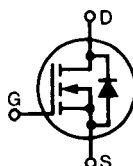


# MegaMOS™FET

|                                    | $V_{DSS}$ | $I_{D25}$ | $R_{DS(on)}$  |
|------------------------------------|-----------|-----------|---------------|
| IXTH / <del>IXTM</del> 11N80 800 V |           | 11 A      | 0.95 $\Omega$ |
| IXTH / <del>IXTM</del> 13N80 800 V |           | 13 A      | 0.80 $\Omega$ |

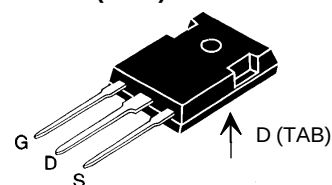
N-Channel Enhancement Mode

Obsolete:  
IXTM11N80  
IXTM13N80



| Symbol                                                                          | Test Conditions                                                               | Maximum Ratings             |                  |   |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|------------------|---|
| $V_{DSS}$                                                                       | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$                               | 800                         | V                |   |
| $V_{DGR}$                                                                       | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$ | 800                         | V                |   |
| $V_{GS}$                                                                        | Continuous                                                                    | $\pm 20$                    | V                |   |
| $V_{GSM}$                                                                       | Transient                                                                     | $\pm 30$                    | V                |   |
| $I_{D25}$                                                                       | $T_C = 25^\circ\text{C}$                                                      | 11N80<br>13N80              | 11<br>13         | A |
| $I_{DM}$                                                                        | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$                    | 11N80<br>13N80              | 44<br>52         | A |
| $P_D$                                                                           | $T_C = 25^\circ\text{C}$                                                      | 300                         | W                |   |
| $T_J$                                                                           |                                                                               | -55 ... +150                | $^\circ\text{C}$ |   |
| $T_{JM}$                                                                        |                                                                               | 150                         | $^\circ\text{C}$ |   |
| $T_{stg}$                                                                       |                                                                               | -55 ... +150                | $^\circ\text{C}$ |   |
| $M_d$                                                                           | Mounting torque                                                               | 1.13/10                     | Nm/lb.in.        |   |
| Weight                                                                          |                                                                               | TO-204 = 18 g, TO-247 = 6 g |                  |   |
| Maximum lead temperature for soldering<br>1.6 mm (0.062 in.) from case for 10 s |                                                                               | 300                         | $^\circ\text{C}$ |   |

TO-247 AD (IXTH)



~~TO-204 AA (IXTM)~~

Package  
unavailable



G = Gate,  
S = Source,

D = Drain,  
TAB = Drain

## Features

- International standard packages
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Low package inductance (< 5 nH)
  - easy to drive and to protect
- Fast switching times

## Applications

- Switch-mode and resonant-mode power supplies
- Motor controls
- Uninterruptible Power Supplies (UPS)
- DC choppers

## Advantages

- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- Space savings
- High power density

| Symbol       | Test Conditions                                                                                      | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |                                  |
|--------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|----------------------------------|
|              |                                                                                                      | min.                                                                              | typ. | max.                             |
| $V_{DSS}$    | $V_{GS} = 0\text{ V}$ , $I_D = 3\text{ mA}$                                                          | 800                                                                               |      | V                                |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 250\text{ }\mu\text{A}$                                                   | 2                                                                                 |      | 4.5 V                            |
| $I_{GSS}$    | $V_{GS} = \pm 20\text{ V}$ , $V_{DS} = 0$                                                            |                                                                                   |      | $\pm 100\text{ nA}$              |
| $I_{DSS}$    | $V_{DS} = 0.8 \cdot V_{DSS}$<br>$V_{GS} = 0\text{ V}$                                                |                                                                                   |      | $250\text{ }\mu\text{A}$<br>1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10\text{ V}$ , $I_D = 0.5\text{ I}_{D25}$<br>Pulse test, $t \leq 300\text{ }\mu\text{s}$ , | 11N80<br>13N80                                                                    |      | 0.95 $\Omega$<br>0.80 $\Omega$   |

