

**Polar™ HiPerFET™
Power MOSFET**

IXFL60N80P

$V_{DSS} = 800V$
 $I_{D25} = 40A$
 $R_{DS(on)} \leq 150m\Omega$
 $t_{rr} \leq 250ns$

(Electrically Isolated Tab)



N-Channel Enhancement Mode
 Avalanche Rated
 Fast Intrinsic Rectifier

ISOPLUS264



G = Gate D = Drain
 S = Source

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|--|-----------------|------------|
| V_{DSS} | $T_J = 25^\circ C$ to $150^\circ C$ | 800 | V |
| V_{DGR} | $T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$ | 800 | V |
| V_{GSS} | Continuous | ± 30 | V |
| V_{GSM} | Transient | ± 40 | V |
| I_{D25} | $T_C = 25^\circ C$ | 40 | A |
| I_{DM} | $T_C = 25^\circ C$, Pulse Width Limited by T_{JM} | 150 | A |
| I_A | $T_C = 25^\circ C$ | 30 | A |
| E_{AS} | $T_C = 25^\circ C$ | 5 | J |
| dv/dt | $I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$ | 20 | V/ns |
| P_D | $T_C = 25^\circ C$ | 625 | W |
| T_J | | -55 ... +150 | $^\circ C$ |
| T_{JM} | | 150 | $^\circ C$ |
| T_{stg} | | -55 ... +150 | $^\circ C$ |
| T_L | Maximum Lead Temperature for Soldering | 300 | $^\circ C$ |
| T_{SOLD} | Plastic Body for 10s | 260 | $^\circ C$ |
| F_C | Mounting Force | 40..120 / 9..27 | N/lb. |
| V_{ISOL} | 50/60 Hz, RMS $t = 1$ min $I_{ISOL} \leq 1$ mA $t = 1$ s | 2500 3000 | V~ V~ |
| Weight | | 8 | g |

Features

- Silicon Chip on Direct-Copper-Bond Substrate
 - High Power Dissipation
 - Isolated Mounting Surface
 - 2500V~ Electrical Isolation
- Avalanche Rated
- Low Package Inductance
- Fast Intrinsic Rectifier
- Low $R_{DS(on)}$ and Q_G

Advantages

- Easy to Mount
- Space Savings

Applications

- DC-DC Converters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- AC Motor Control
- High Speed Power Switching Application

| Symbol | Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|--------------------|
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0V$, $I_D = 3mA$ | 800 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 8mA$ | 3.0 | | V |
| I_{GSS} | $V_{GS} = \pm 30V$, $V_{DS} = 0V$ | | | ± 200 nA |
| I_{DSS} | $V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ C$ | | | 25 μA 3 mA |
| $R_{DS(on)}$ | $V_{GS} = 10V$, $I_D = 30A$, Note 1 | | | 150 m Ω |

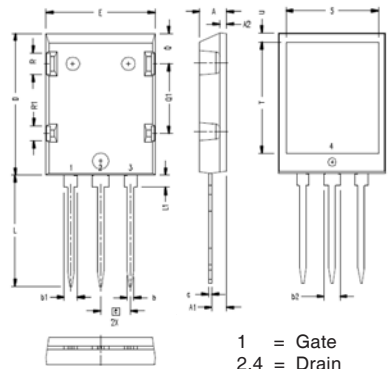
| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = 20\text{V}, I_D = 30\text{A}$, Note 1 | 35 | 67 | S |
| C_{iss} | $V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$ | | 18 | nF |
| C_{oss} | | | 1200 | pF |
| C_{rss} | | | 44 | pF |
| $t_{d(on)}$ | Resistive Switching Times $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 30\text{A}$ $R_G = 1\Omega$ (External) | | 36 | ns |
| t_r | | | 29 | ns |
| $t_{d(off)}$ | | | 110 | ns |
| t_f | | | 26 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 30\text{A}$ | | 250 | nC |
| Q_{gs} | | | 90 | nC |
| Q_{gd} | | | 78 | nC |
| R_{thJC} | | | | 0.20 $^\circ\text{C/W}$ |
| R_{thCS} | | 0.15 | | $^\circ\text{C/W}$ |

Source-Drain Diode

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified) | Characteristic Values | | |
|----------|---|-----------------------|------|---------------|
| | | Min. | Typ. | Max. |
| I_S | $V_{GS} = 0\text{V}$ | | | 60 A |
| I_{SM} | Repetitive, Pulse Width Limited by T_{JM} | | | 150 A |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{V}$, Note 1 | | | 1.5 V |
| t_{rr} | $I_F = 25\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$ | | | 250 ns |
| Q_{RM} | | | 0.6 | μC |
| I_{RM} | | | 6.0 | A |

Note 1. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.

