

- ◆ P-Channel Power MOS FET
- ◆ DMOS Structure
- ◆ Low On-State Resistance:  $0.48\Omega$  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

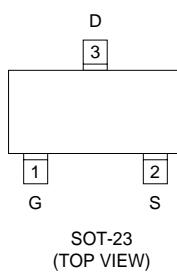
The XP152A01D8MR is a P-Channel Power MOS FET with low on-state resistance and ultra high-speed switching characteristics. Because high-speed switching is possible, the IC can be efficiently set thereby saving energy. The small SOT-23 package makes high density mounting possible.

### ■ Features

- Low on-state resistance:**  $R_{ds(on)}=0.48\Omega(V_{gs}=-4.5V)$   
 $R_{ds(on)}=0.80\Omega(V_{gs}=-2.5V)$
- Ultra high-speed switching**
- Operational Voltage:** -2.5V
- High density mounting:** SOT-23

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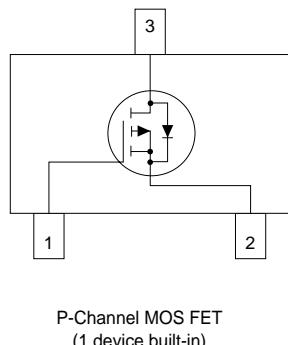
### ■ Pin Configuration



### ■ Pin Assignment

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

### ■ Equivalent Circuit



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

### ■ Absolute Maximum Ratings

T<sub>a</sub>=25°C

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	V <sub>dss</sub>	-20	V
Gate-Source Voltage	V <sub>gss</sub>	±12	V
Drain Current (DC)	I <sub>d</sub>	-0.5	A
Drain Current (Pulse)	I <sub>dp</sub>	-1.5	A
Reverse Drain Current	I <sub>dr</sub>	-0.5	A
Continuous Channel Power Dissipation (note)	P <sub>d</sub>	0.5	W
Channel Temperature	T <sub>ch</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

Note: When implemented on a glass epoxy PCB

## ■ Electrical Characteristics

### DC characteristics

T<sub>a</sub>=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Drain Cut-off Current	I <sub>dss</sub>	V <sub>ds</sub> =-20V, V <sub>gs</sub> =0V			-10	μA
Gate-Source Leakage Current	I <sub>gss</sub>	V <sub>gs</sub> =±12V, V <sub>ds</sub> =0V			±10	μA
Gate-Source Cut-off Voltage	V <sub>gs(off)</sub>	I <sub>d</sub> =-1mA, V <sub>ds</sub> =-10V	-0.5			V
Drain-Source On-state Resistance (note)	R <sub>ds(on)</sub>	I <sub>d</sub> =-0.3A, V <sub>gs</sub> =-4.5V		0.36	0.48	Ω
		I <sub>d</sub> =-0.3A, V <sub>gs</sub> =-2.5V		0.6	0.8	Ω
Forward Transfer Admittance (note)	Y <sub>fs</sub>	I <sub>d</sub> =-0.3A, V <sub>ds</sub> =-10V		1		S
Body Drain Diode Forward Voltage	V <sub>f</sub>	I <sub>f</sub> =-0.5A, V <sub>gs</sub> =0V		-0.8	-1.1	V

Note: Effective during pulse test.

### Dynamic characteristics

T<sub>a</sub>=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Capacitance	C <sub>iss</sub>	V <sub>ds</sub> =-10V, V <sub>gs</sub> =0V f=1MHz		180		pF
Output Capacitance	C <sub>oss</sub>			100		pF
Feedback Capacitance	C <sub>rss</sub>			35		pF

