

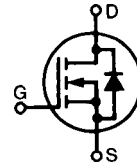
HiPerFET™ Power MOSFETs Q-Class

IXFH 15N80Q
IXFT 15N80Q

V_{DSS} = 800 V
I_{D25} = 15 A
R_{DS(on)} = 0.60 Ω

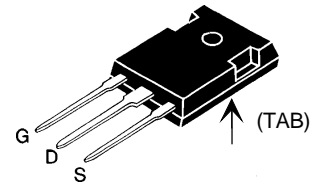
t_{rr} ≤ 250 ns

N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low Q_g

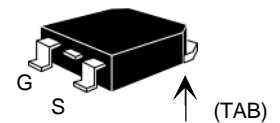


| Symbol | Test Conditions | Maximum Ratings | |
|------------------|--|-----------------|-----------|
| V _{DSS} | T _J = 25°C to 150°C | 800 | V |
| V _{DGR} | T _J = 25°C to 150°C; R _{GS} = 1 MΩ | 800 | V |
| V _{GS} | Continuous | ±20 | V |
| V _{GSM} | Transient | ±30 | V |
| I _{D25} | T _C = 25°C | 15 | A |
| I _{DM} | T _C = 25°C, pulse width limited by T _{JM} | 60 | A |
| I _{AR} | T _C = 25°C | 15 | A |
| E _{AR} | T _C = 25°C | 30 | mJ |
| E _{AS} | T _C = 25°C | 1.0 | J |
| dv/dt | I _S ≤ I _{DM1} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 2 Ω | 5 | V/ns |
| P _D | T _C = 25°C | 300 | W |
| T _J | | -55 ... +150 | °C |
| T _{JM} | | 150 | °C |
| T _{stg} | | -55 ... +150 | °C |
| T _L | 1.6 mm (0.062 in.) from case for 10 s | 300 | °C |
| M _d | Mounting torque | 1.13/10 | Nm/lb.in. |
| Weight | TO-247 | 6 | g |
| | TO-268 | 4 | g |

TO-247 AD (IXFH)



TO-268 (D3) (IXFT) Case Style



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

Features

- IXYS advanced low Q_g process
- International standard packages
- Low R_{DS(on)}
- Unclamped Inductive Switching (UIS) rated
- Fast switching
- Molding epoxies meet UL 94 V-0 flammability classification

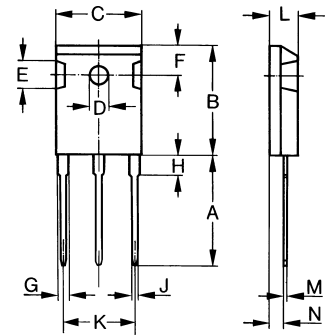
Advantages

- Easy to mount
- Space savings
- High power density

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------|---|------------------------|------|---------|
| | | Min. | Typ. | Max. |
| V _{DSS} | V _{GS} = 0 V, I _D = 3 mA | 800 | | V |
| V _{GS(th)} | V _{DS} = V _{GS} , I _D = 4 mA | 2.0 | | 4.5 V |
| I _{GSS} | V _{GS} = ±20 V _{DC} , V _{DS} = 0 | | | ±100 nA |
| I _{DSS} | V _{DS} = V _{DSS} V _{GS} = 0 V | T _J = 25°C | | 25 μA |
| | | T _J = 125°C | | 1 mA |
| R _{DS(on)} | V _{GS} = 10 V, I _D = 0.5 I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 % | | | 0.60 Ω |

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------------|---|---|------|------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | Min. | Typ. | Max. |
| g_{fs} | V _{DS} = 10 V; I _D = 0.5 I _{D25} pulse test | 8 | 16 | S |
| C_{iss} | V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz | | 4300 | pF |
| C_{oss} | | | 360 | pF |
| C_{rss} | | | 60 | pF |
| t_{d(on)} | V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} R _G = 1.5 Ω (External) | | 18 | ns |
| t_r | | | 27 | ns |
| t_{d(off)} | | | 53 | ns |
| t_f | | | 16 | ns |
| Q_{g(on)} | V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} | | 90 | nC |
| Q_{gs} | | | 20 | nC |
| Q_{gd} | | | 30 | nC |
| R_{thJC} | (TO-247) | | 0.42 | K/W |
| R_{thCK} | | | 0.25 | K/W |

