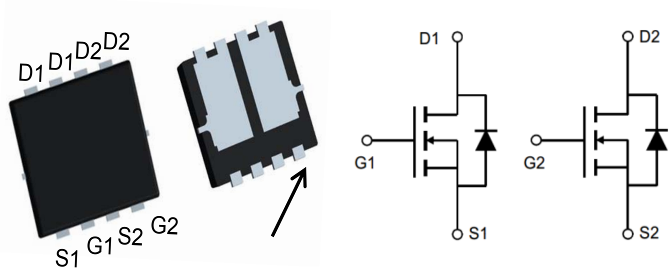
30V N+NChannel Enhancement Mode Power MOSFET

★ 100% EAS Guaranteed
★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

**Product Summary**

| BVDSS | RDSON | ID |
|---|---|---|
| 30V | 7mΩ | 28A |

**PDFN3*3 Pin Configuration**




**Description**

XPX308RX is the high cell density trenched N-ch MOSFETs, which provide excellentRDSON and gate charge for most of the synchronous buck converter applications.

**Package Marking and Ordering Information**

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|---|---|---|---|---|---|
| XPX308RX | XPX308RX | PDFN3*3 | ---mm | ---mm | 5000 |

**Table 1. Absolute Maximum Ratings ($T_A$=25℃)**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage ($V_{GS}$=0V) | 30 | V |
| $V_{GS}$ | Gate-Source Voltage ($V_{DS}$=0V) | ±20 | V |
| $I_D$ | Drain Current-Continuous(Tc=25˚C) (Note 1) | 28 | A |
| | Drain Current-Continuous(Tc=100˚C) | 17 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | 40 | A |
| $P_D$ | Maximum Power Dissipation(Tc=25˚C) | 30.5 | w |
| | Maximum Power Dissipation(Tc=100˚C) | 20 | W |
| EAS | Avalanche energy (Note 3) | 33 | mJ |
| $T_J$,$T_{STG}$ | Operating Junction and Storage Temperature Range | -55 To 150 | ˚C |

**Table 2. Thermal Characteristic**

| Symbol | Parameter | Typ | Max | Unit |
|---|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance Junction-Case[1] | --- | 5.26 | ℃/W |

**Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)**

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **On/Off States** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V $I_D$=250μA | 30 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=30V,$V_{GS}$=0V | | | 1.0 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±20V,$V_{DS}$=0V | | | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1.2 | 1.6 | 2.1 | V |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=10V,$I_D$=15A | | 10 | | S |
| $R_{DS(ON)}$ | Drain-Source On-State Resistance | $V_{GS}$=10V, $I_D$=20A | | 7.0 | 9.5 | mΩ |
| | | VGS=4.5V, ID=10A | | 12 | 16 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| Ciss | Input Capacitance | VDS=15V,VGS=0V, F=1.0MHZ | | 830 | | PF |
| Coss | Output Capacitance | | | 142 | | pF |
| Crss | Reverse Transfer Capacitance | | | 119 | | pF |
| | | | | | | |
| **Switching Times** | | | | | | |
| $t_{d(on)}$ | Turn-on Delay Time | VGS=10V, VDS=30V, RG=3Ω $I_D$=2A | | 6 | | nS |
| $t_r$ | Turn-on Rise Time | | | 5 | | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 25 | | nS |
| $t_f$ | Turn-Off Fall Time | | | 7 | | nS |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=15V, $I_D$=20A | | 19 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 6.3 | | nC |
| $Q_{gd}$ | Gate-Drain Charge | | | 4.5 | | nC |
| **Source-Drain Diode Characteristics** | | | | | | |
| $I_S$ | | VG=VD=0V , Force Current | | | 25 | A |
| $V_{SD}$ | Forward on Voltage | $V_{GS}$=0V,$I_S$=30A | | | 1.2 | V |
| trr | Reverse Recovery Time | IF=30A dI/ dt=100A/ μs , | | 7 | | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | | 6.3 | | nc |

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}$=50V,$V_{GS}$=10V,L=0.1mH,$I_{AS}$=48A.,$R_G$=25Ω,Starting $T_J$=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

