



Advanced Technical Information

High Voltage MOSFET

IXTA 2N80
IXTP 2N80

$$V_{DSS} = 800 \text{ V}$$

$$I_{D25} = 2 \text{ A}$$

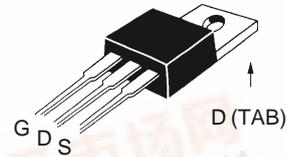
$$R_{DS(on)} = 6.2 \text{ } \Omega$$

N-Channel Enhancement Mode
Avalanche Energy Rated

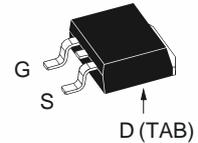


| Symbol | Test Conditions | Maximum Ratings | |
|--|---|-----------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 800 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$ | 800 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 2 | A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 8 | A |
| I_{AR} | | 2 | A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 6 | mJ |
| E_{AS} | $T_C = 25^\circ\text{C}$ | 200 | mJ |
| dv/dt | $I_S \leq I_{DM}^1$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}^1$, $T_J \leq 150^\circ\text{C}$, $R_G = 18 \text{ } \Omega$ | 5 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | 54 | 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 | | 4 | g |
| Maximum lead temperature for soldering | | 300 | $^\circ\text{C}$ |

TO-220AB (IXTP)



TO-263 AA (IXTA)



G = Gate, D = Drain,
S = Source, 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
- Flyback inverters
- DC choppers

Advantages

- Space savings
- High power density

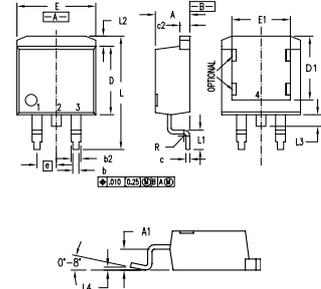
| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|---|---|------|---------------------------------------|
| | | min. | typ. | max. |
| V_{DSS} | $V_{GS} = 0 \text{ V}$, $I_D = 250 \text{ } \mu\text{A}$ | 800 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 250 \text{ } \mu\text{A}$ | 2.5 | | V |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$ | | | $\pm 100 \text{ nA}$ |
| I_{DSS} | $V_{DS} = V_{DSS}$, $V_{GS} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$ | | | 25 μA 500 μA |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \text{ } \mu\text{s}$, duty cycle $d \leq 2 \%$ | | | 6.2 Ω |



| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|--|---|------|------|
| | | min. | typ. | max. |
| g_{fs} | $V_{DS} = 20\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test | 1.0 | 2.0 | S |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | 440 | pF |
| C_{oss} | | | 56 | pF |
| C_{rss} | | | 15 | pF |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 18\Omega$, (External) | | 15 | ns |
| t_r | | | 18 | ns |
| $t_{d(off)}$ | | | 30 | ns |
| t_f | | | 15 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$ | | 22 | nC |
| Q_{gs} | | | 5.5 | nC |
| Q_{gd} | | | 12 | nC |
| R_{thJC} | | | 2.3 | K/W |
| R_{thCK} | (IXTP) | | 0.5 | K/W |

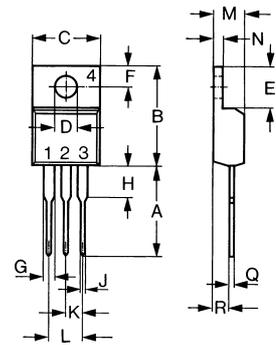
| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|----------|---|---|------|-------|
| | | min. | typ. | max. |
| I_S | $V_{GS} = 0\text{ V}$ | | | 2 A |
| I_{SM} | Repetitive; pulse width limited by T_{JM} | | | 8 A |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$ | | | 1.8 V |
| t_{rr} | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$ | | 510 | ns |

TO-263 AA (IXTA) Outline



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|------|
| | Min. | Max. | Min. | Max. |
| A | 4.06 | 4.83 | .160 | .190 |
| A1 | 2.03 | 2.79 | .080 | .110 |
| b | 0.51 | 0.99 | .020 | .039 |
| b2 | 1.14 | 1.40 | .045 | .055 |
| c | 0.46 | 0.74 | .018 | .029 |
| c2 | 1.14 | 1.40 | .045 | .055 |
| D | 8.64 | 9.65 | .340 | .380 |
| D1 | 7.11 | 8.13 | .280 | .320 |
| E | 9.65 | 10.29 | .380 | .405 |
| E1 | 6.86 | 8.13 | .270 | .320 |
| e | 2.54 | BSC | .100 | BSC |
| L | 14.61 | 15.88 | .575 | .625 |
| L1 | 2.29 | 2.79 | .090 | .110 |
| L2 | 1.02 | 1.40 | .040 | .055 |
| L3 | 1.27 | 1.78 | .050 | .070 |
| L4 | 0 | 0.38 | 0 | .015 |
| R | 0.46 | 0.74 | .018 | .029 |

TO-220 AB (IXTP) Outline



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 12.70 | 13.97 | 0.500 | 0.550 |
| B | 14.73 | 16.00 | 0.580 | 0.630 |
| C | 9.91 | 10.66 | 0.390 | 0.420 |
| D | 3.54 | 4.08 | 0.139 | 0.161 |
| E | 5.85 | 6.85 | 0.230 | 0.270 |
| F | 2.54 | 3.18 | 0.100 | 0.125 |
| G | 1.15 | 1.65 | 0.045 | 0.065 |
| H | 2.79 | 5.84 | 0.110 | 0.230 |
| J | 0.64 | 1.01 | 0.025 | 0.040 |
| K | 2.54 | BSC | 0.100 | BSC |
| M | 4.32 | 4.82 | 0.170 | 0.190 |
| N | 1.14 | 1.39 | 0.045 | 0.055 |
| Q | 0.35 | 0.56 | 0.014 | 0.022 |
| R | 2.29 | 2.79 | 0.090 | 0.110 |