TO-247 AD (IXFH) Outline



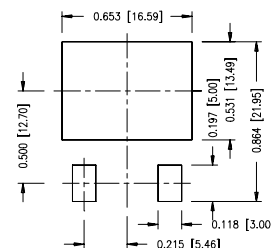
| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.80 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.610 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| 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 |

| Symbol | Test Conditions | Characteristic Values | | |
|-----------------------|--|---|------|--------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | min. | typ. | max. |
| I_S | V _{GS} = 0 V | | | 15 A |
| I_{SM} | Repetitive; | | | 60 A |
| V_{SD} | I _F = I _S , V _{GS} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 % | | | 1.5 V |
| t_{rr} | I _F = I _S -di/dt = 100 A/μs, V _R = 100 V | | 0.85 | 250 ns |
| Q_{RM} | | | | μC |
| I_{RM} | | | 8 | A |

TO-268AA (D³ PAK)

| Dim. | Millimeter | | Inches | |
|----------------|------------|-------|----------|------|
| | Min. | Max. | Min. | Max. |
| A | 4.9 | 5.1 | .193 | .201 |
| A ₁ | 2.7 | 2.9 | .106 | .114 |
| A ₂ | .02 | .25 | .001 | .010 |
| b | 1.15 | 1.45 | .045 | .057 |
| b ₂ | 1.9 | 2.1 | .75 | .83 |
| C | .4 | .65 | .016 | .026 |
| D | 13.80 | 14.00 | .543 | .551 |
| E | 15.85 | 16.05 | .624 | .632 |
| E ₁ | 13.3 | 13.6 | .524 | .535 |
| e | 5.45 BSC | | .215 BSC | |
| H | 18.70 | 19.10 | .736 | .752 |
| L | 2.40 | 2.70 | .094 | .106 |
| L ₁ | 1.20 | 1.40 | .047 | .055 |
| L ₂ | 1.00 | 1.15 | .039 | .045 |
| L ₃ | 0.25 BSC | | .010 BSC | |
| L ₄ | 3.80 | 4.10 | .150 | .161 |

