X2-Class Power MOSFET

IXTN102N65X2

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

Symbol | Test Conditions | Characteristic Values
---|---|---
$V_{DSS}$ | $T_J = 25^\circ C$ to $150^\circ C$ | 650 V
$V_{DGR}$ | $T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1 \Omega$ | 650 V
$V_{GSS}$ | Continuous | ± 30 V
$V_{GSM}$ | Transient | ± 40 V
$I_{DSS}$ | $T_C = 25^\circ C$ | 76 A
$I_{DM}$ | $T_C = 25^\circ C$, Pulse Width Limited by $T_{JM}$ | 204 A
$I_A$ | $T_C = 25^\circ C$ | 25 A
$E_{AS}$ | $T_C = 25^\circ C$ | 3 J
$P_D$ | $T_C = 25^\circ C$ | 595 W
$dv/dt$ | $I_s \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$ | 50 V/ns
$T_J$ | $-55 \ldots +150^\circ C$
$T_{JM}$ | 150°C
$T_{SG}$ | $-55 \ldots +150^\circ C$
$V_{ISOL}$ | 50/60 Hz, RMS, $t = 1$ minute | 2500 V~
$I_{GOL}$ | $t = 1$ s | 3000 V~
$M_d$ | Mounting Torque for Base Plate | 1.5/13 Nm/lb.in
Terminal Connection Torque | 1.3/11.5 Nm/lb.in
Weight | 30 g

Symbol | Test Conditions (Unless Otherwise Specified) | Characteristic Values
---|---|---
$BV_{DSS}$ | $V_{GS} = 0$ V, $I_D = 1$ mA | 650 V
$V_{DS(SH)}$ | $V_{DS} = V_{GS}$, $I_D = 250 \mu$A | 3.0 V
$I_{GSS}$ | $V_{GS} = \pm 30$ V, $V_{DS} = 0$ | ± 100 nA
$I_{GSS}$ | $V_{DS} = V_{DSS}$, $V_{GS} = 0$ | $25 \mu$A, $350 \mu$A
$R_{DSS(on)}$ | $V_{GS} = 10$ V, $I_D = 51$ A, Note 1 | 30 mΩ

Features

- International Standard Package
- miniBLOC with Aluminum Nitride Isolation
- Low $Q_g$
- Avalanche Rated
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- DC-DC Converters
- PFC Circuits
- AC and DC Motor Drives
- Robotics and Servo Controls

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### IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,860,072, 5,017,508, 5,063,307, 5,381,025, 6,259,123, 6,534,343, 6,710,455, 6,759,692, 7,005,734, 7,157,338, 7,063,975.

### Source-Drain Diode

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

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**ADVANCE TECHNICAL INFORMATION**

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a “considered reflection” of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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IXYS MOSFETs and IGBTs are covered by the following U.S. patents: 4,835,592, 4,931,844, 5,049,961, 5,237,481, 6,162,665, 6,404,005 B1, 6,683,344, 6,727,585, 7,005,734 B2, 7,157,338.

by one or more of the following U.S. patents: 4,881,106, 5,034,796, 5,187,117, 5,486,715, 6,306,728 B1, 6,583,505, 6,771,478 B2, 7,071,537.
Fig. 1. Output Characteristics @ $T_J = 25^\circ C$

Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ C$

Fig. 3. Output Characteristics @ $T_J = 125^\circ C$

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 51A$ Value vs. Junction Temperature

Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 51A$ Value vs. Drain Current

Fig. 6. Maximum Drain Current vs. Case Temperature
Fig. 13. Forward-Bias Safe Operating Area

- \( V_{DS} \) - Volts
- \( I_{D} \) - Amperes
- \( T_J = 150^\circ C \)
- \( T_C = 25^\circ C \)
- Single Pulse

Fig. 14. Maximum Transient Thermal Impedance

- \( Z(\theta_{JC}) \) - \(^\circ C / W\)
- Pulse Width - Seconds

R_{DS(on)} Limit