## Typical Performance Characteristics

**Figure1:** Output Characteristics

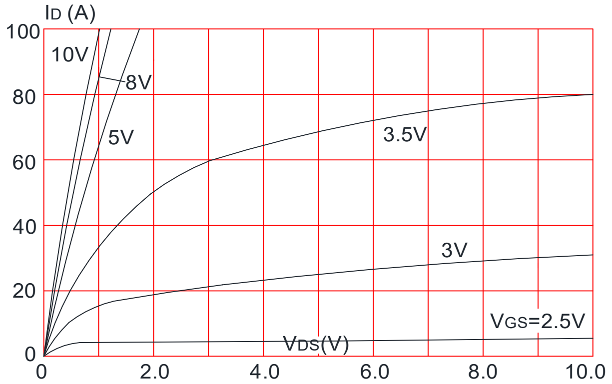



**Figure 2:** Typical Transfer Characteristics

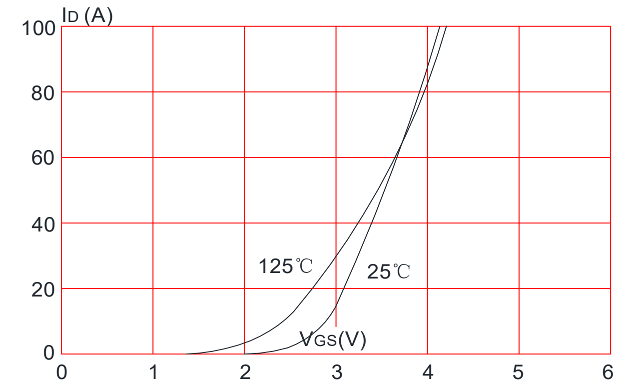



**Figure 3:**On-resistance vs. Drain Current

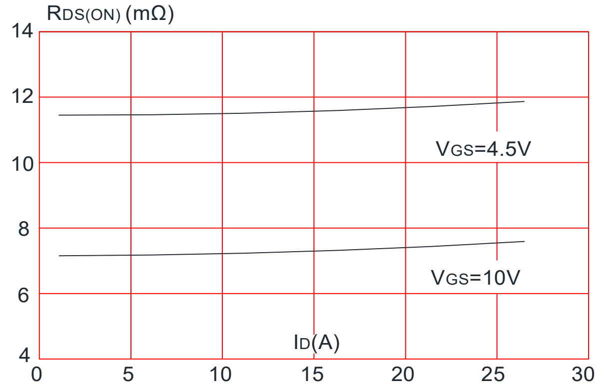



**Figure 4**: Body Diode Characteristics

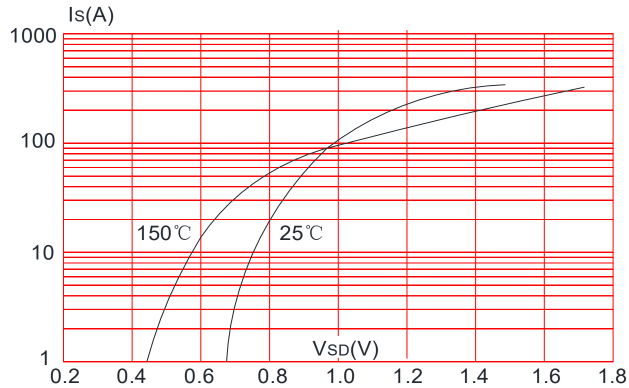



**Figure 5:** Gate Charge Characteristics

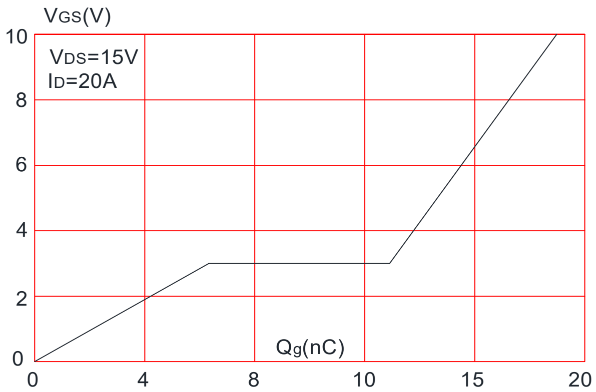