ISOPLUS264 (IXFL) OUTLINE



| SYM | INCHES | | MILLIMETERS | |
|-----|----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .190 | .205 | 4.83 | 5.21 |
| A1 | .102 | .118 | 2.59 | 3.00 |
| A2 | .046 | .055 | 1.17 | 1.40 |
| b | .045 | .055 | 1.14 | 1.40 |
| b1 | .087 | .102 | 2.21 | 2.59 |
| b2 | .111 | .126 | 2.82 | 3.20 |
| c | .020 | .029 | 0.51 | 0.74 |
| D | 1.020 | 1.040 | 25.91 | 26.42 |
| E | .770 | .799 | 19.56 | 20.29 |
| e | .215 BSC | | 5.46 BSC | |
| L | .780 | .820 | 19.81 | 20.83 |
| L1 | .080 | .102 | 2.03 | 2.59 |
| Q | .210 | .235 | 5.33 | 5.97 |
| Q1 | .490 | .513 | 12.45 | 13.03 |
| R | .150 | .180 | 3.81 | 4.57 |
| R1 | .100 | .130 | 2.54 | 3.30 |
| S | .668 | .690 | 16.97 | 17.53 |
| T | .801 | .821 | 20.34 | 20.85 |
| U | .065 | .080 | 1.65 | 2.03 |

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

| | | | | | | | | | | |
|--|-----------|-----------|-----------|-----------|--------------|--------------|--------------|--------------|--------------|-------------|
| IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: | 4,835,592 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665 | 6,404,065 B1 | 6,683,344 | 6,727,585 | 7,005,734 B2 | 7,157,338B2 |
| | 4,860,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123 B1 | 6,534,343 | 6,710,405 B2 | 6,759,692 | 7,063,975 B2 | |
| | 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728 B1 | 6,583,505 | 6,710,463 | 6,771,478 B2 | 7,071,537 | |

Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

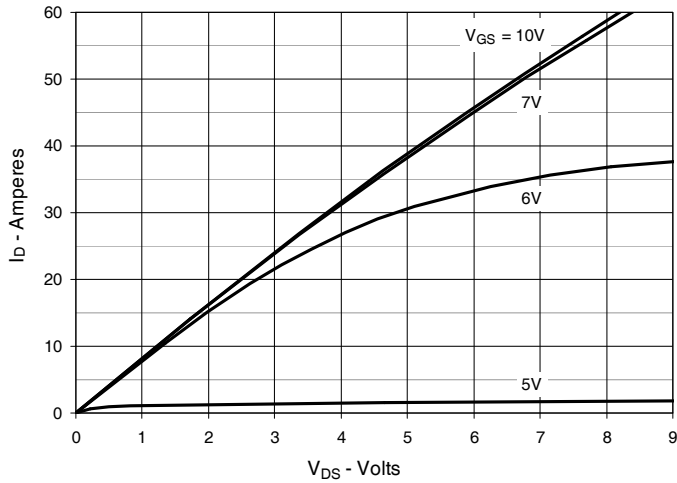


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

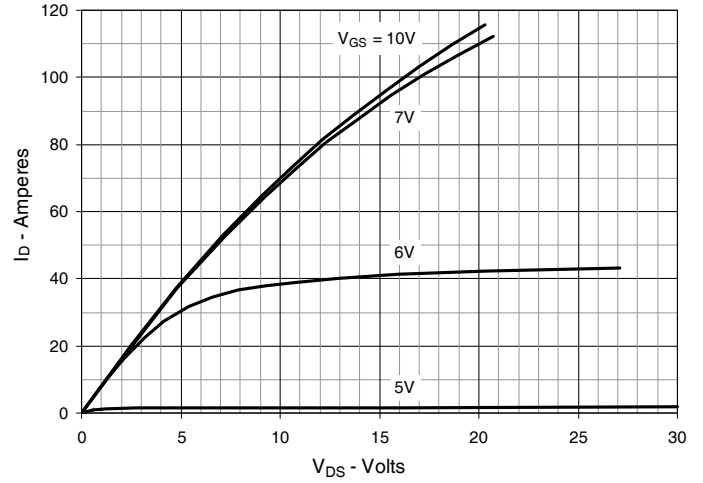


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

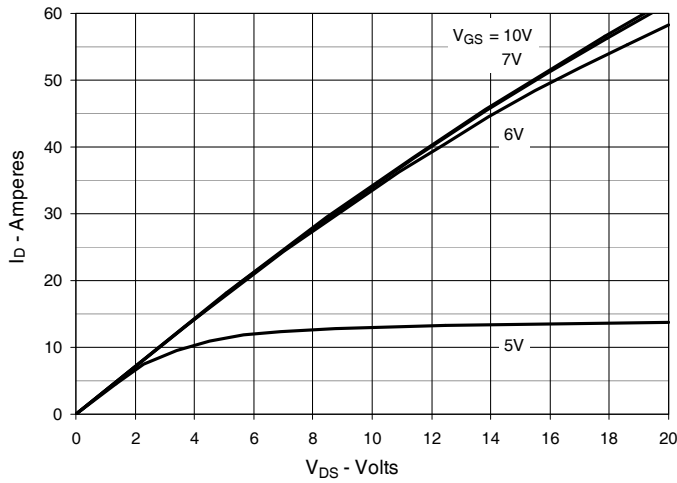


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 30\text{A}$ Value vs. Junction Temperature

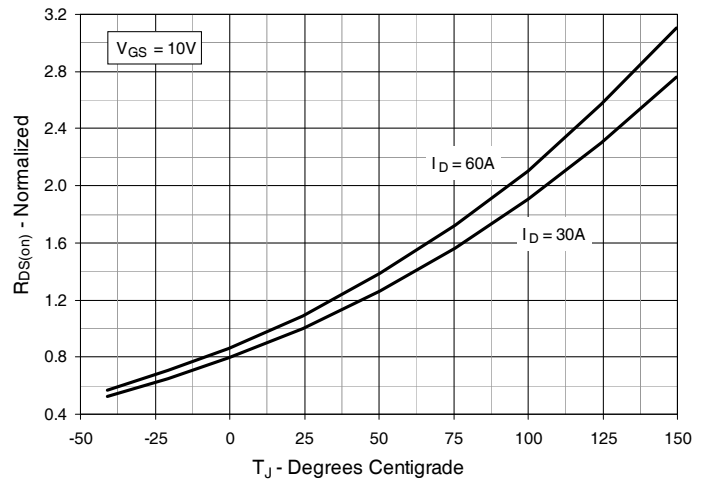


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 30\text{A}$ Value vs. Drain Current

