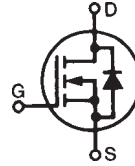


HiPerFET™ Power MOSFETs

IXFK25N90 IXFX25N90
IXFK26N90 IXFX26N90

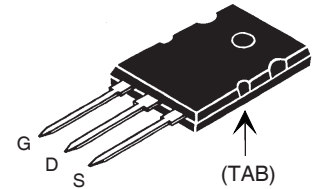
N-Channel Enhancement Mode
 Avalanche Rated
 Fast Intrinsic Diode



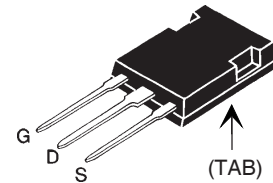
| V_{DSS} | I_{D25} | $R_{DS(on)}$ |
|-----------|-----------|--------------|
| 900V | 25A | 330mΩ |
| 900V | 26A | 300mΩ |

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|--|-------------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 900 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1\text{M}\Omega$ | 900 | V |
| V_{GSS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 25N90 25 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 25N90 100 | A |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 26N90 26 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 26N90 104 | A |
| I_A | $T_C = 25^\circ\text{C}$ | 25N90 25 | A |
| | | 26N90 26 | A |
| E_{AS} | $T_C = 25^\circ\text{C}$ | 3 | J |
| dV/dt | $I_s \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$ | 5 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | 560 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| T_L | 1.6mm (0.062 in.) from case for 10s | 300 | $^\circ\text{C}$ |
| T_{SOLD} | Plastic body for 10s | 260 | $^\circ\text{C}$ |
| M_d | Mounting torque (IXFK) | 1.13/10 | Nm/lb.in. |
| F_c | Mounting force (IXFX) | 20..120 / 4.5..27 | N/lb. |
| Weight | TO-264 | 10 | g |
| | TO-247 | 6 | g |

TO-264



PLUS247



G = Gate D = Drain
 S = Source TAB = Drain

Features

- International standard packages
- Avalanche Rated
- Low package inductance
- Low $R_{DS(ON)}$ HDMOS Process
- Fast intrinsic diode

Advantages

- Easy to mount
- Space savings
- High power density

Applications:

- Switched-mode and resonant-mode power supplies
- DC-DC Converters
- Battery chargers
- DC choppers
- AC motor drives
- Temperature & lighting controls

| Symbol | Test Conditions | Characteristic Values | | |
|--------------|--|---|------|---------------------------|
| | | $(T_J = 25^\circ\text{C}$ unless otherwise specified) | | |
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0\text{V}$, $I_D = 3\text{mA}$ | 900 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 8\text{mA}$ | 3.0 | | 5.0 V |
| I_{GSS} | $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$ | | | ± 200 nA |
| I_{DSS} | $V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0\text{V}$ $T_J = 125^\circ\text{C}$ | | | 100 μA 2 mA |
| $R_{DS(on)}$ | $V_{GS} = 10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1 | 25N90 26N90 | | 330 mΩ 300 mΩ |

| Symbol | Test Conditions | Characteristic Values | | | |
|--------------|---|-----------------------|------|------|---------------|
| | | Min. | Typ. | Max. | |
| g_{fs} | $V_{DS} = 10V, I_D = 0.5 \cdot I_{D25}$, Note 1 | 18 | 28 | | S |
| C_{iss} | $V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$ | | 8.7 | 10.8 | nF |
| C_{oss} | | | 800 | 1000 | pF |
| C_{rss} | | | 300 | 375 | pF |
| $t_{d(on)}$ | Resistive Switching Times | | 60 | | ns |
| t_r | $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ | | 35 | | ns |
| $t_{d(off)}$ | $R_G = 1\Omega$ (External) | | 130 | | ns |
| t_f | | | 24 | | ns |
| $Q_{g(on)}$ | $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ | | 260 | | nC |
| Q_{gs} | | | 70 | | nC |
| Q_{gd} | | | 100 | | nC |
| R_{thJC} | | | | 0.22 | $^{\circ}C/W$ |
| R_{thCS} | | | 0.15 | | $^{\circ}C/W$ |