| Symbol       | Test Conditions                                                                                         | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |        |
|--------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--------|
|              |                                                                                                         | min.                                                                              | typ. | max.   |
| $g_{fs}$     | $V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$ , pulse test                                            | 8                                                                                 | 14   | S      |
| $C_{iss}$    | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$                                           |                                                                                   | 4500 | pF     |
| $C_{oss}$    |                                                                                                         |                                                                                   | 310  | pF     |
| $C_{rss}$    |                                                                                                         |                                                                                   | 65   | pF     |
| $t_{d(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$<br>$R_G = 2\ \Omega$ , (External) |                                                                                   | 20   | 50 ns  |
| $t_r$        |                                                                                                         |                                                                                   | 33   | 50 ns  |
| $t_{d(off)}$ |                                                                                                         |                                                                                   | 63   | 100 ns |
| $t_f$        |                                                                                                         |                                                                                   | 32   | 50 ns  |
| $Q_{g(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$                                   |                                                                                   | 145  | 170 nC |
| $Q_{gs}$     |                                                                                                         |                                                                                   | 30   | 45 nC  |
| $Q_{gd}$     |                                                                                                         |                                                                                   | 55   | 80 nC  |
| $R_{thJC}$   |                                                                                                         |                                                                                   | 0.42 | K/W    |
| $R_{thCK}$   |                                                                                                         |                                                                                   | 0.25 | K/W    |

**Source-Drain Diode**

| Symbol   | Test Conditions                                                                                       | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |              |
|----------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--------------|
|          |                                                                                                       | min.                                                                              | typ. | max.         |
| $I_S$    | $V_{GS} = 0\text{ V}$                                                                                 | 11N80<br>13N80                                                                    |      | 11 A<br>13 A |
| $I_{SM}$ | Repetitive;<br>pulse width limited by $T_{JM}$                                                        | 11N80<br>13N80                                                                    |      | 44 A<br>52 A |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0\text{ V}$ ,<br>Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$ |                                                                                   |      | 1.5 V        |
| $t_{rr}$ | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$                                    |                                                                                   | 800  | ns           |

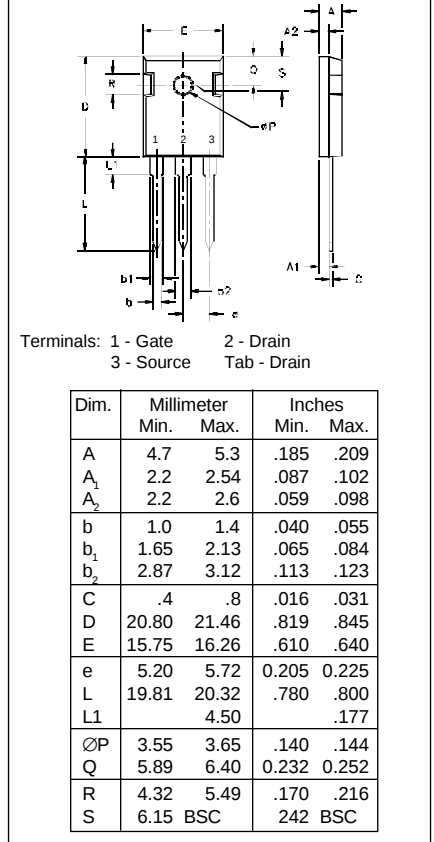
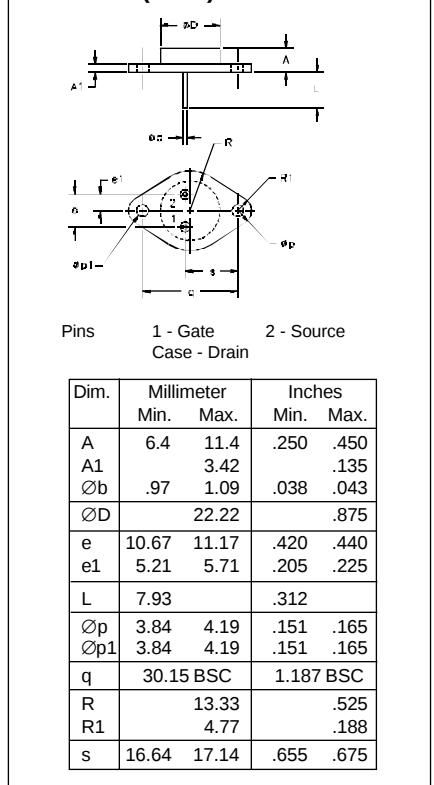
**TO-247 AD (IXTH) Outline**