Min. Recommended Footprint



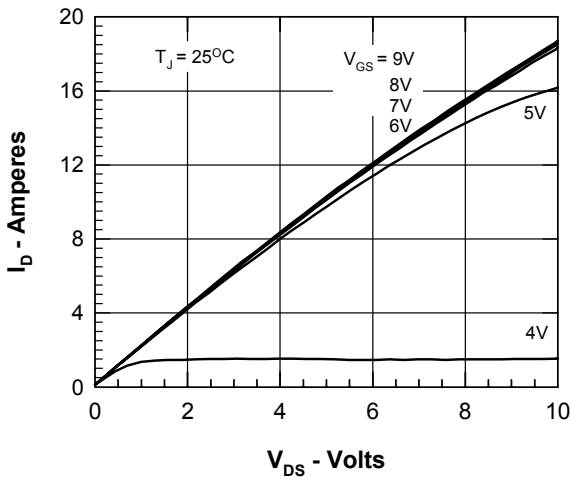


Figure 1. Output Characteristics at 25°C

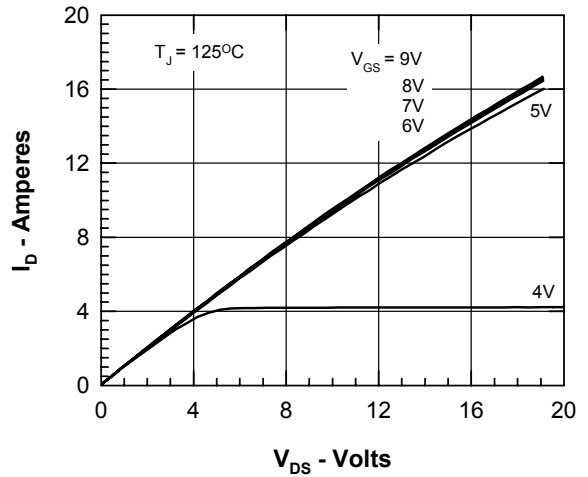


Figure 2. Output Characteristics at 125°C

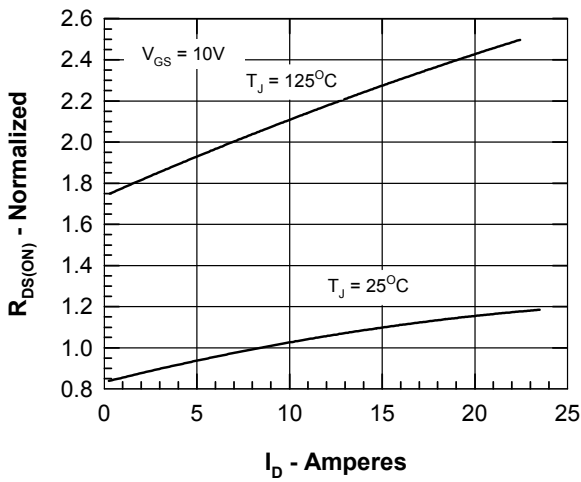


Figure 3. $R_{DS(on)}$ normalized to value at $I_D = 12A$

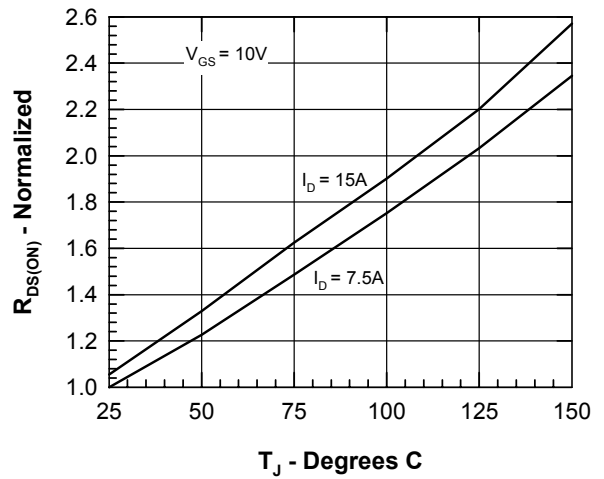


Figure 4. $R_{DS(on)}$ normalized to value at $I_D = 12A$

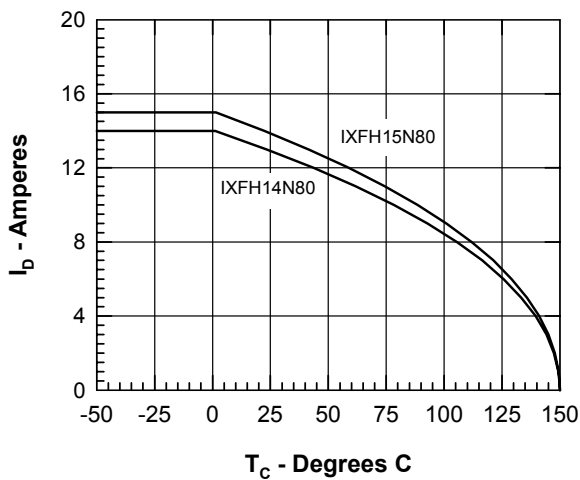


Figure 5. Drain Current vs. Case Temperature

