

HiPerFET™ Power MOSFETs

ISOPLUS247™

IXFR 26N50
IXFR 24N50

| V_{DSS} | I_{D25} | $R_{DS(on)}$ |
|-----------|-----------|---------------|
| 500 V | 24 A | 0.20 Ω |
| 500 V | 22 A | 0.23 Ω |

(Electrically Isolated Back Surface)

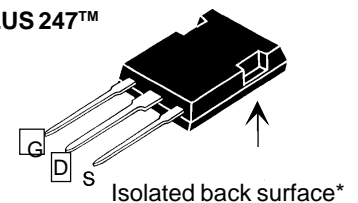
N-Channel Enhancement Mode
High dV/dt , Low t_{rr} , HDMOS™ Family



$t_{rr} \leq 250$ ns

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|--|-----------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 500 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω | 500 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 26N50 | 26 A |
| | | 24N50 | 24 A |
| I_{DM} | $T_C = 25^\circ\text{C}$, Pulse width limited by T_{JM} | 26N50 | 104 A |
| | | 24N50 | 96 A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | 26N50 | 26 A |
| | | 24N50 | 24 A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 30 | mJ |
| dv/dt | $I_S \leq I_{DM}$, $di/dt \leq 100$ A/ μs , $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω | 5 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | 250 | 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 (0.062 in.) from case for 10 s | 300 | $^\circ\text{C}$ |
| V_{ISOL} | 50/60 Hz, RMS $t = 1$ minute leads-to-tab | 2500 | V~ |
| Weight | | 6 | g |

ISOPLUS 247™



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 (<50pF)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- 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

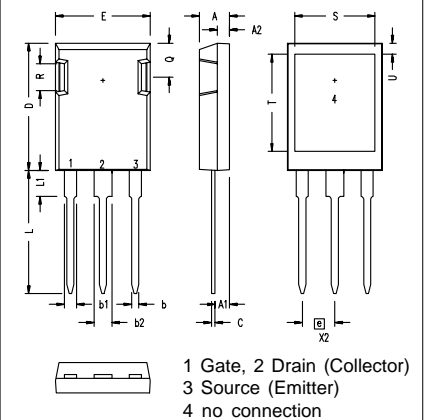
| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|--|---|------|-------------------|
| | | min. | typ. | max. |
| V_{DSS} | $V_{GS} = 0$ V, $I_D = 250$ μA | 500 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 4$ mA | 2 | | V |
| I_{GSS} | $V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$ | | | ± 100 nA |
| I_{DSS} | $V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V | $T_J = 25^\circ\text{C}$ | | 200 μA |
| | | $T_J = 125^\circ\text{C}$ | | 1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10$ V, $I_D = I_T$ Notes 1 & 2 | 26N50 | | 0.20 Ω |
| | | 24N50 | | 0.23 Ω |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | | |
|--------------|--|---|------|------|----|
| | | min. | typ. | max. | |
| g_{fs} | $V_{DS} = 15\text{ V}; I_D = I_T$ Note 1 | 11 | 21 | S | |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | 4200 | pF | |
| C_{oss} | | | 450 | pF | |
| C_{rss} | | | 135 | pF | |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ $R_G = 1\ \Omega$ (External), | | 16 | 25 | ns |
| t_r | | | 33 | 45 | ns |
| $t_{d(off)}$ | | | 65 | 80 | ns |
| t_f | | | 30 | 40 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ | | 135 | 160 | nC |
| Q_{gs} | | | 28 | 40 | nC |
| Q_{gd} | | | 62 | 85 | nC |
| R_{thJC} | | | 0.50 | 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 | Characteristic Values | | |
|----------|--|---------------------------|------|-------------------|
| | | min. | typ. | max. |
| I_S | $V_{GS} = 0\text{ V}$ | | | 26 A |
| I_{SM} | Repetitive; pulse width limited by T_{JM} | | | 104 A |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{ V}$, Note 1 | | | 1.5 V |
| t_{rr} | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$ | $T_J = 25^\circ\text{C}$ | | 250 ns |
| Q_{RM} | | $T_J = 125^\circ\text{C}$ | | 400 ns |
| | | $T_J = 25^\circ\text{C}$ | 1 | 1.5 μC |
| I_{RM} | | $T_J = 125^\circ\text{C}$ | 2 | μC |
| | $T_J = 25^\circ\text{C}$ | 10 | A | |
| | $T_J = 125^\circ\text{C}$ | 15 | A | |

- Note: 1. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
2. I_T test current: IXFR26N50 $I_T = 13\text{ A}$
IXFR24N50 $I_T = 12\text{ A}$
3. See IXFR26N50 data sheet for characteristic curves.

ISOPLUS 247 (IXFR) OUTLINE


| 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 | .244 |
| R | 4.32 | 4.83 | .170 | .190 |
| S | 13.21 | 13.72 | .520 | .540 |
| T | 15.75 | 16.26 | .620 | .640 |
| U | 1.65 | 3.03 | .065 | .080 |



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.