

## -100V P-Channel Enhancement Mode MOSFET

### Features

- Advanced HEFET™ Technology
- Ultra Low On-Resistance
- Excellent  $Q_g \times R_{DS(on)}$  Product
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Comp)

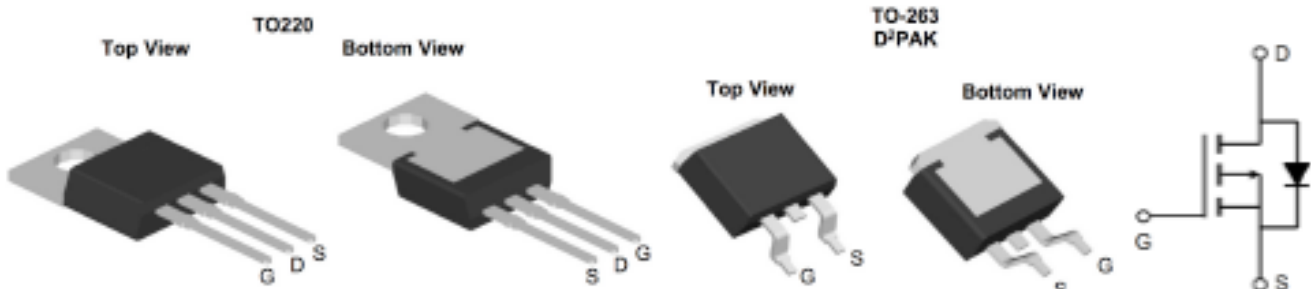
### Applications

- Motor Drives
- Uninterruptible Power Supplies
- DC/DC converter
- General Purpose Applications



$V_{DS} = -100V$   $I_D = -80A$

$R_{DS(ON)} < 19m\Omega$  @  $V_{GS} = 10V$



| Product ID | Pack      | Marking             | Qty(PCS) |
|------------|-----------|---------------------|----------|
| XPX80P10TU | TO-263-3L | XPX80P10TU XXX YYYY | 800      |
| XPX80P10TU | TO-220-3L | XPX80P10TU XXX YYYY | 1000     |

### Absolute Maximum Ratings ( $T_C = 25^\circ C$ unless otherwise noted)

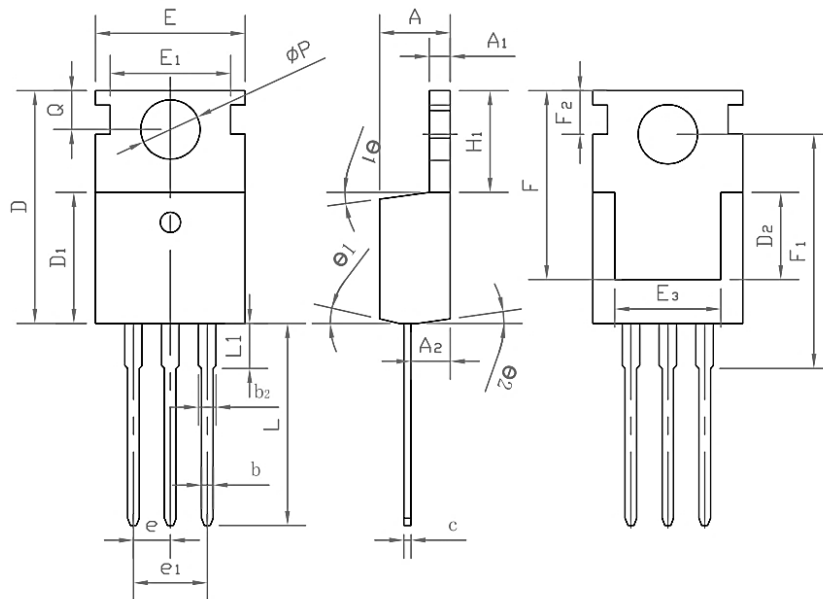
| Symbol                    | Parameter  | Rating     | Units        |
|---------------------------|--|------------|--------------|
| $V_{DS}$                  | Drain-Source Voltage                             | -100       | V            |
| $V_{GS}$                  | Gate-Source Voltage                              | $\pm 20$   | V            |
| $I_D @ T_C = 25^\circ C$  | Continuous Drain Current, $V_{GS} @ -10V^1$      | -80        | A            |
| $I_D @ T_C = 100^\circ C$ | Continuous Drain Current, $V_{GS} @ -10V^1$      | -56        | A            |
| $I_{DM}$                  | Pulsed Drain Current <sup>2</sup>                | -300       | A            |
| EAS                       | Single Pulse Avalanche Energy <sup>3</sup>       | 174        | mJ           |
| $I_{AS}$                  | Avalanche Current                                | -50        | A            |
| $P_D @ T_C = 25^\circ C$  | Total Power Dissipation <sup>4</sup>             | 280        | W            |
| $T_{STG}$                 | Storage Temperature Range                        | -55 to 150 | $^\circ C$   |
| $T_J$                     | Operating Junction Temperature Range             | -55 to 150 | $^\circ C$   |
| $R_{\theta JA}$           | Thermal Resistance Junction-Ambient <sup>1</sup> | 62         | $^\circ C/W$ |
| $R_{\theta JC}$           | Thermal Resistance Junction-Case <sup>1</sup>    | 0.65       | $^\circ C/W$ |