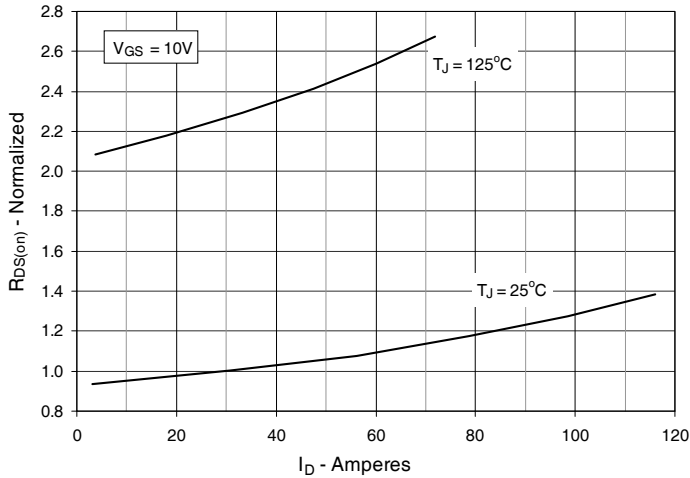


Fig. 6. Maximum Drain Current vs. Case Temperature

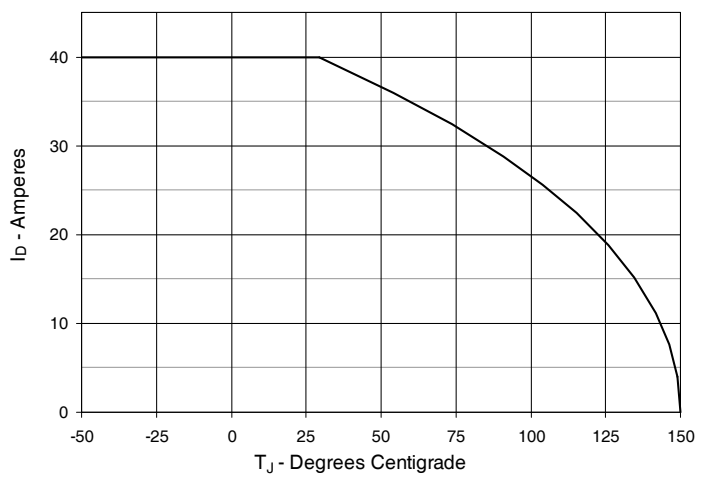


Fig. 7. Input Admittance

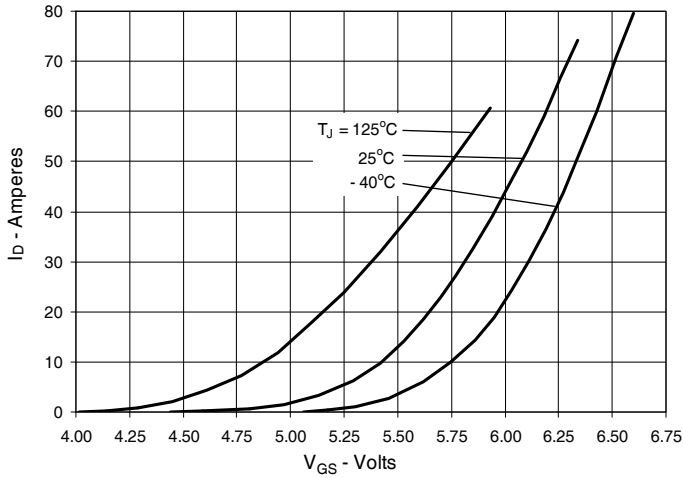


Fig. 8. Transconductance

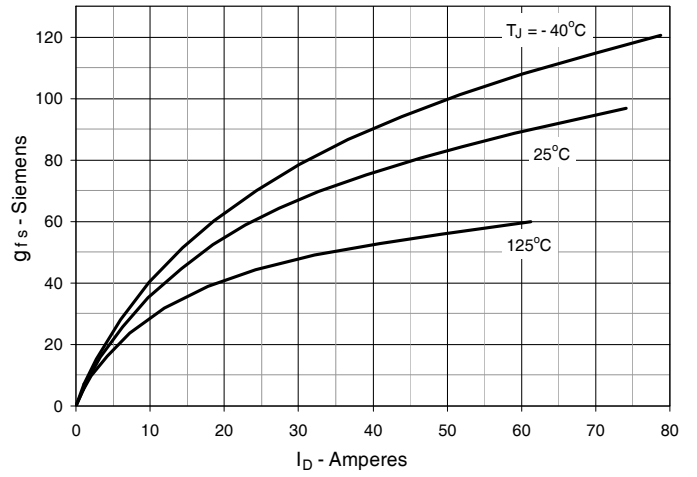


Fig. 9. Forward Voltage Drop of Intrinsic Diode