**TO-204AA (IXTM) Outline**


Fig. 1 Output Characteristics

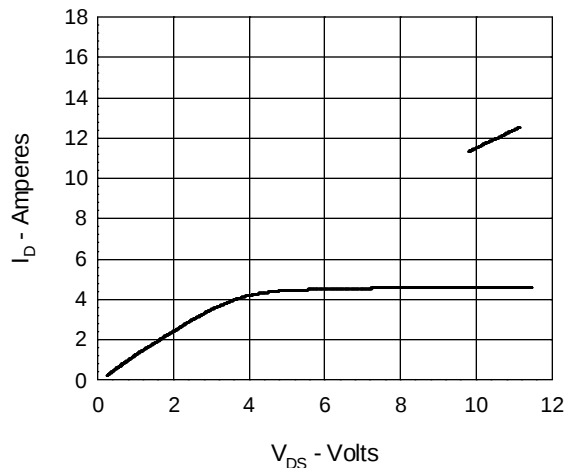


Fig. 2 Input Admittance

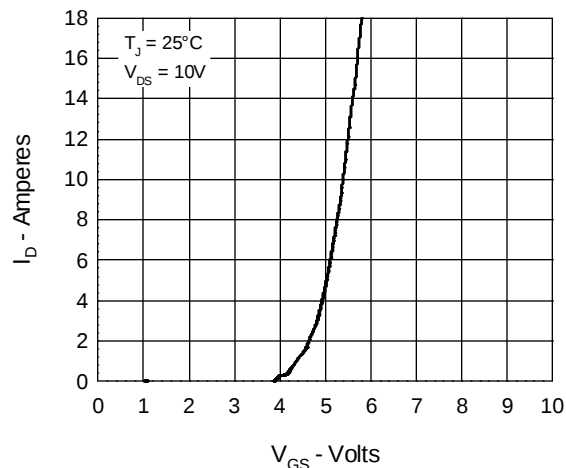


Fig. 3  $R_{DS(on)}$  vs. Drain Current

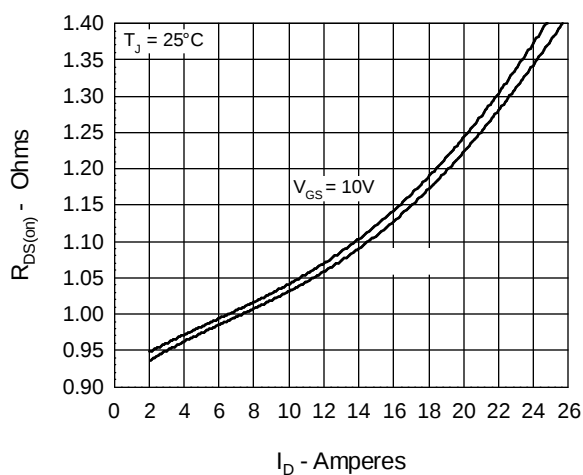


Fig. 4 Temperature Dependence of Drain to Source Resistance

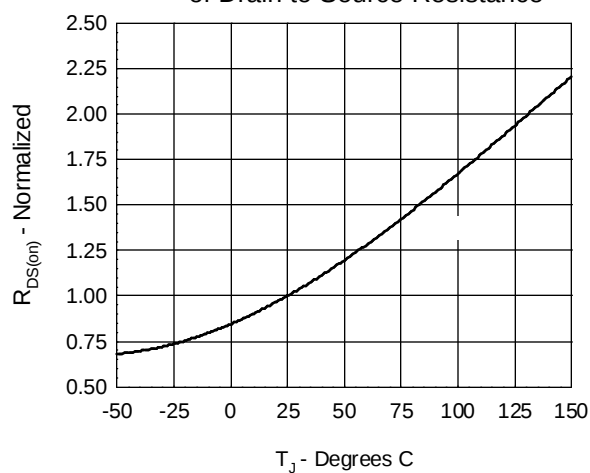


