

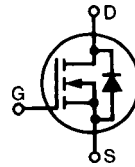
HiPerFET™ Power MOSFETs

N-Channel Enhancement Mode
High dv/dt, Low t_{rr} , HDMOS™ Family

IXFH 76 N06-11
IXFH 76 N06-12
IXFH 76 N07-11
IXFH 76 N07-12

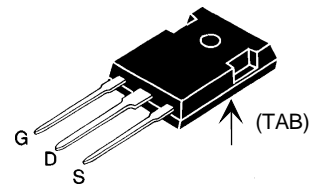
| V_{DSS} | I_{D25} | $R_{DS(on)}$ |
|-------------|-------------|--------------|
| 60 V | 76 A | 11 mΩ |
| 60 V | 76 A | 12 mΩ |
| 70 V | 76 A | 11 mΩ |
| 70 V | 76 A | 12 mΩ |

Preliminary data sheet



| Symbol | Test Conditions | Maximum Ratings | | |
|------------|---|-----------------|--------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 175°C | N06 | 60 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 10\text{ k}\Omega$ | N06 | 60 | V |
| | | N07 | 70 | V |
| V_{GS} | Continuous | | ± 20 | V |
| V_{GSM} | Transient | | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ (Chip capability = 125 A) | | 76 | A |
| I_{D119} | $T_C = 119^\circ\text{C}$, limited by external leads | | 76 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | | 304 | A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | | 100 | A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | | 30 | mJ |
| E_{AS} | | | 2 | J |
| dv/dt | $I_S \leq I_{DM}$, $di/dt \leq 100\text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2\ \Omega$ | | 5 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | | 360 | W |
| T_J | | | -55 ... +175 | $^\circ\text{C}$ |
| T_{JM} | | | 175 | $^\circ\text{C}$ |
| T_{stg} | | | -55 ... +150 | $^\circ\text{C}$ |
| T_L | 1.6 mm (0.062 in.) from case for 10 s | | 300 | $^\circ\text{C}$ |
| M_d | Mounting torque | | 1.15/10 | Nm/lb.in. |
| Weight | | | 6 | g |

TO-247 AD



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

Features

- International standard package JEDEC TO-247 AD
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance - easy to drive and to protect
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

Advantages

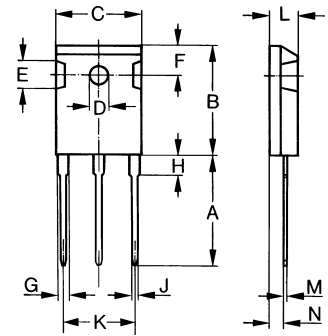
- Easy to mount with 1 screw (isolated mounting screw hole)
- Space savings
- High power density

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|---|---|------|---------------------|
| | | min. | typ. | max. |
| V_{DSS} | $V_{GS} = 0\text{ V}$, $I_D = 250\ \mu\text{A}$ | N06 | 60 | V |
| | | N07 | 70 | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 4\text{ mA}$ | | 2.0 | 3.4 V |
| I_{GSS} | $V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$ | | | $\pm 100\text{ nA}$ |
| I_{DSS} | $V_{DS} = 0.8 \cdot V_{DSS}$, $V_{GS} = 0\text{ V}$ | $T_J = 25^\circ\text{C}$ | | 100 μA |
| | | $T_J = 125^\circ\text{C}$ | | 500 μA |
| $R_{DS(on)}$ | $V_{GS} = 10\text{ V}$, $I_D = 40\text{ A}$ | 76N06/N07-11 | | 11 mΩ |
| | | 76N06/N07-12 | | 12 mΩ |
| | Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$ | | | |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|---|---|------|------|
| | | min. | typ. | max. |
| g_{fs} | $V_{DS} = 10\text{ V}; I_D = 40\text{ A}$, pulse test | 30 | 40 | S |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | 4400 | pF |
| C_{oss} | | | 2000 | pF |
| C_{rss} | | | 1200 | pF |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 50\text{ V}, I_D = 30\text{ A}$ $R_G = 1\ \Omega$ (External) | | 40 | ns |
| t_r | | | 70 | ns |
| $t_{d(off)}$ | | | 130 | ns |
| t_f | | | 55 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 40\text{ A}$ | | 240 | nC |
| Q_{gs} | | | 30 | nC |
| Q_{gd} | | | 120 | nC |
| R_{thJC} | | | 0.42 | K/W |
| R_{thCK} | | 0.25 | | K/W |

Source-Drain Diode

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|----------|--|---|------|--------------|
| | | min. | typ. | max. |
| I_S | $V_{GS} = 0\text{ V}$ | | | 76 A |
| I_{SM} | Repetitive; pulse width limited by T_{JM} | | | 304 A |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$ | | | 1.5 V |
| t_{rr} | $I_F = 25\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, T_J = 25^\circ\text{C}$ $V_R = 25\text{ V}, T_J = 125^\circ\text{C}$ | | 150 | ns 250 ns |

