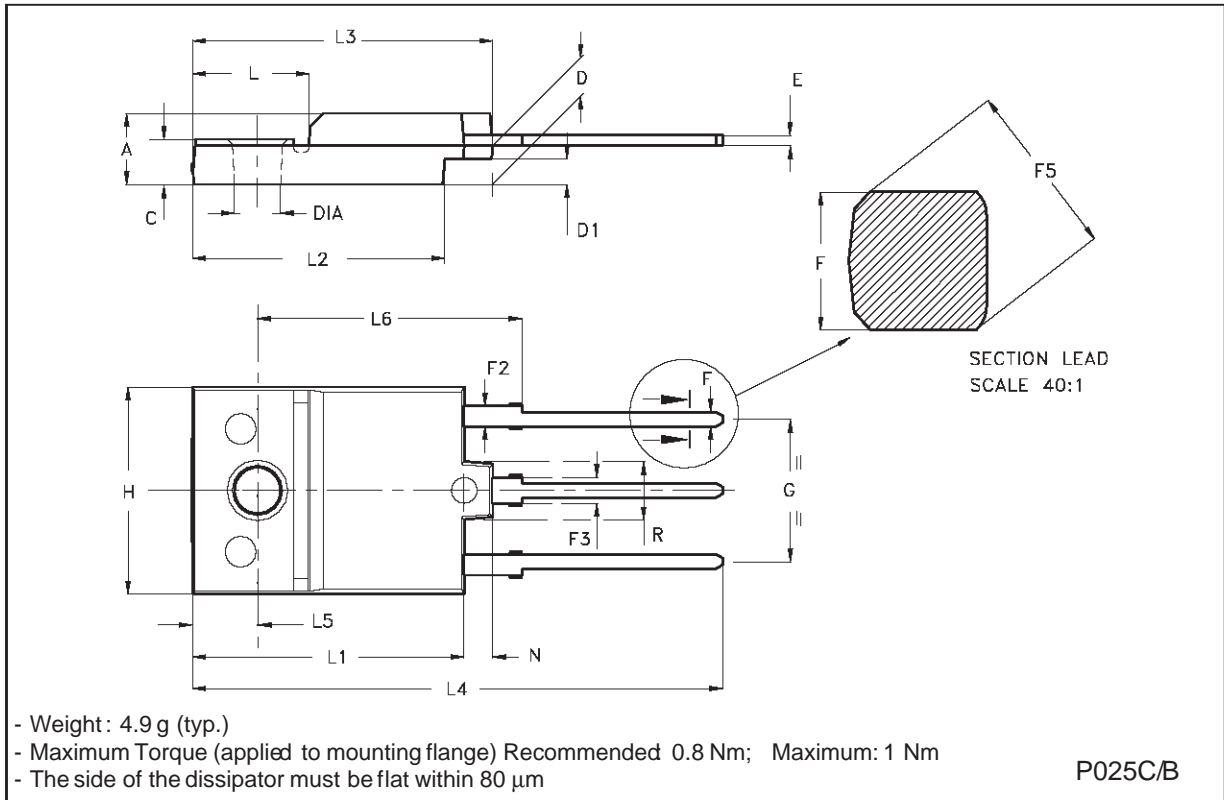


Inductive Load Switching Test Circuits.



ISOWATT218 NARROW LEADS MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 5.35 | | 5.65 | 0.211 | | 0.222 |
| C | 3.30 | | 3.80 | 0.130 | | 0.150 |
| D | 2.90 | | 3.10 | 0.114 | | 0.122 |
| D1 | 1.88 | | 2.08 | 0.074 | | 0.082 |
| E | 0.75 | | 0.95 | 0.030 | | 0.037 |
| F | 0.75 | | 0.95 | 0.030 | | 0.037 |
| F2 | 1.50 | | 1.70 | 0.059 | | 0.067 |
| F3 | 1.90 | | 2.10 | 0.075 | | 0.083 |
| F5 | | | 1.10 | | | 0.043 |
| G | 10.80 | | 11.20 | 0.425 | | 0.441 |
| H | 15.80 | | 16.20 | 0.622 | | 0.638 |
| L | | 9 | | | 0.354 | |
| L1 | 20.80 | | 21.20 | 0.819 | | 0.835 |
| L2 | 19.10 | | 19.90 | 0.752 | | 0.783 |
| L3 | 22.80 | | 23.60 | 0.898 | | 0.929 |
| L4 | 40.50 | | 42.50 | 1.594 | | 1.673 |
| L5 | 4.85 | | 5.25 | 0.191 | | 0.207 |
| L6 | 20.25 | | 20.75 | 0.797 | | 0.817 |
| N | 2.1 | | 2.3 | 0.083 | | 0.091 |
| R | | 4.6 | | | 0.181 | |
| DIA | 3.5 | | 3.7 | 0.138 | | 0.146 |



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