High Voltage Power MOSFET

IXTL2N450

(Electrically Isolated Tab)

N-Channel Enhancement Mode

Symbol | Test Conditions | Maximum Ratings
|----------------|------------------|
| \( V_{DSS} \) | \( T_J = 25 \degree C \text{ to } 150 \degree C \) | 4500 V
| \( V_{DGR} \) | \( T_J = 25 \degree C \text{ to } 150 \degree C \), \( R_{GS} = 1 \Omega \) | 4500 V
| \( V_{GSS} \) | Continuous | ±20 V
| \( V_{GSM} \) | Transient | ±30 V
| \( I_{DSS} \) | \( T_C = 25 \degree C \) | 2 A
| \( I_{DM} \) | \( T_C = 25 \degree C \), Pulse Width Limited by \( T_{JM} \) | 8 A
| \( P_d \) | \( T_C = 25 \degree C \) | 220 W
| \( T_J \) | -55 ... +150 \degree C
| \( T_{JM} \) | 150 \degree C
| \( T_{stg} \) | -55 ... +150 \degree C
| \( T_L \) | Maximum Lead Temperature for Soldering | 300 \degree C
| \( T_{SOLD} \) | Plastic Body for 10s | 260 \degree C
| \( F_C \) | Mounting Force | 20..120 / 4.5..27 N/lb.
| \( V_{BOL} \) | 50/60Hz, 1 Minute | 4000 V~

Weight: 8 g

**Features**
- Silicon Chip on Direct-Copper Bond (DCB) Substrate
- Isolated Mounting Surface
- 4000V~ RMS Electrical Isolation
- Molding Epoxies meet UL 94 V-0 Flammability Classification

**Advantages**
- Easy to Mount
- Space Savings
- High Power Density

**Applications**
- High Voltage Power Supplies
- Capacitor Discharge Applications
- Pulse Circuits
- Laser and X-Ray Generation Systems

© 2013 IXYS CORPORATION, All Rights Reserved
### Symbol Test Conditions (TJ = 25°C, Unless Otherwise Specified) Characteristic Values

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Characteristic Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>gfs</td>
<td>VDS = 60V, ID25, Note 1</td>
<td>Min.</td>
</tr>
<tr>
<td>Ciss</td>
<td>VGS = 0V, VDS = 25V, f = 1MHz</td>
<td>267 pF</td>
</tr>
<tr>
<td>Coss</td>
<td>VGS = 0V, VDS = 25V, f = 1MHz</td>
<td>105 pF</td>
</tr>
<tr>
<td>RGI</td>
<td>Integrated Gate Input Resistance</td>
<td>4.0 Ω</td>
</tr>
<tr>
<td>t(fon)</td>
<td>Resistive Switching Times</td>
<td>40 ns</td>
</tr>
<tr>
<td>tr</td>
<td>VGS = 10V, VDS = 1kV, ID25, Note 1</td>
<td>34 ns</td>
</tr>
<tr>
<td>toff</td>
<td>Rg = 0Ω (External)</td>
<td>123 ns</td>
</tr>
<tr>
<td>Qg(on)</td>
<td>VGS = 10V, VDS = 1kV, ID25, Note 1</td>
<td>180 nC</td>
</tr>
<tr>
<td>Qgs</td>
<td>VGS = 10V, VDS = 1kV, ID25, Note 1</td>
<td>34 nC</td>
</tr>
<tr>
<td>Qgd</td>
<td>VGS = 10V, VDS = 1kV, ID25, Note 1</td>
<td>83 nC</td>
</tr>
<tr>
<td>RthJC</td>
<td>0.56 °C/W</td>
<td>0.56 °C/W</td>
</tr>
<tr>
<td>RthCS</td>
<td>0.15 °C/W</td>
<td>0.15 °C/W</td>
</tr>
</tbody>
</table>

### Source-Drain Diode

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Test Conditions (TJ = 25°C, Unless Otherwise Specified)</th>
<th>Characteristic Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is</td>
<td>VGS = 0V</td>
<td>Min.</td>
</tr>
<tr>
<td>Ism</td>
<td>Repetitive, Pulse Width Limited by T JM</td>
<td>8 A</td>
</tr>
<tr>
<td>Vsd</td>
<td>IF = IS, VGS = 0V, Note 1</td>
<td>3 V</td>
</tr>
<tr>
<td>trr</td>
<td>IF = 2A, -di/dt = 100A/μs, VR = 100V</td>
<td>1.75 μs</td>
</tr>
</tbody>
</table>

Notes: 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%. 2. Part must be heatsunk for high-temp Idss measurement.

### IXTL2N450 ISOPLUS i5-Pak™ (IXTL) Outline

- Symbol: SIM
- INCHES: MIN. | MAX. | MIN. | MAX.
- MILLIMETERS: MIN. | MAX.
- A: 0.190 | 0.205 | 4.83 | 5.21
- A1: 0.102 | 0.118 | 2.59 | 3.00
- A2: 0.045 | 0.050 | 1.14 | 1.40
- b: 0.053 | 0.072 | 1.37 | 1.83
- c: 0.020 | 0.029 | 0.51 | 0.74
- D: 0.020 | 0.104 | 25.41 | 25.42
- E: 0.770 | 0.999 | 19.56 | 20.32
- U: 0.065 | 0.080 | 1.65 | 2.03

IXYS reserves the right to change limits, test conditions, and dimensions.
Fig. 1. Output Characteristics @ $T_J = 25^\circ$C

Fig. 2. Output Characteristics @ $T_J = 125^\circ$C

Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 1$A Value vs. Junction Temperature

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 1$A Value vs. Drain Current

Fig. 5. Maximum Drain Current vs. Case Temperature

Fig. 6. Input Admittance
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.
Fig. 13. Maximum Transient Thermal Impedance

Z_th, °C/W vs. Pulse Width - Seconds