### Switching characteristics

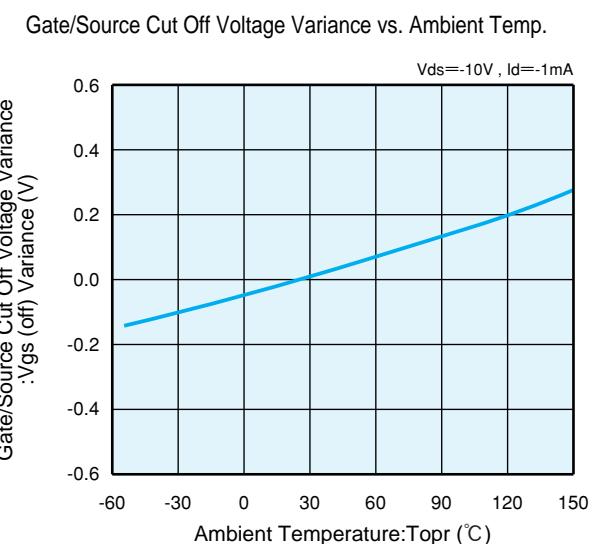
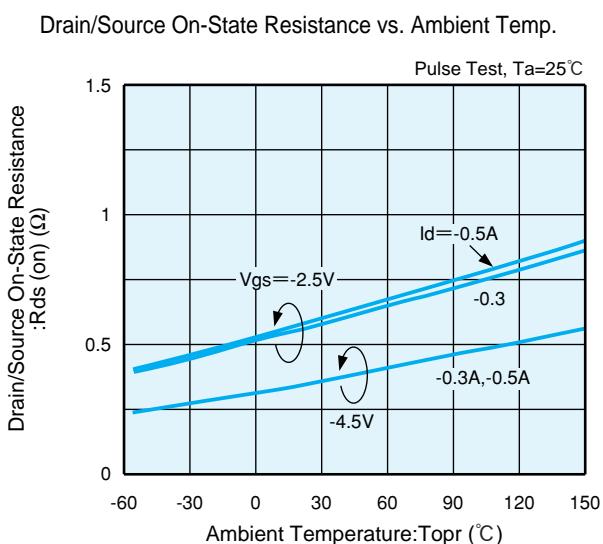
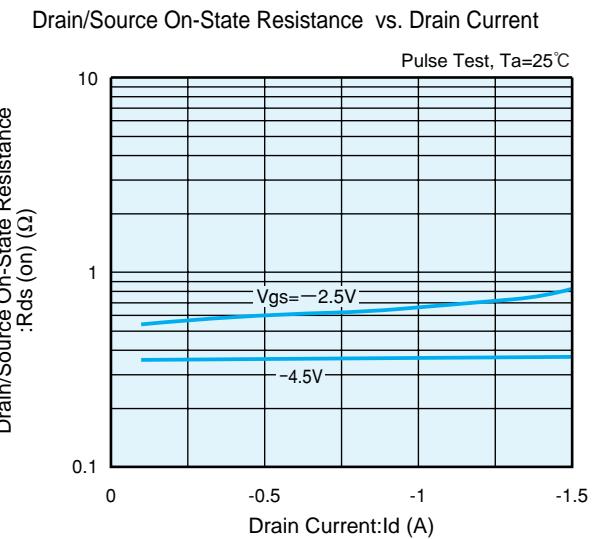
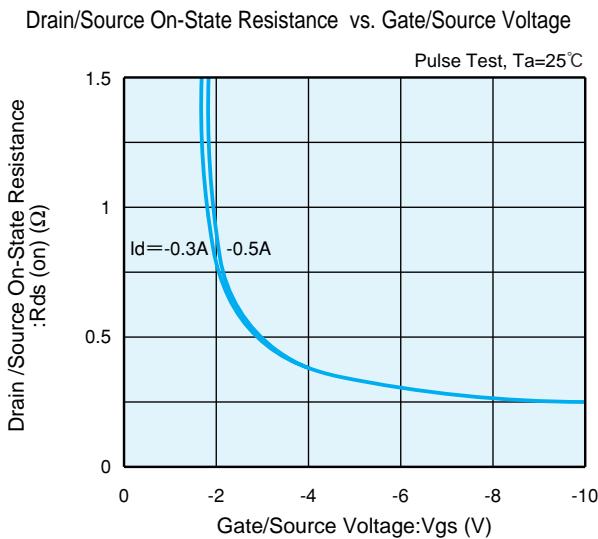
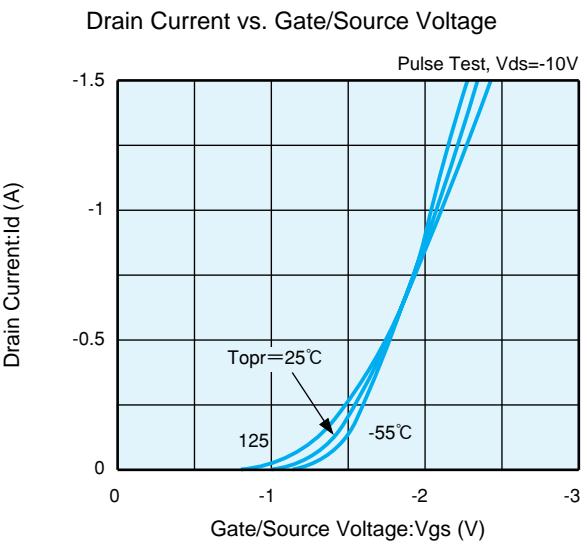
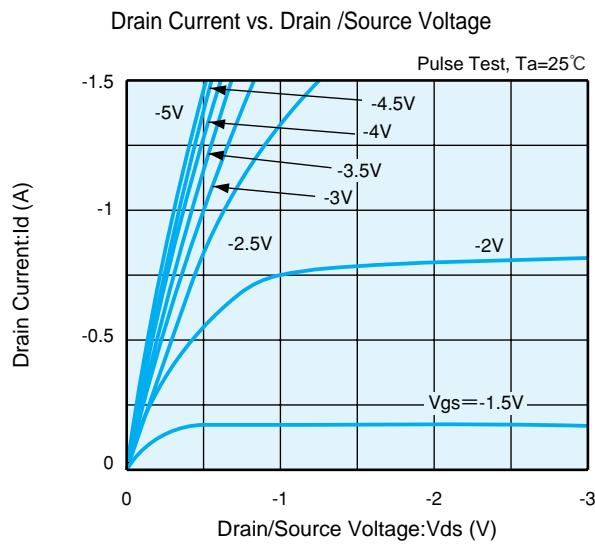
T<sub>a</sub>=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	t <sub>d</sub> (on)	V <sub>gs</sub> =-5V, I <sub>d</sub> =-0.3A V <sub>dd</sub> =-10V		10		ns
Rise Time	t <sub>r</sub>			15		ns
Turn-off Delay Time	t <sub>d</sub> (off)			30		ns
Fall Time	t <sub>f</sub>			70		ns

### Thermal characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-surroundings)	R <sub>th</sub> (ch-a)	Implement on a glass epoxy resin PCB		250		°C/W

## ■ XP152A01D8MR Characteristics



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