

# **ST2408HI**

# HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

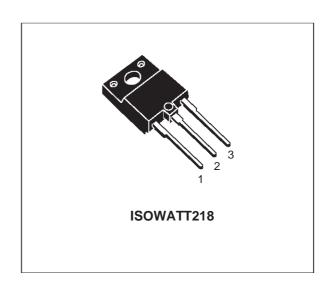
- NEW SERIES, ENHANCHED PERFORMANCE
- FULLY INSULATED PACKAGE FOR EASY MOUNTING
- HIGH VOLTAGE CAPABILITY
- HIGH SWITCHING SPEED
- TIGTHER hfe CONTROL
- IMPROVED RUGGEDNESS

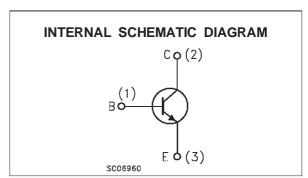
#### **APPLICATIONS:**

 HORIZONTAL DEFLECTION FOR MONITOR 17" AND HIGH END TV

#### **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 <sub>CES</sub> | Collector-Emitter Voltage (V <sub>BE</sub> = 0) | 1500       | V    |
| Vceo             | Collector-Emitter Voltage (I <sub>B</sub> = 0)  | 600        | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage (I <sub>C</sub> = 0)       | 7          | V    |
| Ic               | Collector Current                               | 12         | Α    |
| Ісм              | Collector Peak Current (t <sub>p</sub> < 5 ms)  | 25         | Α    |
| I <sub>B</sub>   | Base Current                                    | 7          | Α    |
| P <sub>tot</sub> | Total Dissipation at T <sub>c</sub> = 25 °C     | 55         | W    |
| T <sub>stg</sub> | Storage Temperature                             | -65 to 150 | °C   |
| Tj               | Max. Operating Junction Temperature             | 150        | °C   |

February 2000 1/6

### THERMAL DATA

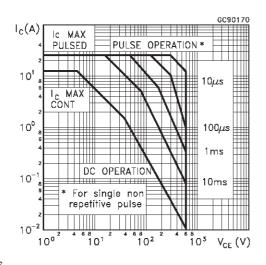
| R <sub>thj-case</sub> Thermal Resistance Junction-case | Max | 2.3 | °C/W |
|--|-----|-----|------|
|--|-----|-----|------|

# **ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

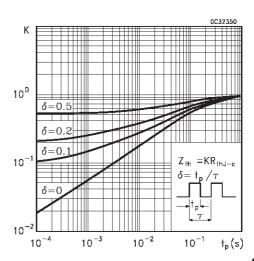
| Symbol                  | Parameter   | Test  | Conditions                               | Min. | Тур.       | Max.       | Unit     |
|-------------------------|---|---|--|------|------------|------------|----------|
| I <sub>CES</sub>        | Collector Cut-off<br>Current (V <sub>BE</sub> = 0)              | V <sub>CE</sub> = 1500 V  |  |      |            | 1          | mA       |
| I <sub>EBO</sub>        | Emitter Cut-off Current (I <sub>C</sub> = 0)                    | V <sub>EB</sub> = 7 V   |  |      |            | 1          | mA       |
| V <sub>CEO(sus)</sub> * | Collector-Emitter<br>Sustaining Voltage<br>(I <sub>B</sub> = 0) | I <sub>C</sub> = 100 mA   | L = 25 mH                                | 600  |            |            | V        |
| V <sub>CE(sat)</sub> *  | Collector-Emitter<br>Saturation Voltage                         | I <sub>C</sub> = 8 A  | I <sub>B</sub> = 2 A                     |      |            | 3          | V        |
| V <sub>BE(sat)</sub> *  | Base-Emitter<br>Saturation Voltage                              | I <sub>C</sub> = 8 A  | I <sub>B</sub> = 2 A                     |      |            | 1.5        | V        |
| h <sub>FE</sub> *       | DC Current Gain   | I <sub>C</sub> = 1 A<br>I <sub>C</sub> = 8 A                                  | $V_{CE} = 5 V$<br>$V_{CE} = 5 V$         | 6    | 25         | 9          |          |
| t <sub>s</sub>          | INDUCTIVE LOAD<br>Storage Time<br>Fall Time                     | I <sub>C</sub> = 7 A<br>I <sub>B(on)</sub> = 1.5 A<br>L <sub>B</sub> = 0.4 μH | $f_h$ = 82 KHz<br>$V_{BB(off)}$ = -2.5 V |      | 2.1<br>110 | 2.4<br>150 | μs<br>ns |