**Figure 6:** Capacitance Characteristics

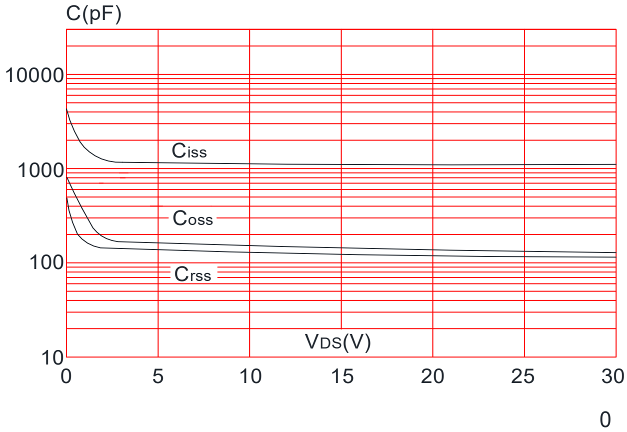


**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

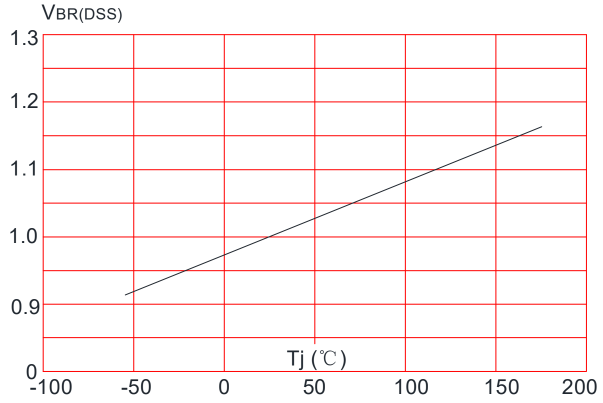



**Figure 8:** Normalized on Resistance vs. Junction Temperature

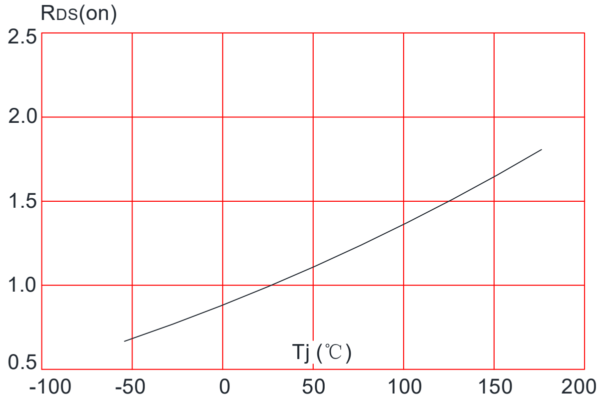



**Figure 9:** Maximum Safe Operating Area

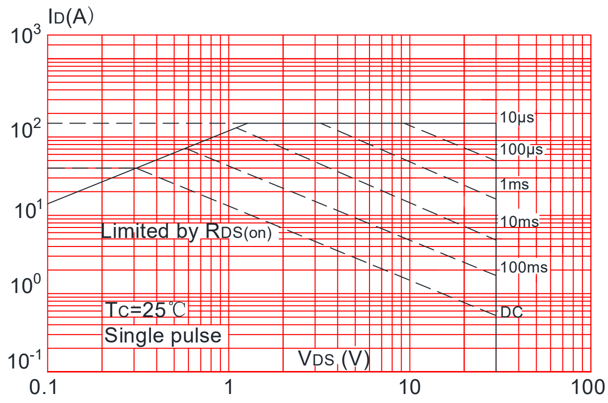
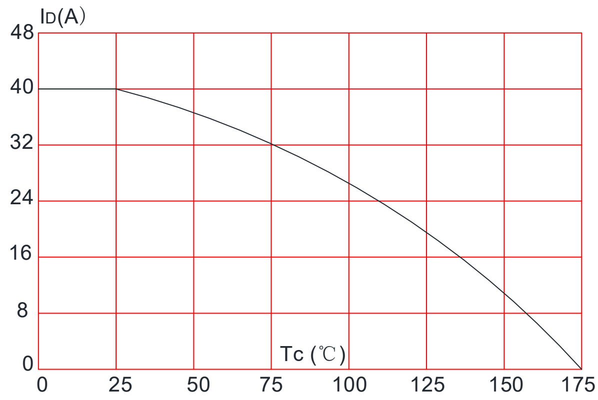
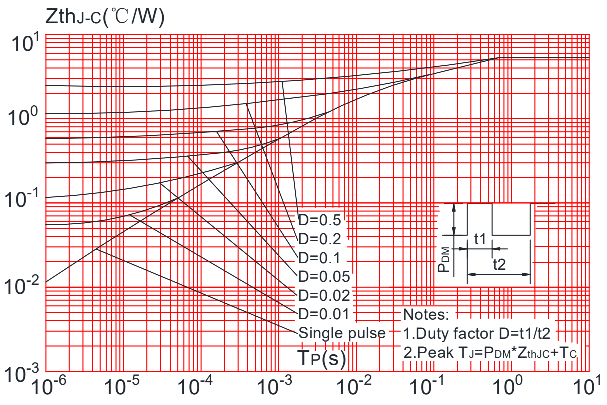



