# XP152A01D8MR

TOREX

*Power MOS FET*

**◆P-Channel Power MOS FET**
**◆DMOS Structure**
**◆Low On-State Resistance: 0.48Ω (max)**
**◆Ultra High-Speed Switching**
**◆SOT-23 Package**

## ■Applications

●Notebook PCs
●Cellular and portable phones
●On-board power supplies
●Li-ion battery systems

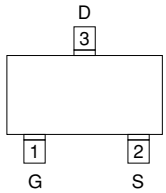
## ■General Description

The XP152A01D8MR is a P-Channel Power MOS FET with low on-state resistance and ultra high-speed switching characteristics.
Because high-speed switching is possible, the IC can be efficiently set thereby saving energy.
The small SOT-23 package makes high density mounting possible.

## ■Features

**Low on-state resistance** : Rds(on)=0.48Ω(Vgs=-4.5V)
: Rds(on)=0.80Ω(Vgs=-2.5V)
**Ultra high-speed switching**
**Operational Voltage** : -2.5V
**High density mounting** : SOT-23

## ■Pin Configuration




SOT-23
(TOP VIEW)

## ■Pin Assignment

| PIN NUMBER | PIN NAME | FUNCTION |
|---|---|---|
| 1 | G | Gate |
| 2 | S | Source |
| 3 | D | Drain |

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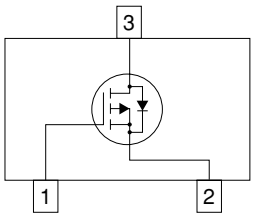
## ■Equivalent Circuit




P-Channel MOS FET
(1 device built-in)

## ■Absolute Maximum Ratings

Ta=25℃

| PARAMETER | SYMBOL | RATINGS | UNITS |
|---|---|---|---|
| Drain-Source Voltage | Vdss | -20 | V |
| Gate-Source Voltage | Vgss | ±12 | V |
| Drain Current (DC) | Id | -0.5 | A |
| Drain Current (Pulse) | Idp | -1.5 | A |
| Reverse Drain Current | Idr | -0.5 | A |
| Continuous Channel Power Dissipation (note) | Pd | 0.5 | W |
| Channel Temperature | Tch | 150 | ℃ |
| Storage Temperature | Tstg | -55~150 | ℃ |

Note: When implemented on a ceramic PCB

## ■Electrical Characteristics

### DC Characteristics

Ta=25℃

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Drain Cut-off Current | Idss | Vds=-20V, Vgs=0V | | | -10 | μA |
| Gate-Source Leakage Current | Igss | Vgs=±12V, Vds=0V | | | ±10 | μA |
| Gate-Source Cut-off Voltage | Vgs(off) | Id=-1mA, Vds=-10V | -0.5 | | | V |
| Drain-Source On-state Resistance (note) | Rds(on) | Id=-0.3A, Vgs=-4.5V | | 0.36 | 0.48 | Ω |
| | | Id=-0.3A, Vgs=-2.5V | | 0.6 | 0.8 | Ω |
| Forward Transfer Admittance (note) | \|Yfs\| | Id=-0.3A, Vds=-10V | | 1 | | S |
| Body Drain Diode Forward Voltage | Vf | If=-0.5A, Vgs=0V | | -0.8 | -1.1 | V |

Note: Effective during pulse test.

### Dynamic Characteristics

Ta=25℃

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Input Capacitance | Ciss | Vds=-10V, Vgs=0V f=1MHz | | 180 | | pF |
| Output Capacitance | Coss | | | 100 | | pF |
| Feedback Capacitance | Crss | | | 35 | | pF |

### Switching Characteristics

Ta=25℃

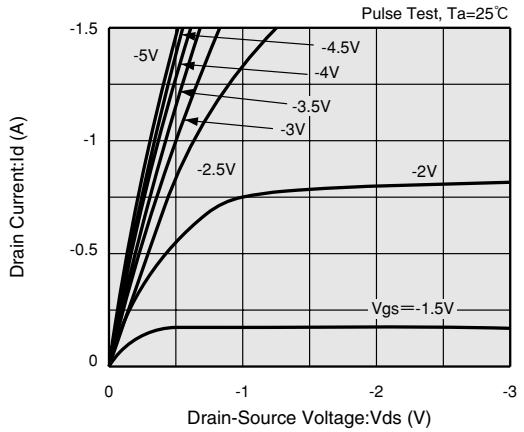
| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Turn-on Delay Time | td (on) | Vgs=-5V, Id=-0.3A Vdd=-10V | | 10 | | ns |
| Rise Time | tr | | | 15 | | ns |
| Turn-off Delay Time | td (off) | | | 30 | | ns |
| Fall Time | tf | | | 70 | | ns |