Source-Drain Diode

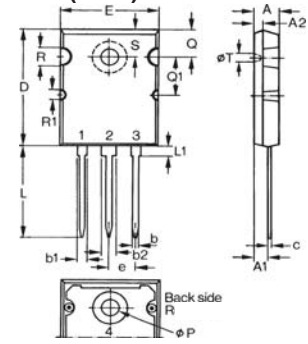
| Symbol | Test Conditions | Characteristic Values | | | |
|----------|---|-----------------------|------|------|---------|
| | | Min. | Typ. | Max. | |
| I_S | $V_{GS} = 0V$ | 25N90 | | 25 | A |
| I_{SM} | Repetitive, pulse width limited by T_{JM} | 25N90 | | 100 | A |
| I_S | $V_{GS} = 0V$ | 26N90 | | 26 | A |
| I_{SM} | Repetitive, pulse width limited by T_{JM} | 26N90 | | 104 | A |
| V_{SD} | $I_F = I_S, V_{GS} = 0V$, Note 1 | | | 1.5 | V |
| t_{rr} | $I_F = I_S, -di/dt = 100A/\mu s$ $V_R = 100V, V_{GS} = 0V$ | | | 250 | ns |
| Q_{RM} | | | 1.4 | | μC |
| I_{RM} | | | 10 | | A |

Note 1: Pulse test, $t \leq 300\mu s$; duty cycle, $d \leq 2\%$.

IXYS reserves the right to change limits, test conditions, and dimensions.

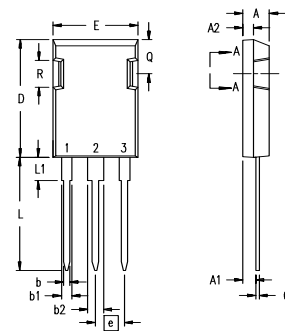
IXYS MOSFETs and IGBTs are covered 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2
by one or more of the following U.S. patents: 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2
4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

TO-264 (IXFK) Outline



| Dim. | Millimeter | | Inches | |
|------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.82 | 5.13 | .190 | .202 |
| A1 | 2.54 | 2.89 | .100 | .114 |
| A2 | 2.00 | 2.10 | .079 | .083 |
| b | 1.12 | 1.42 | .044 | .056 |
| b1 | 2.39 | 2.69 | .094 | .106 |
| b2 | 2.90 | 3.09 | .114 | .122 |
| c | 0.53 | 0.83 | .021 | .033 |
| D | 25.91 | 26.16 | 1.020 | 1.030 |
| E | 19.81 | 19.96 | .780 | .786 |
| e | 5.46 BSC | | .215 BSC | |
| J | 0.00 | 0.25 | .000 | .010 |
| K | 0.00 | 0.25 | .000 | .010 |
| L | 20.32 | 20.83 | .800 | .820 |
| L1 | 2.29 | 2.59 | .090 | .102 |
| P | 3.17 | 3.66 | .125 | .144 |
| Q | 6.07 | 6.27 | .239 | .247 |
| Q1 | 8.38 | 8.69 | .330 | .342 |
| R | 3.81 | 4.32 | .150 | .170 |
| R1 | 1.78 | 2.29 | .070 | .090 |
| S | 6.04 | 6.30 | .238 | .248 |
| T | 1.57 | 1.83 | .062 | .072 |

PLUS 247™ (IXFX) Outline



Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)

| Dim. | Millimeter | | Inches | |
|------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.83 | 5.21 | .190 | .205 |
| A1 | 2.29 | 2.54 | .090 | .100 |
| A2 | 1.91 | 2.16 | .075 | .085 |
| b | 1.14 | 1.40 | .045 | .055 |
| b1 | 1.91 | 2.13 | .075 | .084 |
| b2 | 2.92 | 3.12 | .115 | .123 |
| C | 0.61 | 0.80 | .024 | .031 |
| D | 20.80 | 21.34 | .819 | .840 |
| E | 15.75 | 16.13 | .620 | .635 |
| e | 5.45 BSC | | .215 BSC | |
| L | 19.81 | 20.32 | .780 | .800 |
| L1 | 3.81 | 4.32 | .150 | .170 |
| Q | 5.59 | 6.20 | .220 | 0.244 |
| R | 4.32 | 4.83 | .170 | .190 |