**P-Channel Electrical Characteristics (T<sub>J</sub> =25 °C, unless otherwise noted)**

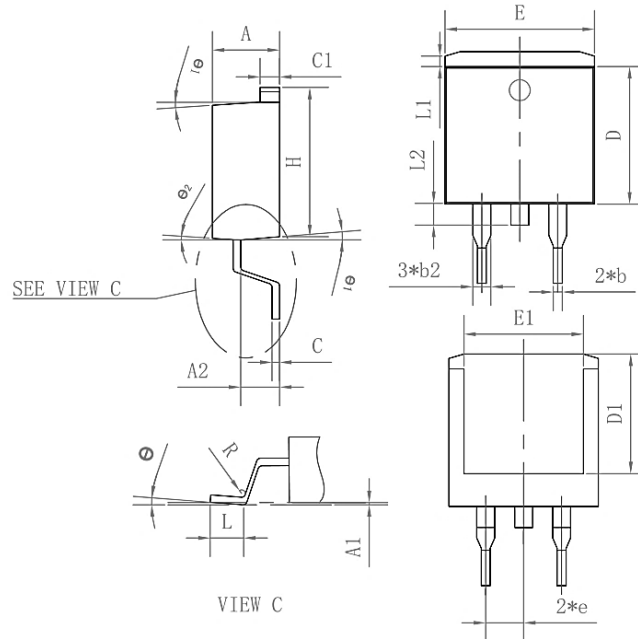
| Symbol          | Parameter  | Test Condition   | Min. | Typ. | Max. | Units |
|-----------------|--|--|------|------|------|-------|
| V(BR)DSS        | Drain-Source Breakdown Voltage                           | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA  | -100 | -    | -    | V     |
| IDSS            | Zero Gate Voltage Drain Current                          | V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V,   | -    | -    | -1.0 | μA    |
| IGSS            | Gate to Body Leakage Current                             | V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V  | -    | -    | ±100 | nA    |
| VGS(th)         | Gate Threshold Voltage                                   | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                | -1.0 | -1.6 | -2.5 | V     |
| RDS(on)         | Static Drain-Source on-Resistance                        | V <sub>GS</sub> =-10V, I <sub>D</sub> =-20A  | -    | 19   | 25   | mΩ    |
|                 |  | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-10A   | -    | 25   | 30   |       |
| Ciss            | Input Capacitance  | V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V,<br>f=1.0MHz                                  | -    | 4230 | -    | pF    |
| Coss            | Output Capacitance                                       |  | -    | 388  | -    | pF    |
| Crss            | Reverse Transfer Capacitance                             |  | -    | 26   | -    | pF    |
| Q <sub>g</sub>  | Total Gate Charge  | V <sub>DS</sub> =-50V, I <sub>D</sub> =-5A,<br>V <sub>GS</sub> =-10V                     | -    | 80   | -    | nC    |
| Q <sub>gs</sub> | Gate-Source Charge                                       |  | -    | 15.6 | -    | nC    |
| Q <sub>gd</sub> | Gate-Drain("Miller") Charge                              |  | -    | 17.2 | -    | nC    |
| td(on)          | Turn-on Delay Time                                       | V <sub>DD</sub> =-50V, I <sub>D</sub> =-5A,<br>R <sub>G</sub> =6Ω, V <sub>GS</sub> =-10V | -    | 26   | -    | ns    |
| t <sub>r</sub>  | Turn-on Rise Time  |  | -    | 78   | -    | ns    |
| td(off)         | Turn-off Delay Time                                      |  | -    | 200  | -    | ns    |
| t <sub>f</sub>  | Turn-off Fall Time                                       |  | -    | 210  | -    | ns    |
| IS              | Maximum Continuous Drain to Source Diode Forward Current |  | -    | -    | -80  | A     |
| ISM             | Maximum Pulsed Drain to Source Diode Forward Current     |  | -    | -    | -280 | A     |
| VSD             | Drain to Source Diode Forward Voltage                    | V <sub>GS</sub> =0V, I <sub>S</sub> =-30A  | -    | -    | -1.2 | V     |
| t <sub>rr</sub> | Body Diode Reverse Recovery Time                         | T <sub>J</sub> =25°C,<br>I <sub>F</sub> =-5A, dI/dt=100A/μs                              | -    | 208  | -    | ns    |
| Q <sub>rr</sub> | Body Diode Reverse Recovery Charge                       |  | -    | 560  | -    | nC    |

