

XP152A01D8MR



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

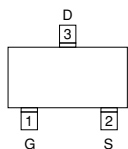
General Description

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

Pin Configuration

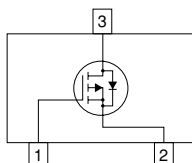


SOT-23
(TOP VIEW)

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

$T_a=25^\circ\text{C}$			
PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	V_{dss}	-20	V
Gate-Source Voltage	V_{gss}	± 12	V
Drain Current (DC)	I_d	-0.5	A
Drain Current (Pulse)	I_{dp}	-1.5	A
Reverse Drain Current	I_{dr}	-0.5	A
Continuous Channel Power Dissipation (note)	P_d	0.5	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55-150	$^\circ\text{C}$

Note: When implemented on a ceramic PCB

XP152A01D8MR

Electrical Characteristics

DC Characteristics

Ta=25°C

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

Note: Effective during pulse test.

Dynamic Characteristics

Ta=25°C

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

Switching Characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	t _{d (on)}	V _{gs} =-5V, I _d =-0.3A V _{dd} =-10V		10		ns
Rise Time	t _r			15		ns
Turn-off Delay Time	t _{d (off)}			30		ns
Fall Time	t _f			70		ns

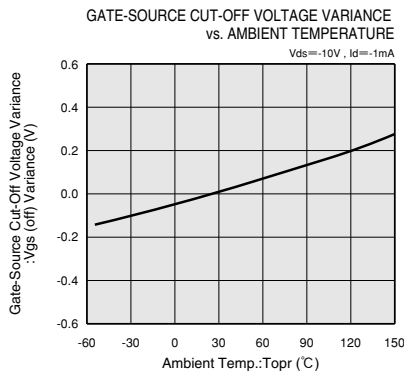
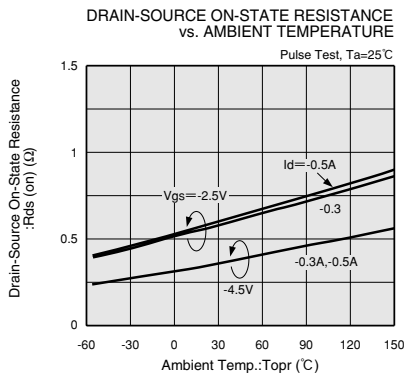
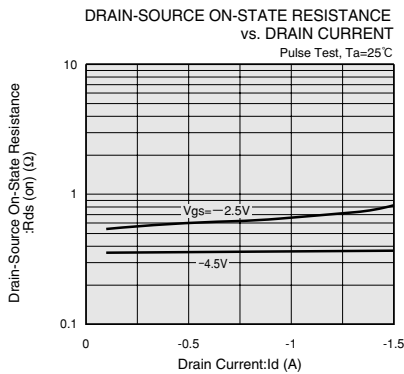
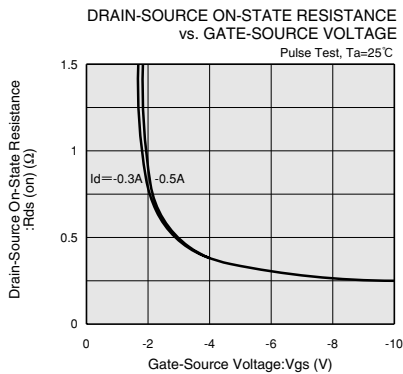
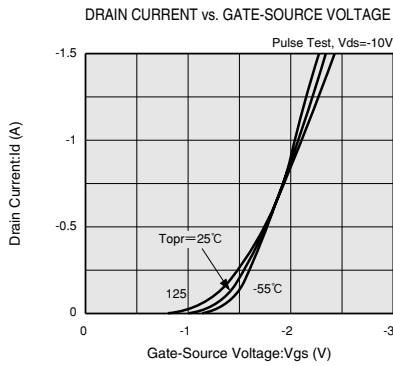
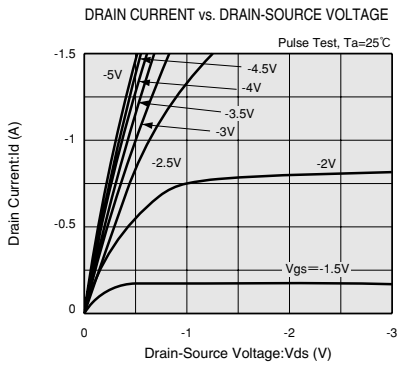
Thermal Characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-ambience)	R _{th (ch-a)}	Implement on a ceramic PCB		250		°C/W

11

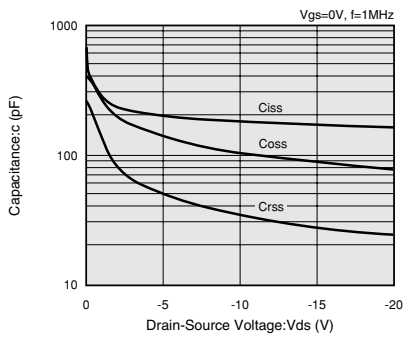
XP152A01D8MR

Typical Performance Characteristics

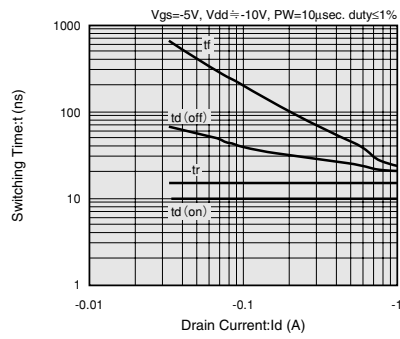


XP152A01D8MR

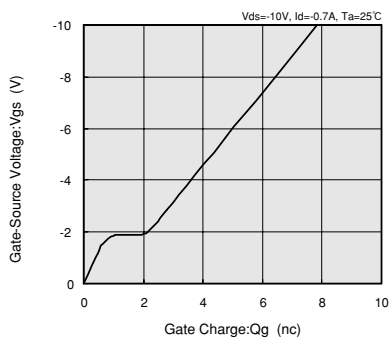
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



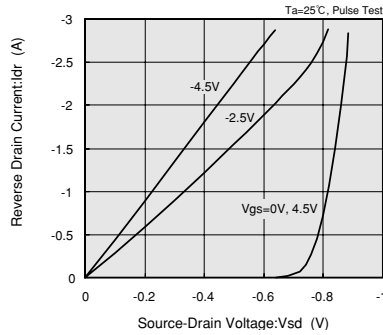
SWITCHING TIME vs. DRAIN CURRENT



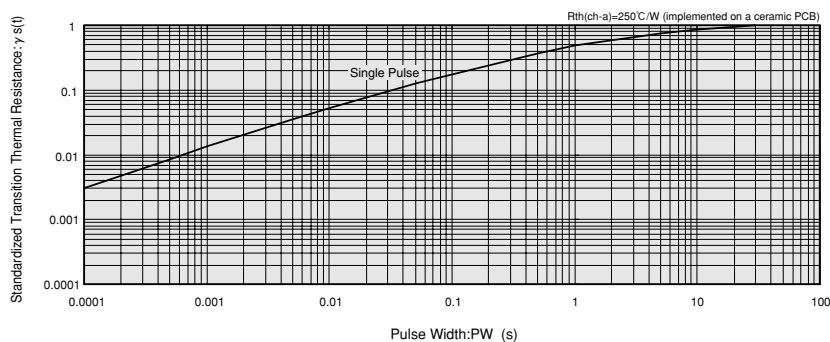
GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH



11