Figure 1. Output Characteristics at 25°C

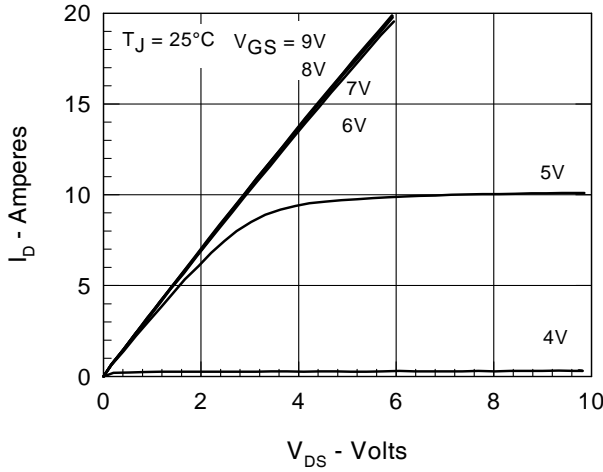


Figure 2. Extended Output Characteristics at 125°C

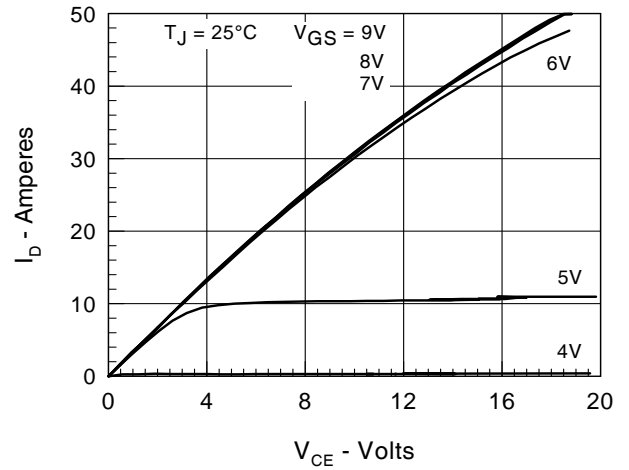


Figure 3. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D

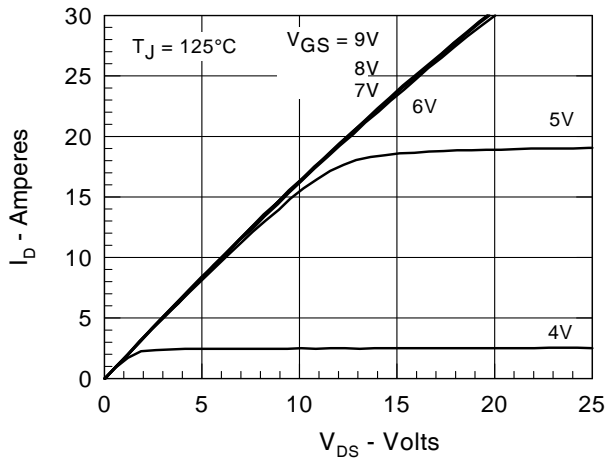


Figure 4. Admittance Curves