### Thermal Characteristics

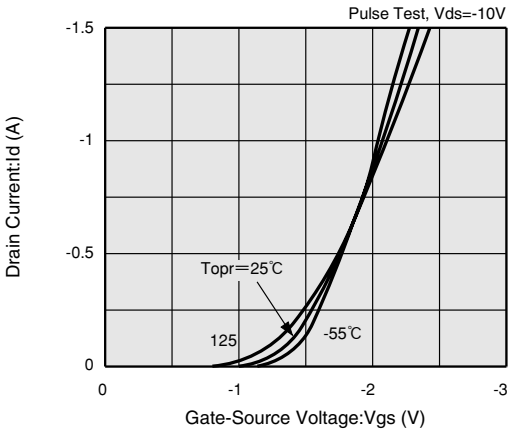
| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Thermal Resistance (channel-ambience) | Rth (ch-a) | Implement on a ceramic PCB | | 250 | | ℃/W |

## ■Typical Performance Characteristics

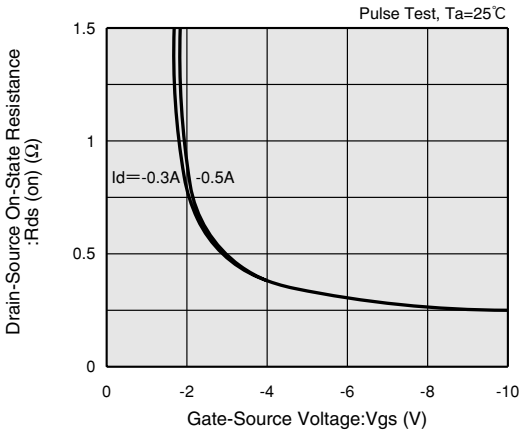
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