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width ≅ 300us , duty cycle ≅ 2%
- 3、 The EAS data shows Max. rating . The test condition is V<sub>DD</sub> =-72V, V<sub>GS</sub> =-10V, L=0.1mH, I<sub>AS</sub> =-50A
- 4、 The power dissipation is limited by 150 °C junction temperature
- 5、 The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

**Package Mechanical Data-TO-220-3L-SLK**


| Symbol     | Common |       |       |
|------------|--------|-------|-------|
|            | mm     |       |       |
|            | Mim    | Nom   | Max   |
| A          | 4.27   | 4.57  | 4.87  |
| A1         | 1.15   | 1.30  | 1.45  |
| A2         | 2.10   | 2.40  | 2.70  |
| b          | 0.70   | 0.80  | 1.00  |
| b2         | 1.17   | 1.27  | 1.50  |
| D          | 0.40   | 0.50  | 0.65  |
| D1         | 8.80   | 9.10  | 9.40  |
| D2         | 5.70   | 6.70  | 7.00  |
| E          | 9.70   | 10.00 | 10.30 |
| E1         | -      | 8.70  | -     |
| E2         | 9.63   | 10.00 | 10.35 |
| E3         | 7.00   | 8.00  | 8.40  |
| e          |        | 0.37  |       |
| e1         |        | 0.10  |       |
| H1         | 6.00   | 6.50  | 6.85  |
| L          | 12.75  | 13.50 | 13.90 |
| L1         | -      | 3.10  | 3.40  |
| $\Phi_p$   | 3.45   | 3.60  | 3.75  |
| Q          | 2.60   | 2.80  | 3.00  |
| $\theta_1$ | 4°     | 7°    | 10°   |
| $\theta_2$ | 0°     | 3°    | 6°    |
| F          | 13.30  | 13.50 | 13.70 |
| F1         | 15.50  | 15.90 | 16.30 |
| F2         | 2.80   | 3.00  | 3.20  |

**Package Mechanical Data-TO-263-3L-SLK**


| Symbol | Common |       |       |
|--------|--------|-------|-------|
|        | mm     |       |       |
|        | Mim    | Nom   | Max   |
| A      | 4.35   | 4.47  | 4.60  |
| A1     | 0.09   | 0.10  | 0.11  |
| A2     | 2.30   | 2.40  | 2.70  |
| b      | 0.70   | 0.80  | 1.00  |
| b2     | 1.25   | 1.36  | 1.50  |
| C      | 0.45   | 0.50  | 0.65  |
| C1     | 1.29   | 1.30  | 9.40  |
| D      | 9.10   | 9.20  | 9.30  |
| D1     | 7.90   | 8.00  | 8.10  |
| E      | 9.85   | 10.00 | 10.20 |
| E1     | 7.90   | 8.00  | 8.10  |
| H      | 15.30  | 15.50 | 15.70 |
| e      | -      | 2.54  | -     |
| L      | 2.34   | 2.54  | 2.74  |
| L1     | 1.00   | 1.10  | 1.20  |
| L2     | 1.30   | 1.40  | 1.50  |
| R      | 0.24   | 0.25  | 0.26  |
| θ      | 0°     | 4°    | 8°    |
| θ1     | 4°     | 7°    | 10°   |
| θ2     | 0°     | 3°    | 6°    |

Flow (wave) soldering (solder dipping)

| Product        | Peak Temperature | Dipping Time |
|----------------|------------------|--------------|
| Pb device      | 245°C ±5°C       | 5sec±1sec    |
| Pb-Free device | 260°C +0/-5°C    | 5sec±1sec    |



This integrated circuit can be damaged by ESD. UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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