Fig. 5 Drain Current vs. Case Temperature

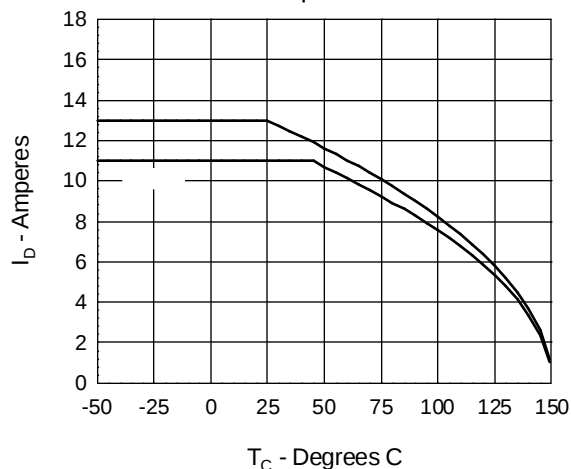
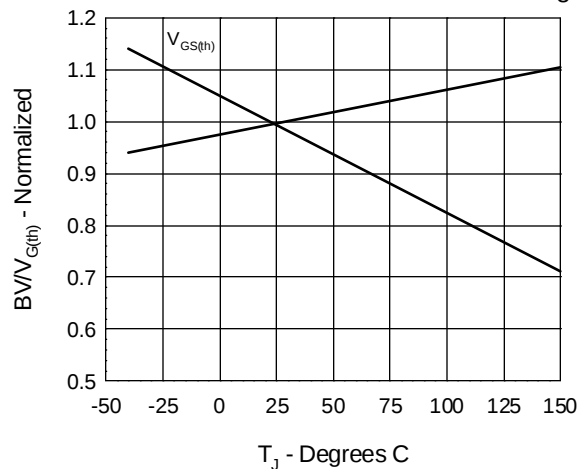
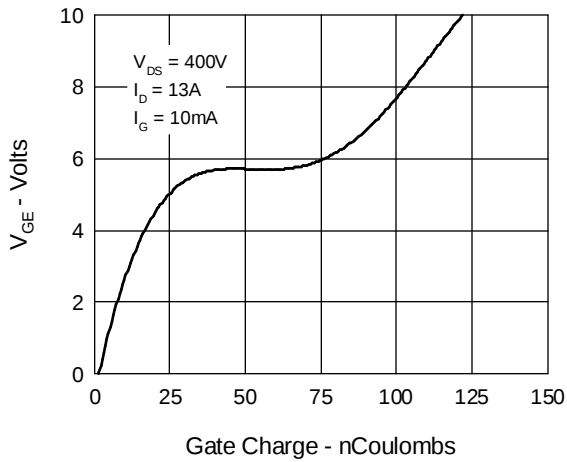
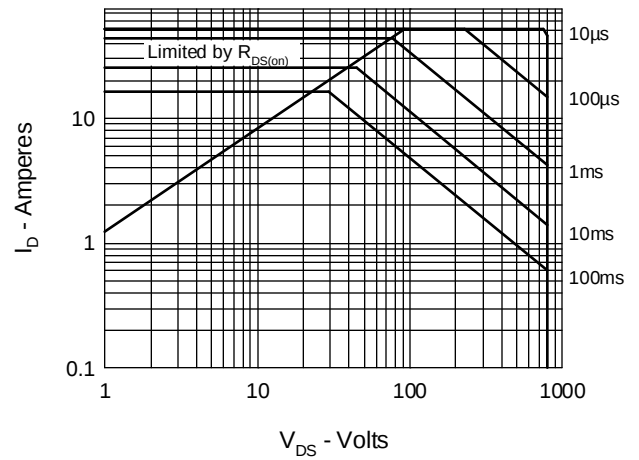
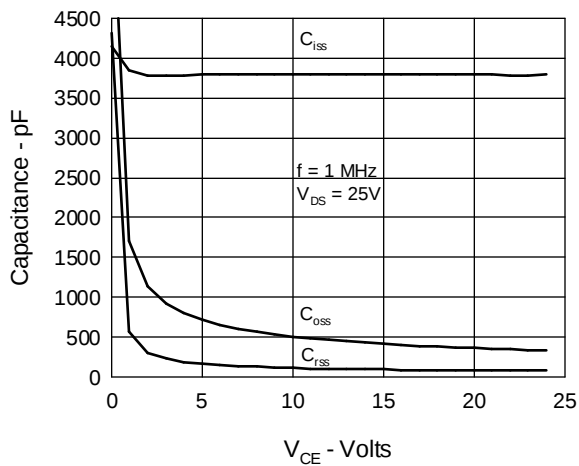
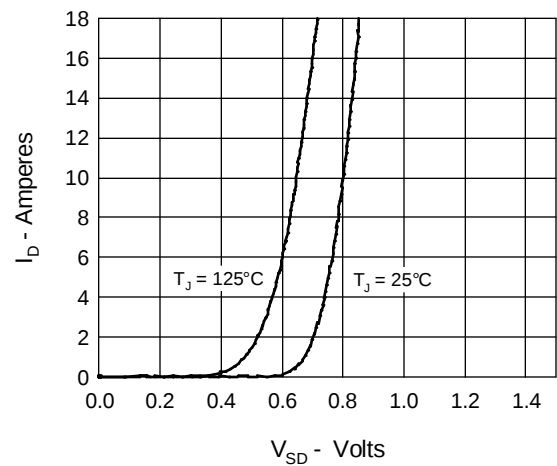
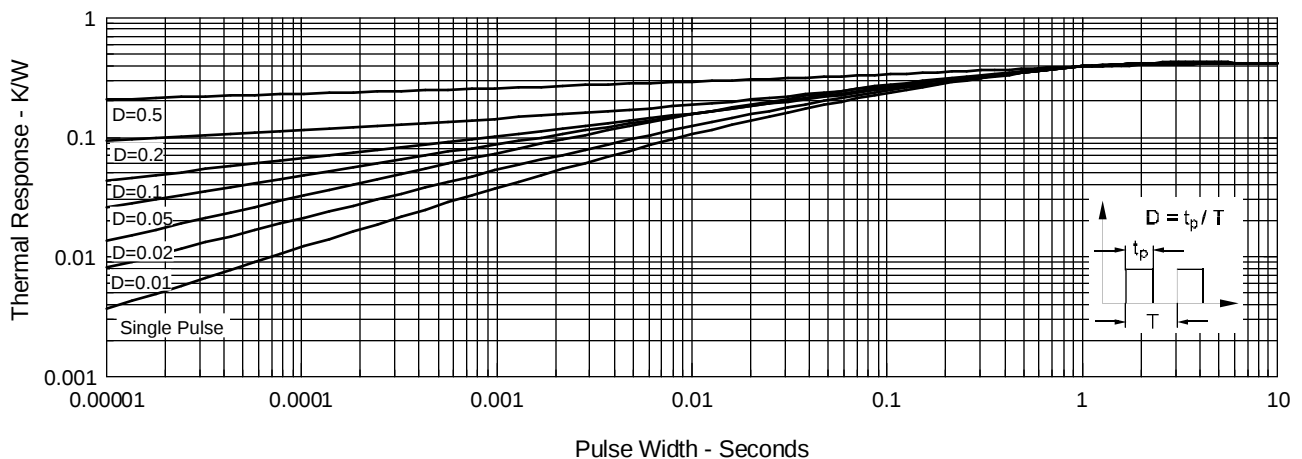


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage



**Fig.7 Gate Charge Characteristic Curve**

**Fig.8 Forward Bias Safe Operating Area**

**Fig.9 Capacitance Curves**

**Fig.10 Source Current vs. Source to Drain Voltage**

**Fig.11 Transient Thermal Impedance**




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