TO-247 AD (IXFH) Outline


| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.80 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.610 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| F | 5.4 | 6.2 | 0.212 | 0.244 |
| G | 1.65 | 2.13 | 0.065 | 0.084 |
| H | - | 4.5 | - | 0.177 |
| J | 1.0 | 1.4 | 0.040 | 0.055 |
| K | 10.8 | 11.0 | 0.426 | 0.433 |
| L | 4.7 | 5.3 | 0.185 | 0.209 |
| M | 0.4 | 0.8 | 0.016 | 0.031 |
| N | 1.5 | 2.49 | 0.087 | 0.102 |

Fig.1 Output Characteristics

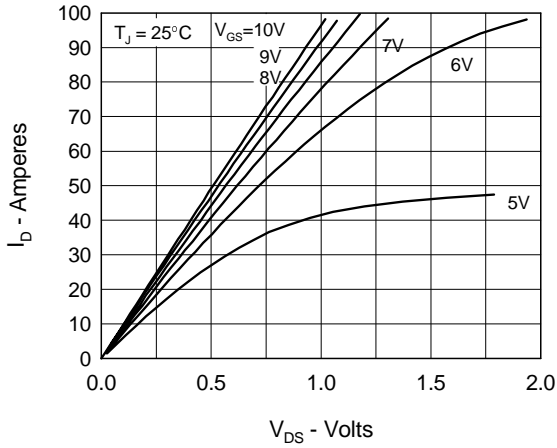


Fig. 2 Input Admittance

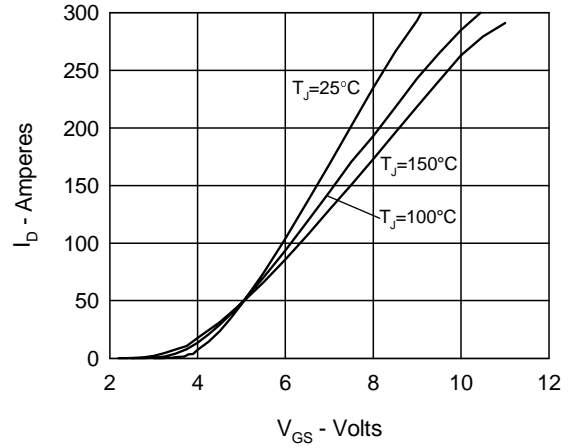


Fig. 3 $R_{DS(on)}$ vs. Drain Current