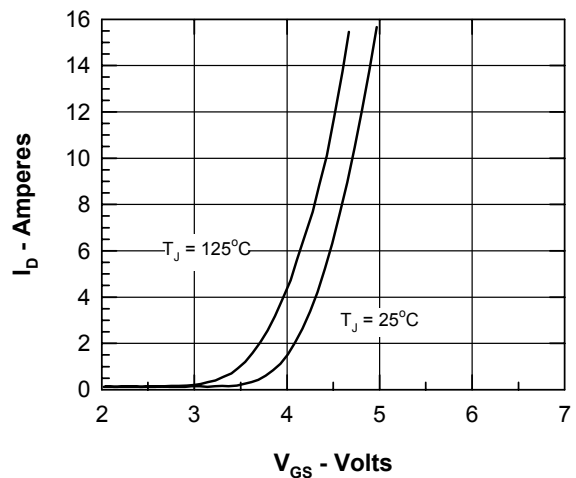


Figure 6. Admittance Curves

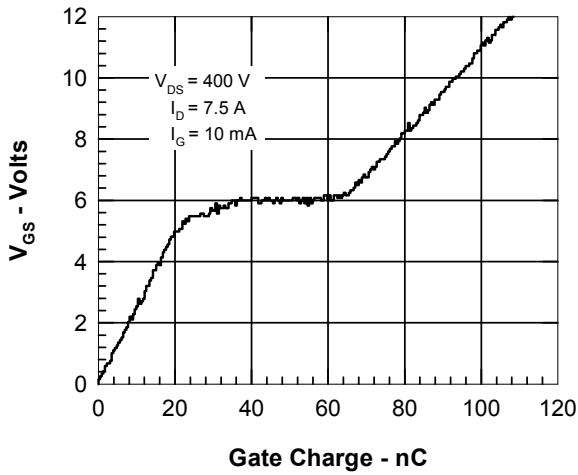


Figure 7. Gate Charge

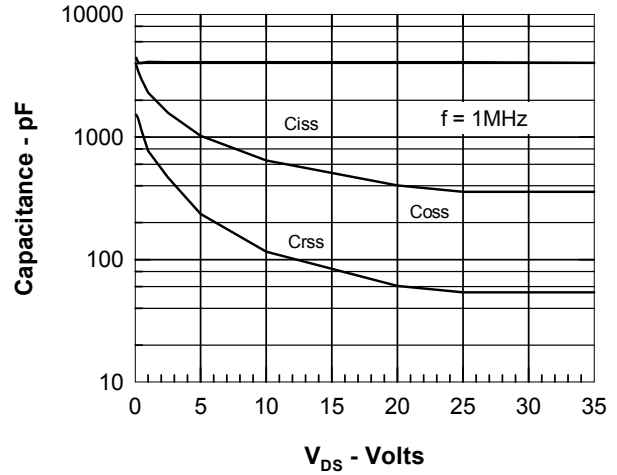


Figure 8. Capacitance Curves

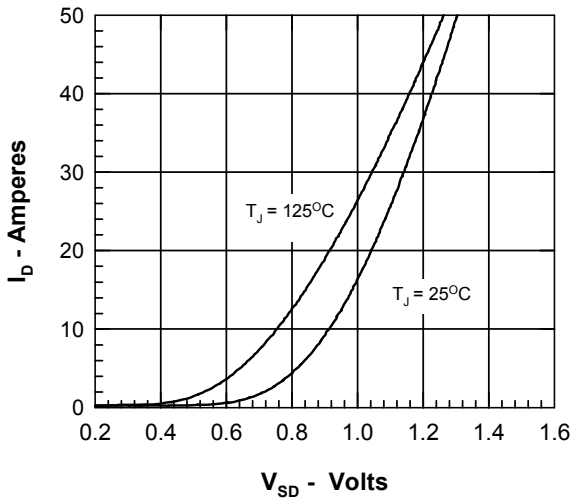


Figure 9. Source Current vs. Source to Drain Voltage

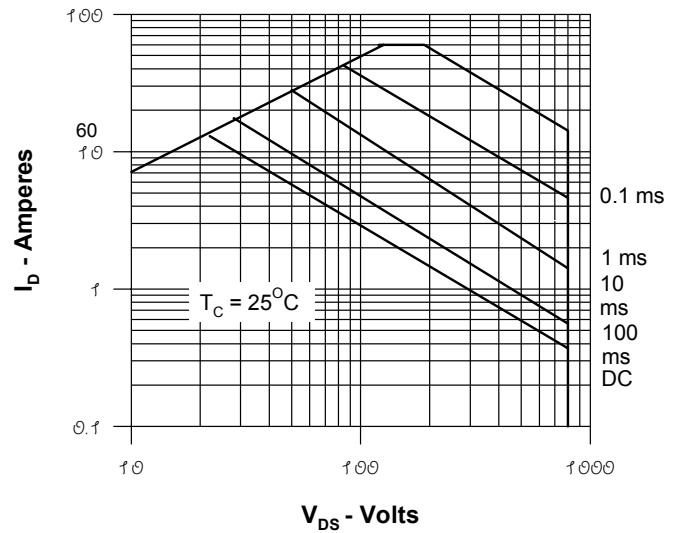


Figure 10. Forward Bias Safe Operating Area

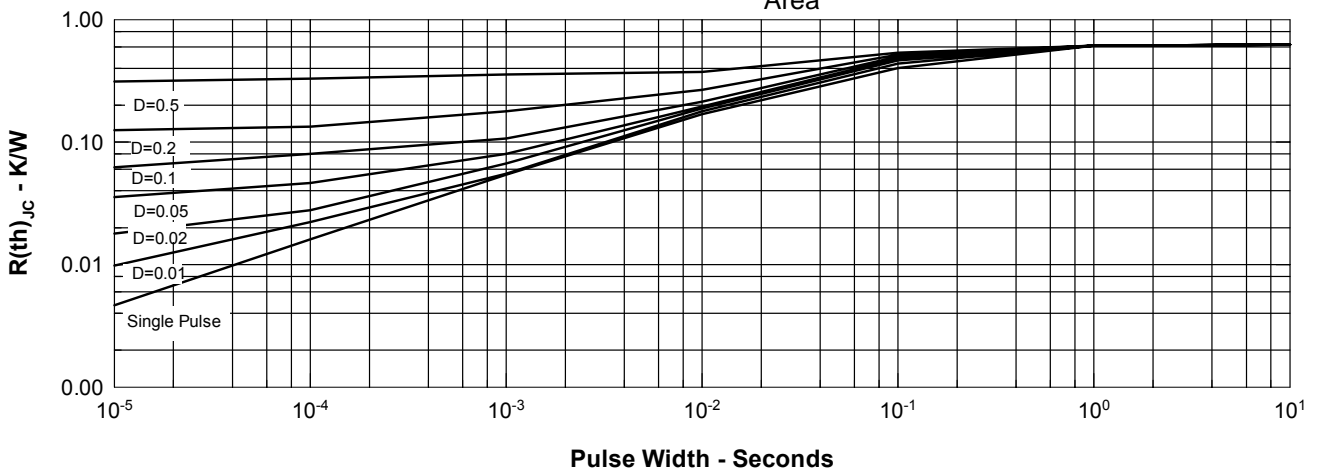


Figure 11. Transient Thermal Resistance