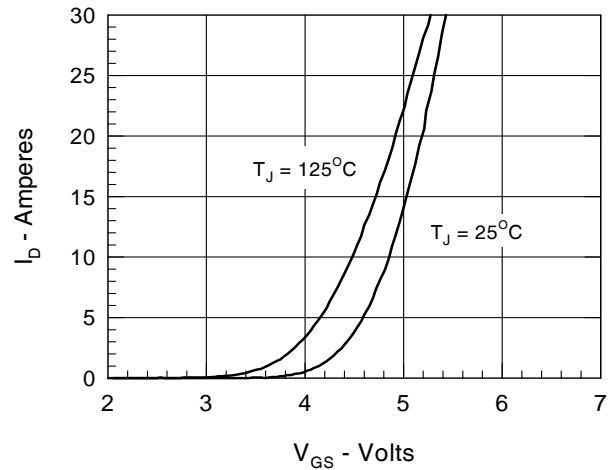


Figure 5. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D

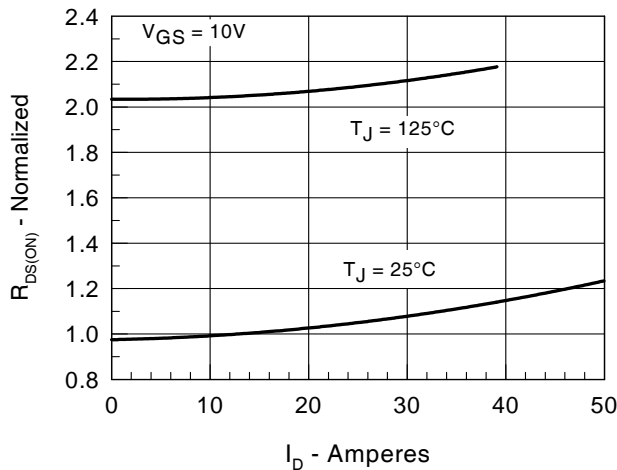


Fig. 6. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

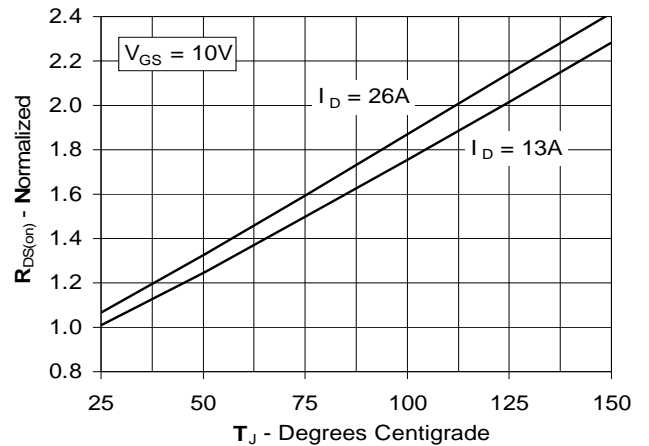


Figure 7. Gate Charge

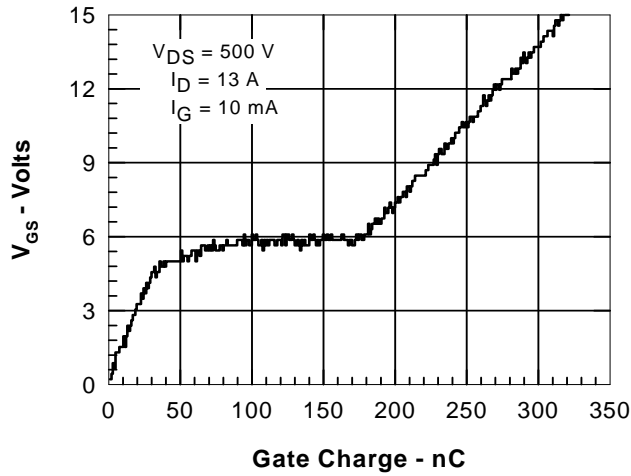