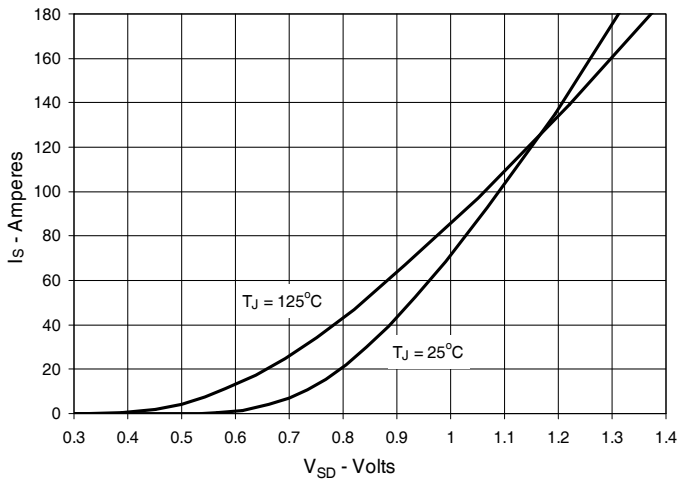


Fig. 10. Gate Charge

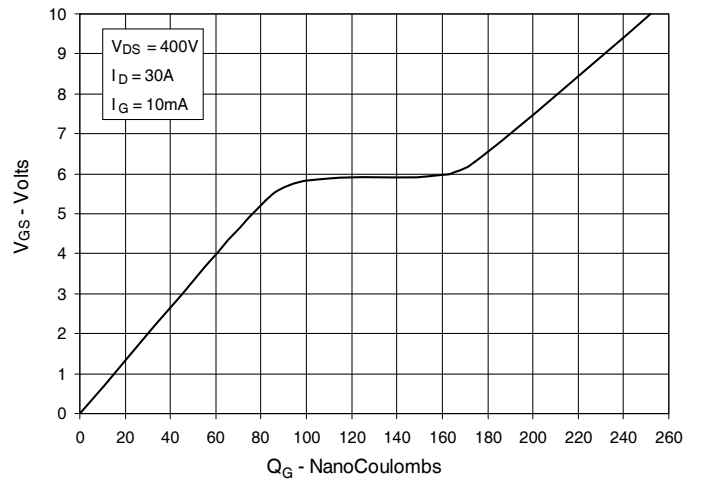


Fig. 11. Capacitance

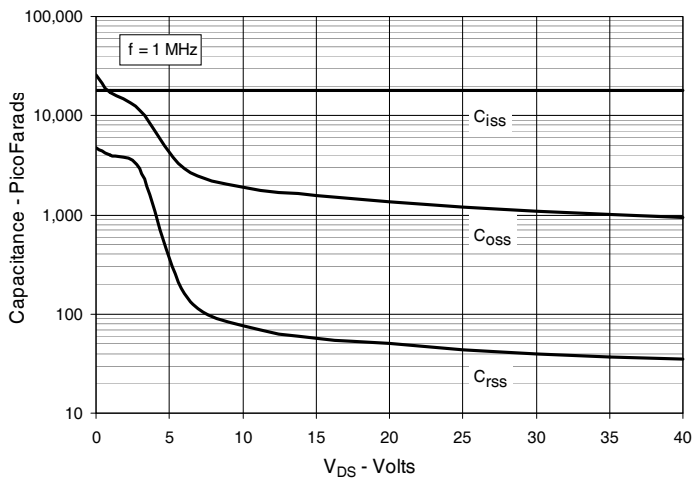
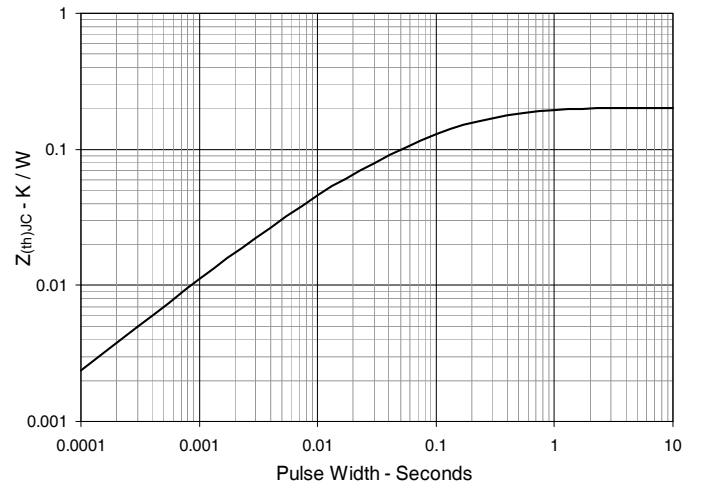


Fig. 12. Maximum Transient Thermal Impedance





Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.