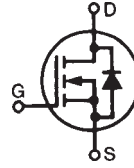


PolarHV™ HiPerFET IXFN 140N30P

Power MOSFET

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

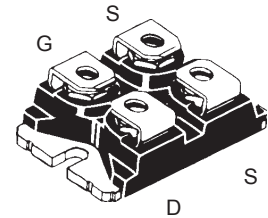


$$\begin{aligned} V_{DSS} &= 300 \text{ V} \\ I_{D25} &= 115 \text{ A} \\ R_{DS(on)} &\leq 24 \text{ m}\Omega \\ t_{rr} &\leq 200 \text{ ns} \end{aligned}$$

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|--|------------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 300 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$ | 300 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 115 | A |
| I_L | Lead Current Limit, RMS | 100 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 300 | A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | 115 | A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 80 | mJ |
| E_{AS} | $T_C = 25^\circ\text{C}$ | 5 | J |
| dv/dt | $I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$ | 20 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | 700 | 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 $I_{ISOL} \leq 1 \text{ mA}$ | $t = 1 \text{ min}$ 2500 $t = 1 \text{ s}$ 3000 | V~ V~ |
| M_d | Mounting torque Terminal connection torque | 1.5 / 13 1.5 / 13 | Nm/lb.in. Nm/lb.in. |
| Weight | | 30 | g |

miniBLOC, SOT-227 B (IXFN)

E153432



G = Gate D = Drain
S = Source

Either Source terminal S can be used as the Source terminal or the Kelvin Source (gate return) terminal.

Features

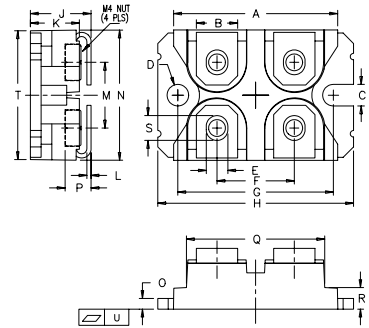
- International standard package
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- † Fast recovery diode
- † Unclamped Inductive Switching (UIS) rated
- † Low package inductance
 - easy to drive and to protect

Advantages

- † Easy to mount
- † Space savings
- † High power density

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|--------------------------|
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$ | 300 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$ | 3.0 | | 5.0 V |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$ | | | $\pm 200 \text{ nA}$ |
| I_{DSS} | $V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$ | | | 25 μA 1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ | 20 | 24 | m Ω |

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------------|---|---|------|-----------|
| | | (T _J = 25° C unless otherwise specified) | | |
| | | Min. | Typ. | Max. |
| g_{fs} | V _{DS} = 20 V; I _D = 0.5 I _{D25} , Note 1 | 50 | 90 | S |
| C_{iss} | V _{GS} = 0 V, V _{DS} = 25 V, f = 500 kHz | | 14 | nF |
| C_{oss} | | | 1800 | pF |
| C_{rss} | | | 135 | pF |
| t_{d(on)} | V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} R _G = 1 Ω (External) | | 30 | ns |
| t_r | | | 30 | ns |
| t_{d(off)} | | | 100 | ns |
| t_f | | | 20 | ns |
| Q_{g(on)} | V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} | | 185 | nC |
| Q_{gs} | | | 72 | nC |
| Q_{gd} | | | 60 | nC |
| R_{thJC} | | | | 0.18 °C/W |
| R_{thCS} | | 0.05 | | °C/W |

SOT-227B Outline


| SYM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.240 | 1.255 | 31.50 | 31.88 |
| B | .307 | .323 | 7.80 | 8.20 |
| C | .161 | .169 | 4.09 | 4.29 |
| D | .161 | .169 | 4.09 | 4.29 |
| E | .161 | .169 | 4.09 | 4.29 |
| F | .587 | .595 | 14.91 | 15.11 |
| G | 1.186 | 1.193 | 30.12 | 30.30 |
| H | 1.496 | 1.505 | 38.00 | 38.23 |
| J | .460 | .481 | 11.68 | 12.22 |
| K | .351 | .378 | 8.92 | 9.60 |
| L | .030 | .033 | 0.76 | 0.84 |
| M | .496 | .506 | 12.60 | 12.85 |
| N | .990 | 1.001 | 25.15 | 25.42 |
| O | .078 | .084 | 1.98 | 2.13 |
| P | .195 | .235 | 4.95 | 5.97 |
| Q | 1.045 | 1.059 | 26.54 | 26.90 |
| R | .155 | .174 | 3.94 | 4.42 |
| S | .186 | .191 | 4.72 | 4.85 |
| T | .968 | .987 | 24.59 | 25.07 |
| U | -.002 | .004 | -0.05 | 0.1 |

| Symbol | Test Conditions | Characteristic Values | | |
|-----------------------|---|---|------|--------|
| | | (T _J = 25° C unless otherwise specified) | | |
| | | Min. | Typ. | Max. |
| I_s | V _{GS} = 0 V | | | 140 A |
| I_{SM} | Repetitive | | | 300 A |
| V_{SD} | I _F = 90 A, V _{GS} = 0 V, | | | 1.3 V |
| t_{rr} | I _F = 25 A, -di/dt = 100 A/μs V _R = 100 V, V _{GS} = 0 V | | | 200 ns |
| Q_{RM} | | | 0.6 | |
| I_{RM} | | | 6 | A |

Notes:

1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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 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