Figure 8. Capacitance Curves

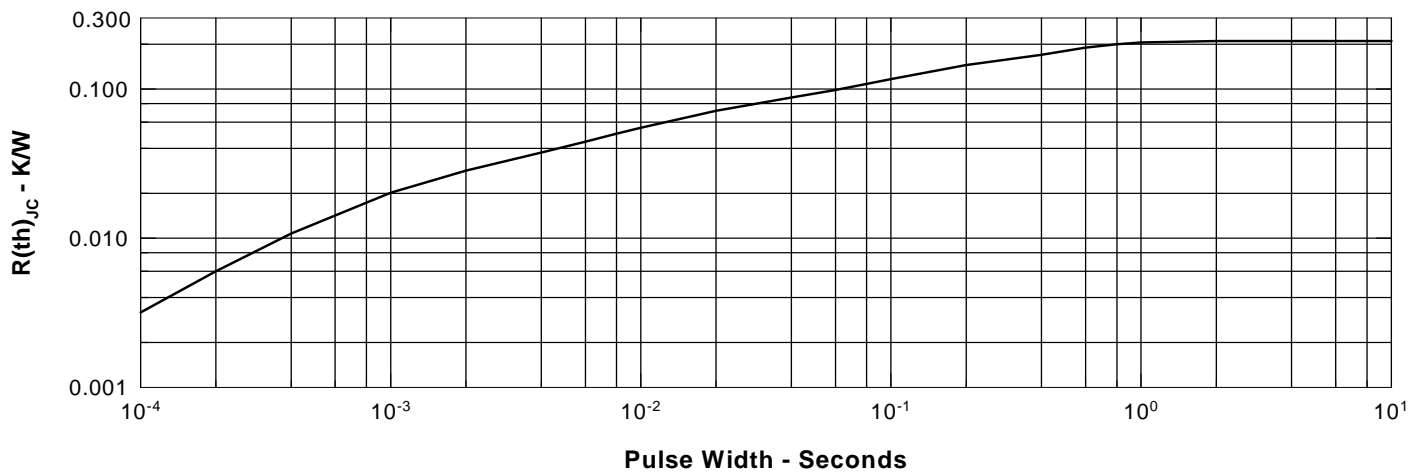
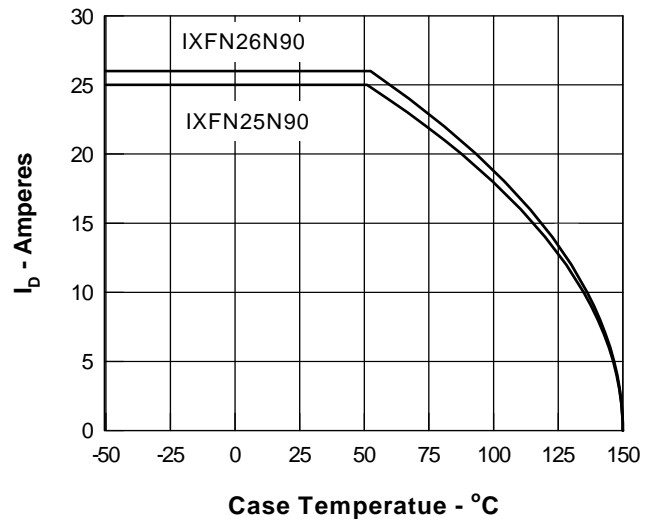
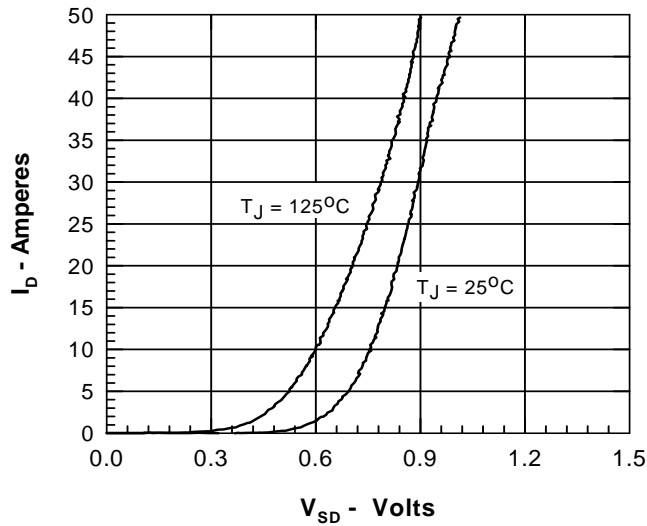
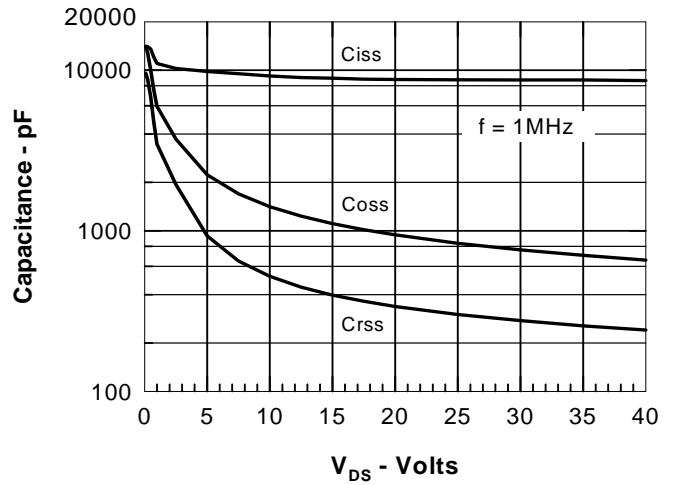


Figure 11. Transient Thermal Resistance

IXYS reserves the right to change limits, test conditions, and dimensions.