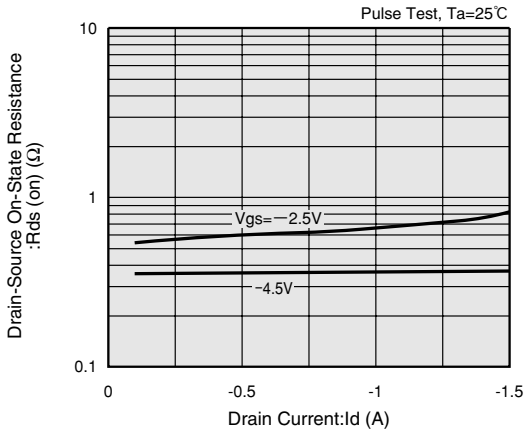

DRAIN CURRENT vs. GATE-SOURCE VOLTAGE



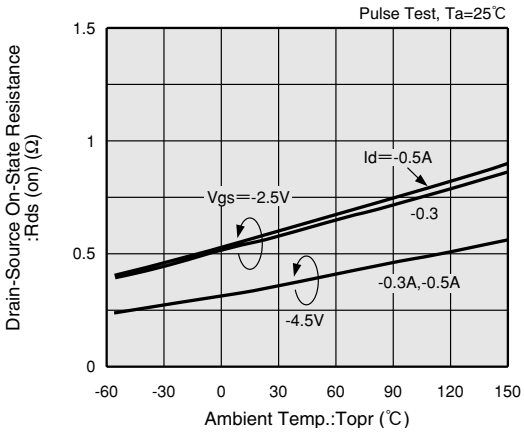

DRAIN-SOURCE ON-STATE RESISTANCE
vs. GATE-SOURCE VOLTAGE



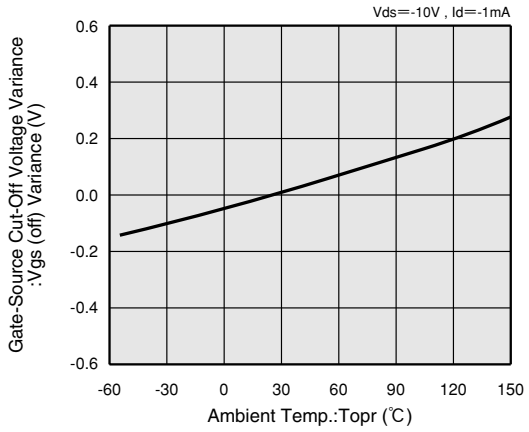

DRAIN-SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT




DRAIN-SOURCE ON-STATE RESISTANCE
vs. AMBIENT TEMPERATURE




GATE-SOURCE CUT-OFF VOLTAGE VARIANCE
vs. AMBIENT TEMPERATURE

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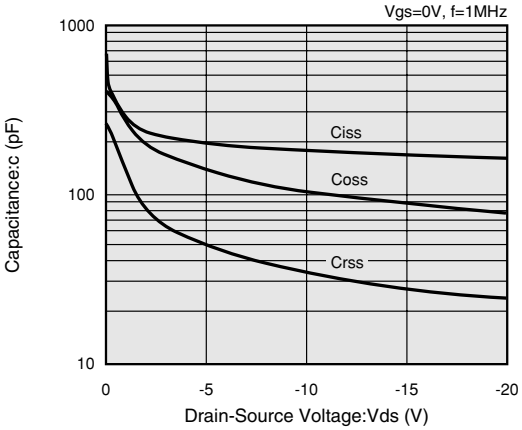
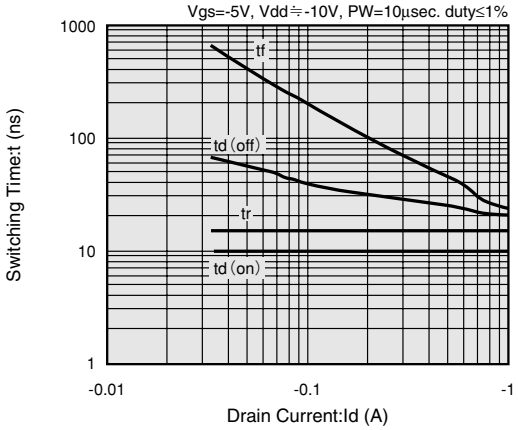
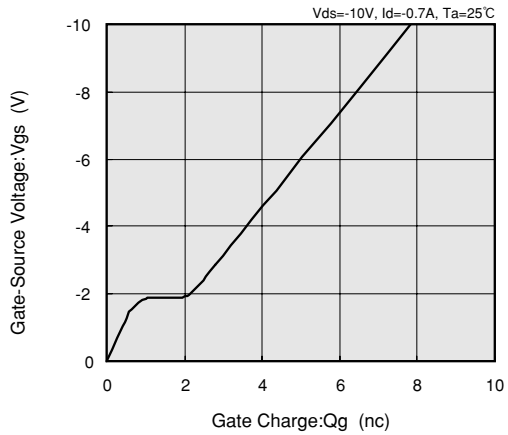
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



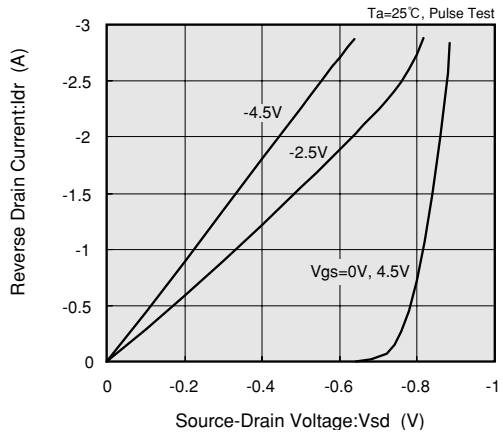

SWITCHING TIME vs. DRAIN CURRENT




GATE-SOURCE VOLTAGE vs. GATE CHARGE




REVERSE DRAIN CURRENT
vs. SOURCE-DRAIN VOLTAGE




STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH