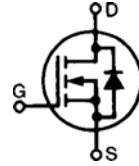


High Current MegaMOS™ FET

IXTK 250N10

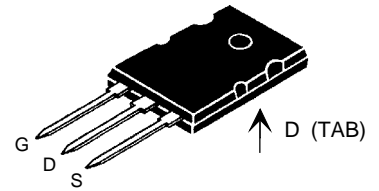
$$\begin{aligned} V_{DSS} &= 100 \text{ V} \\ I_{D25} &= 250 \text{ A} \\ R_{DS(on)} &= 5 \text{ m}\Omega \end{aligned}$$

N-Channel Enhancement Mode



| Symbol | Test conditions | Maximum ratings | |
|---------------|---|-----------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 100 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1.0 \text{ M}\Omega$ | 100 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ MOSFET chip capability | 250 | A |
| $I_{D(RMS)}$ | External lead current limit | 75 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 1000 | A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | 90 | A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 80 | mJ |
| E_{AS} | $T_C = 25^\circ\text{C}$ | 4.0 | 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 | $T_C = 25^\circ\text{C}$ | 730 | 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 | $^\circ\text{C}$ |
| M_d | Mounting torque | 0.7/6 | Nm/lb.in. |
| Weight | TO-264 | 10 | g |

TO-264 AA (IXTK)



G = Gate D = Drain
S = Source Tab = Drain

Features

- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- International standard package
- Fast switching times

Applications

- Motor controls
- DC choppers
- Switched-mode power supplies
- DC-DC Converters
- Linear Regulators

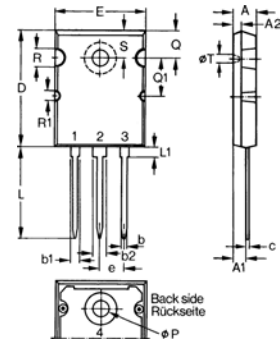
Advantages

- Easy to mount with one screw (isolated mounting screw hole)
- Space savings
- High power density

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|--------------------------|
| | | Min. | Typ. | Max. |
| V_{DSS} | $V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$ | 100 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$ | 2.0 | | V |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V DC}$, $V_{DS} = 0$ | | | $\pm 200 \text{ nA}$ |
| I_{DSS} | $V_{DS} = V_{DSS}$, $T_J = 25^\circ\text{C}$ $V_{GS} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$ | | | 50 μA 1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$, $I_D = 90 \text{ A}$ Pulse test, $t \leq 300 \text{ ms}$, duty cycle $d \leq 2\%$ | | | 5 m Ω |

| Symbol | Test Conditions | Characteristic values | | |
|--------------|---|-----------------------|------|----------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = 10\text{ V}; I_D = 90\text{ A}$, pulse test | 75 | 110 | S |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | 7800 | pF |
| C_{oss} | | | 3200 | pF |
| C_{rss} | | | 1300 | pF |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 90\text{ A}$ $R_G = 1.0\ \Omega$ (External) | | 35 | ns |
| t_r | | | 40 | ns |
| $t_{d(off)}$ | | | 120 | ns |
| t_f | | | 55 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$ | | 390 | nC |
| Q_{gs} | | | 60 | nC |
| Q_{gd} | | | 180 | nC |
| R_{thJC} | | | | 0.17 K/W |
| R_{thCK} | | 0.15 | | K/W |

TO-264 AA Outline



| Dim. | Millimeter | | Inches | |
|------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.82 | 5.13 | .190 | .202 |
| A1 | 2.54 | 2.89 | .100 | .114 |
| A2 | 2.00 | 2.10 | .079 | .083 |
| b | 1.12 | 1.42 | .044 | .066 |
| b1 | 2.39 | 2.69 | .094 | .106 |
| b2 | 2.90 | 3.09 | .114 | .122 |
| c | 0.53 | 0.83 | .021 | .033 |
| D | 25.91 | 26.16 | 1.020 | 1.030 |
| E | 19.81 | 19.96 | .780 | .786 |
| e | 5.46 BSC | | .215 BSC | |
| J | 0.00 | 0.25 | .000 | .010 |
| K | 0.00 | 0.25 | .000 | .010 |
| L | 20.32 | 20.83 | .800 | .820 |
| L1 | 2.29 | 2.59 | .090 | .102 |
| P | 3.17 | 3.66 | .125 | .144 |
| Q | 6.07 | 6.27 | .239 | .247 |
| Q1 | 8.38 | 8.69 | .330 | .342 |
| R | 3.81 | 4.32 | .150 | .170 |
| R1 | 1.78 | 2.29 | .070 | .090 |
| S | 6.04 | 6.30 | .238 | .248 |
| T | 1.57 | 1.83 | .062 | .072 |

Source-Drain Diode

Ratings and Characteristics

($T_J = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Test Conditions | Min. | Typ. | Max. |
|----------|---|------|------|---------------|
| I_S | $V_{GS} = 0\text{ V}$ | | | 250 A |
| I_{SM} | Repetitive; pulse width limited by T_{JM} | | | 1000 A |
| V_{SD} | $I_F = 90\text{ A}, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$ | | | 1.2 V |
| t_{rr} | $I_F = 30\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 50\text{ V}$ | | 150 | ns |
| Q_{rr} | | | 2 | μC |

IXYS reserves the right to change limits, test conditions, and dimensions.

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