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

# Safe Operating Area

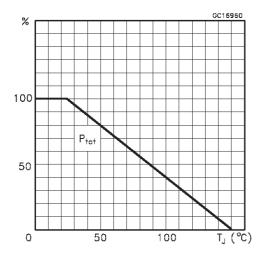


# Thermal Impedance

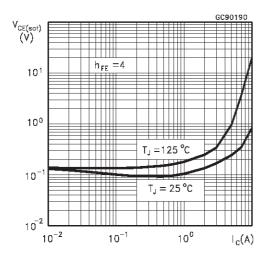


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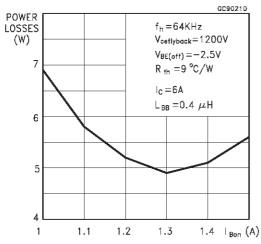
# **Derating Curve**



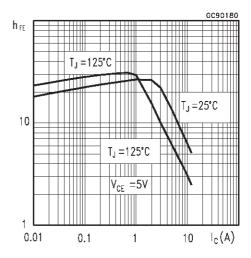
# Collector Emitter Saturation Voltage



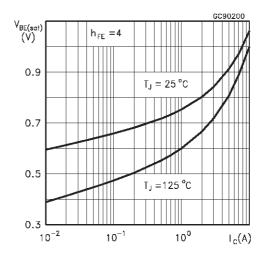
## Power Losses



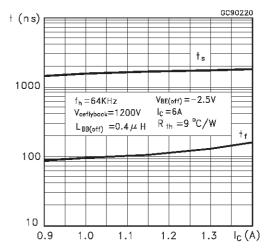
## DC Current Gain



## Base Emitter Saturation Voltage

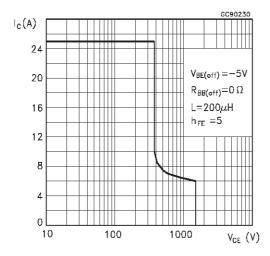


# Switching Time Inductive Load



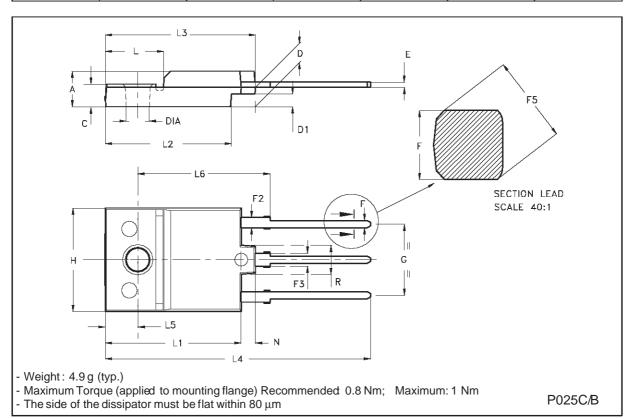
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## Reverse Biased Soa



# **ISOWATT218 NARROW LEADS MECHANICAL DATA**

| DIM.  | mm    |      |       | inch  |       |       |  |
|-------|-------|------|-------|-------|-------|-------|--|
| DIWI. | MIN.  | TYP. | MAX.  | MIN.  | TYP.  | MAX.  |  |
| А     | 5.35  |      | 5.65  | 0.211 |       | 0.222 |  |
| С     | 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 |  |
| Е     | 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 |  |
| Н     | 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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