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature




Maximum Effective Transient Thermal Impedance, Junction-to-Case



## Test Circuit

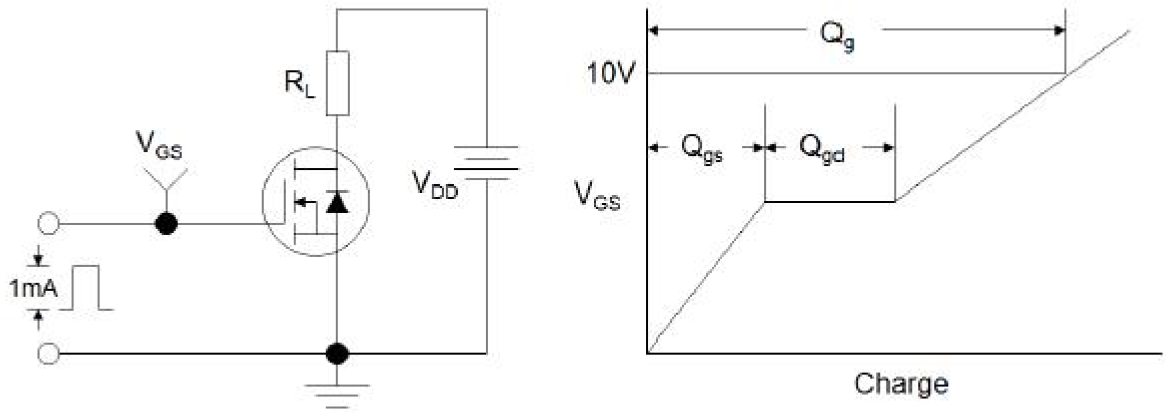



Figure1:Gate Charge Test Circuit & Waveform

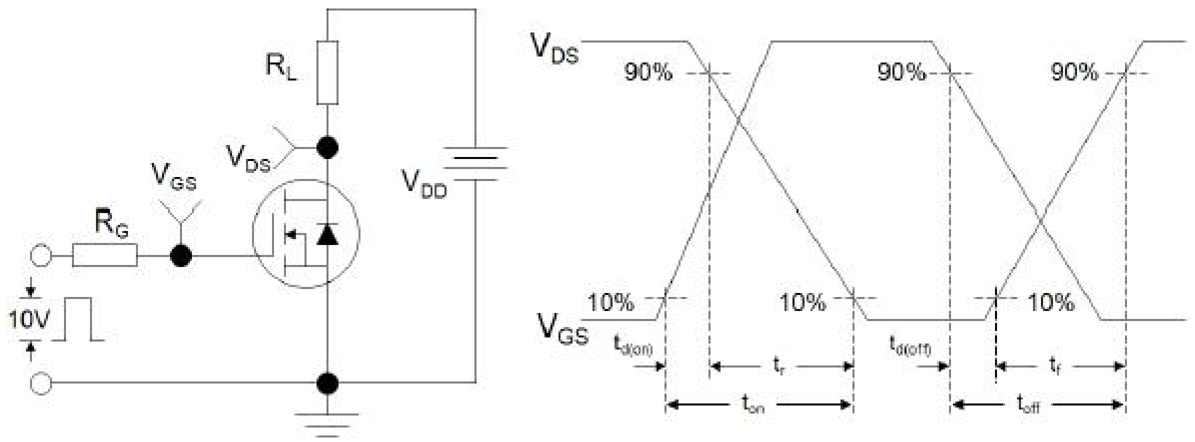



Figure 2: Resistive Switching Test Circuit & Waveforms

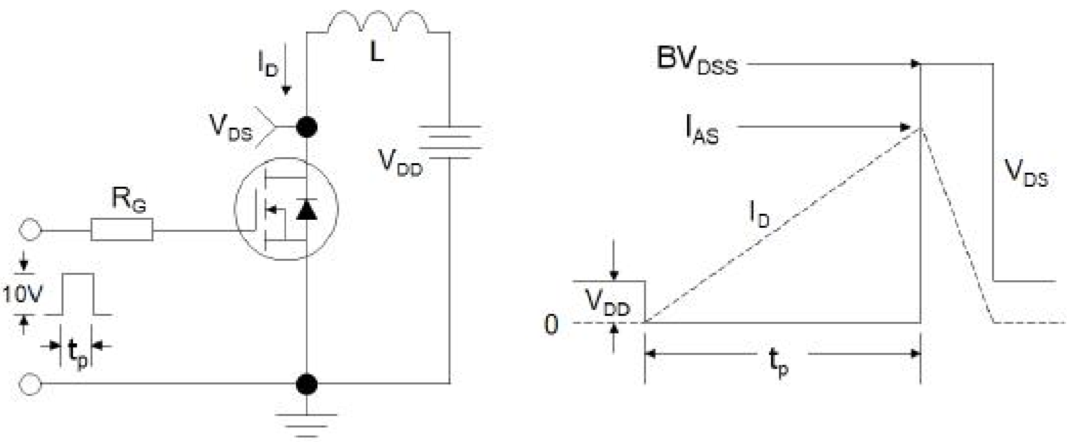
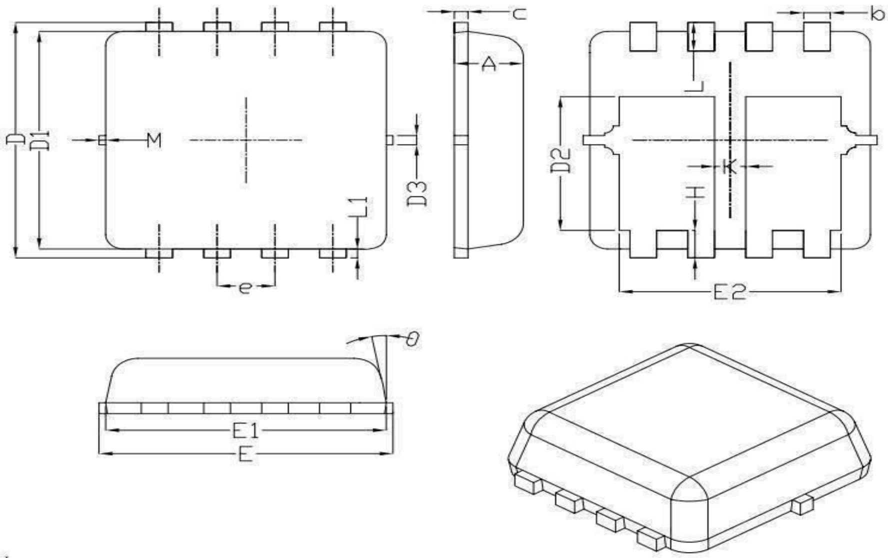



Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

**●Dimensions（PDFN3.3×3.3）**




| Symbol | Dimensions (unit: mm) | | |
|---|---|---|---|
| | Min | Typ | Max |
| A | 0.70 | 0.75 | 0.80 |
| b | 0.25 | 0.30 | 0.35 |
| c | 0.10 | 0.15 | 0.25 |
| D | 3.25 | 3.35 | 3.45 |
| D1 | 3.00 | 3.10 | 3.20 |
| D2 | 1.78 | 1.88 | 1.98 |
| D3 | -- | 0.13 | -- |
| E | 3.20 | 3.30 | 3.40 |
| E1 | 3.00 | 3.15 | 3.20 |
| E2 | 2.39 | 2.49 | 2.59 |
| e | | 0.65 BSC | |
| H | 0.30 | 0.39 | 0.50 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | -- | 0.13 | -- |
| K | 0.30 | -- | -- |
| θ | -- | 10° | 12° |
| M | * | * | 0.15 |

* Not Specified

Flow (wave) soldering (solder dipping)

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