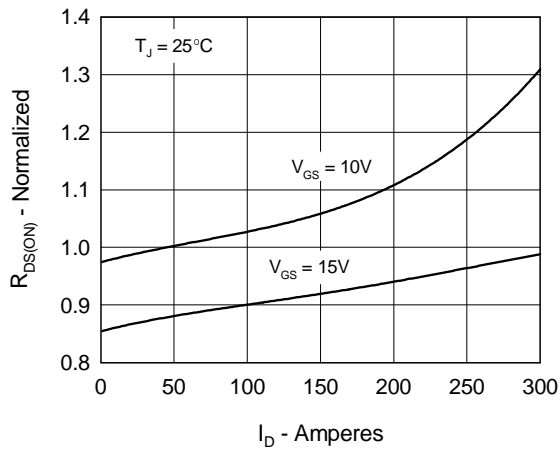


Fig. 4 $R_{DS(on)}$ Temperature Dependence

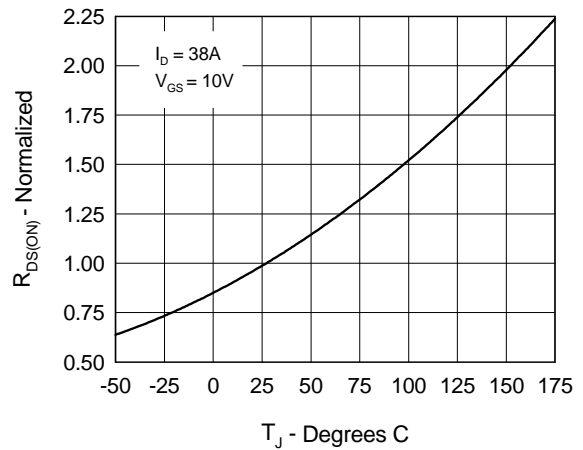


Fig. 5 I_D vs. Case Temperature

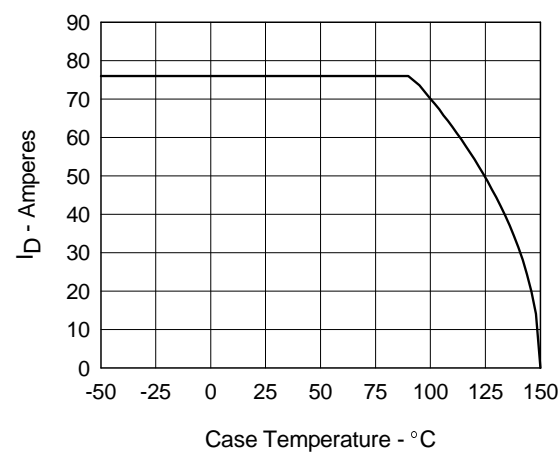


Fig. 6 Transconductance

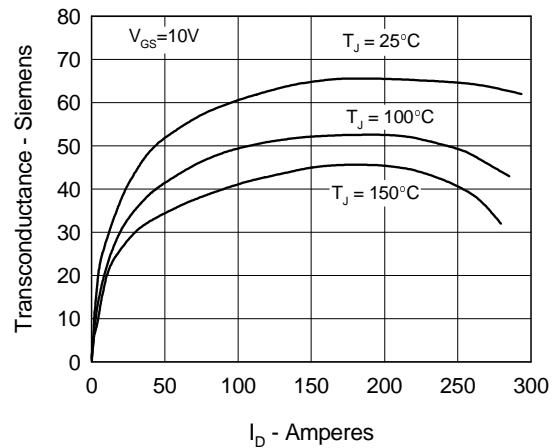


Fig. 7 Gate Charge

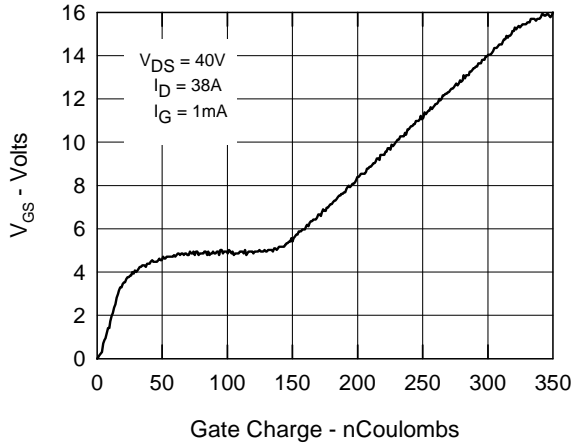


Fig. 8 Forward Bias Safe Operating Area

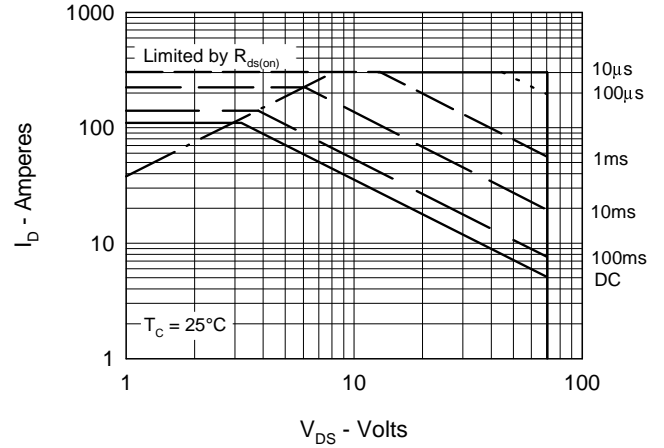


Fig. 9 Capacitance Curves

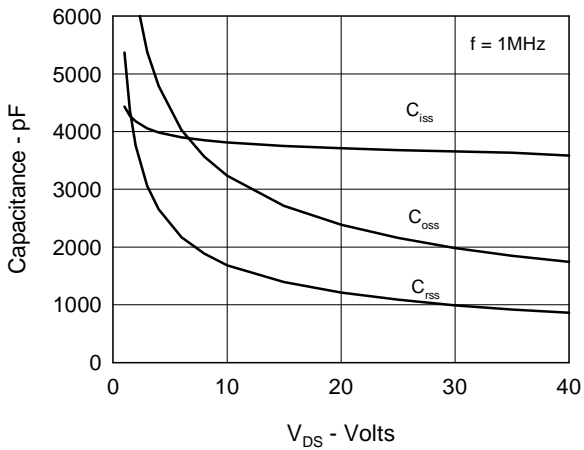


Fig. 10 Source Current vs. Source to Drain Voltage

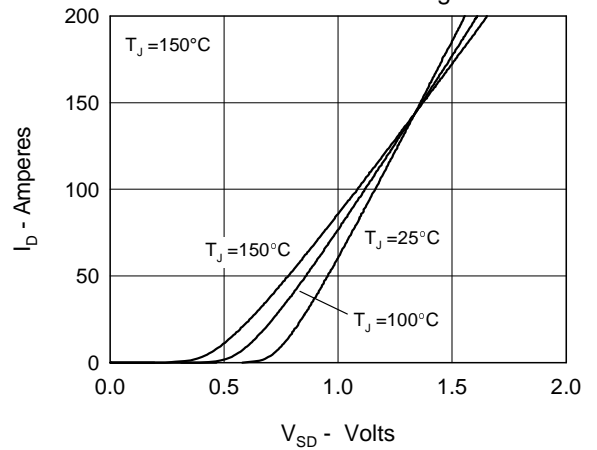


Fig. 11 Transient Thermal Impedance

