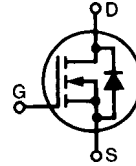


HiPerFET™ Power MOSFETs IXFR 80N15Q

ISOPLUS247™

(Electrically Isolated Backside)

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



| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|-----------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 150 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$ | 150 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 75 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, Note 1 | 320 | A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | 80 | A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 45 | mJ |
| E_{AS} | $T_C = 25^\circ\text{C}$ | 1.5 | 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 | $T_C = 25^\circ\text{C}$ | 310 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| T_L | 1.6 mm (0.063 in.) from case for 10 s | 300 | $^\circ\text{C}$ |
| V_{ISOL} | 50/60 Hz, RMS $t = 1\text{ min}$ | 2500 | V~ |
| Weight | | 5 | g |

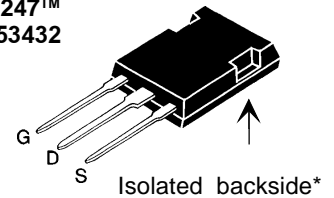
$$V_{DSS} = 150\text{ V}$$

$$I_{D25} = 75\text{ A}$$

$$R_{DS(on)} = 22.5\text{ m}\Omega$$

$$t_{rr} \leq 200\text{ ns}$$

ISOPLUS247™
E153432



G = Gate D = Drain
S = Source

* Patent pending

Features

- Silicon chip on Direct-Copper-Bond substrate
 - High power dissipation
 - Isolated mounting surface
 - 2500V electrical isolation
- Low drain to tab capacitance (<30pF)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Rated for Unclamped Inductive Load Switching (UIS)
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages

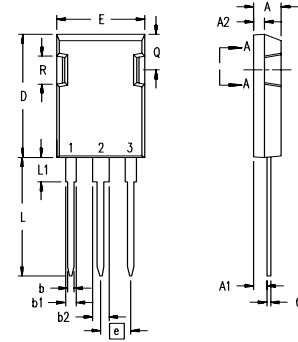
- Easy assembly
- Space savings
- High power density

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|--|---|------|--------------------------|
| | | min. | typ. | max. |
| V_{DSS} | $V_{GS} = 0\text{ V}$, $I_D = 250\ \mu\text{A}$ | 150 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 4\text{ mA}$ | 2.0 | | 4.0 V |
| I_{GSS} | $V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$ | | | $\pm 100\text{ nA}$ |
| I_{DSS} | $V_{DS} = V_{DSS}$ $V_{GS} = 0\text{ V}$ | | | 25 μA 1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10\text{ V}$, $I_D = I_T$ Notes 2, 3 | | | 22.5 m Ω |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | Characteristic Values | | |
|--------------|---|---|-----------------------|------|------|
| | | | min. | typ. | max. |
| g_{fs} | $V_{DS} = 10\text{ V}; I_D = I_T$ | Notes 2, 3 | 35 | 50 | S |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | | 4600 | pF |
| C_{oss} | | | | 1400 | pF |
| C_{rss} | | | | 680 | pF |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ $R_G = 2\ \Omega$ (External), Notes 2, 3 | | | 30 | ns |
| t_r | | | | 55 | ns |
| $t_{d(off)}$ | | | | 68 | ns |
| t_f | | | | 20 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ Notes 2, 3 | | | 180 | nC |
| Q_{gs} | | | | 39 | nC |
| Q_{gd} | | | | 85 | nC |
| R_{thJC} | | | | 0.40 | K/W |
| R_{thCK} | | | | 0.15 | K/W |

| Source-Drain Diode | | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | | |
|--------------------|--|---|------|--------|---------------|
| Symbol | Test Conditions | min. | typ. | max. | |
| I_S | $V_{GS} = 0\text{ V}$ | | | 80 A | |
| I_{SM} | Repetitive; Note 1 | | | 320 A | |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{ V}$, Notes 2, 3 | | | 1.5 V | |
| t_{rr} | $I_F = 50\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$ | | | 200 ns | |
| Q_{RM} | | | | 1.2 | μC |
| I_{RM} | | | | 10 | A |

- Note: 1. Pulse width limited by T_{JM}
 2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
 3. $I_T = 40\text{ A}$

ISOPLUS 247™ Outline


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

| Dim. | Millimeter | | Inches | |
|----------------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.83 | 5.21 | .190 | .205 |
| A ₁ | 2.29 | 2.54 | .090 | .100 |
| A ₂ | 1.91 | 2.16 | .075 | .085 |
| b | 1.14 | 1.40 | .045 | .055 |
| b ₁ | 1.91 | 2.13 | .075 | .084 |
| b ₂ | 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 |