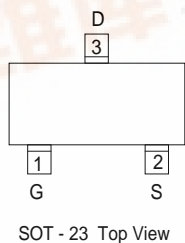


- ◆ P-Channel Power MOS FET
- ◆ DMOS Structure
- ◆ Low On-State Resistance :  $0.3\Omega$  (max)
- ◆ Ultra High-Speed Switching
- ◆ Gate Protect Diode Built-in
- ◆ SOT - 23 Package

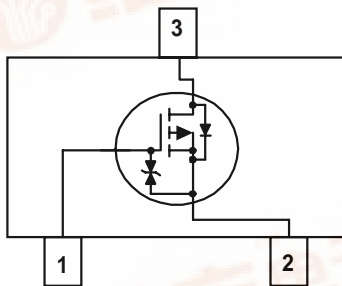
### General Description

The XP152A12C0MR 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. In order to counter static, a gate protect diode is built-in. The small SOT-23 package makes high density mounting possible.

### Pin Configuration



### Equivalent Circuit



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

### Applications

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

### Features

- Low on-state resistance :  $R_{ds(on)} = 0.3\Omega$  (  $V_{gs} = -4.5V$  )  
 $R_{ds(on)} = 0.5\Omega$  (  $V_{gs} = -2.5V$  )
- Ultra high-speed switching
- Gate Protect Diode Built-in
- Operational Voltage :  $-2.5V$
- High density mounting : SOT - 23

### Pin Assignment

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

### Absolute Maximum Ratings

PARAMETER	SYMBOL	RATINGS	Ta=25°C
			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>	-0.7	A
Drain Current (Pulse)	I <sub>dp</sub>	-2.8	A
Reverse Drain Current	I <sub>dr</sub>	-0.7	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 to 150	°C

( note ) : When implemented on a ceramic PCB

## ■ Electrical Characteristics

### DC characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Drain Cut-off Current	Idss	Vds = - 20 , Vgs = 0V			- 10	μA
Gate-Source Leakage Current	Igss	Vgs = ± 12 , Vds = 0V			± 10	μA
Gate-Source Cut-off Voltage	Vgs ( off )	Id = -1mA , Vds = - 10V	- 0.5		- 1.2	V
Drain-Source On-state Resistance ( note )	Rds ( on )	Id = - 0.4A , Vgs = - 4.5V		0.23	0.3	Ω
		Id = - 0.4A , Vgs = - 2.5V		0.37	0.5	Ω
Forward Transfer Admittance ( note )	Yfs	Id = - 0.4A , Vds = - 10V		1.5		S
Body Drain Diode Forward Voltage	Vf	If = - 0.7A , Vgs = 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	Ciss	Vds = - 10V , Vgs = 0V f = 1 MHz		180		pF
Output Capacitance	Coss			120		pF
Feedback Capacitance	Crss			60		pF

### Switching characteristics

Ta=25°C

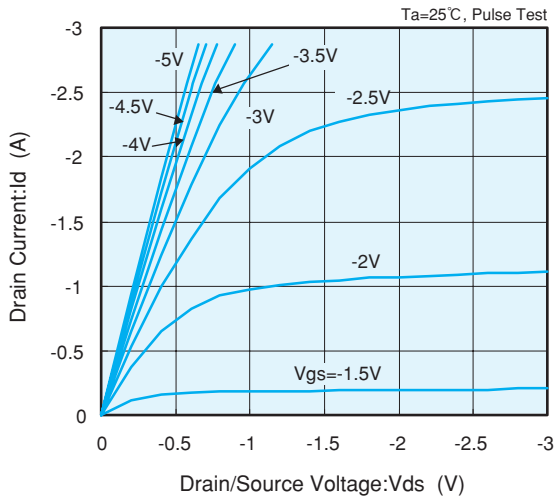
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td ( on )	Vgs = - 5V , Id = - 0.4A Vdd = - 10V		5		ns
Rise Time	tr			20		ns
Turn-off Delay Time	td ( off )			55		ns
Fall Time	tf			70		ns

### Thermal characteristics

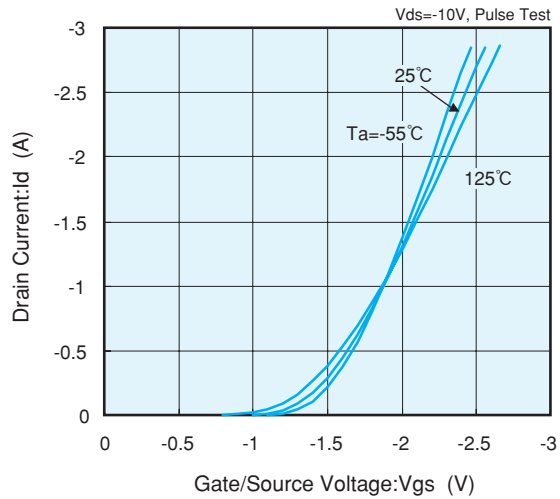
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance ( channel - surroundings )	Rth ( ch - a )	Implement on a ceramic PCB		250		°C / W

### Electrical Characteristics

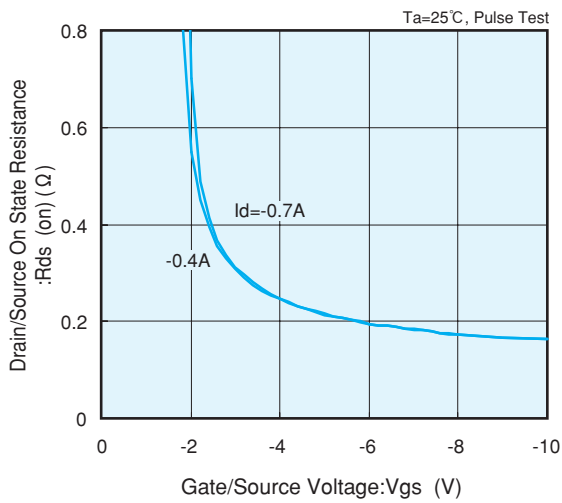
Drain Current vs. Drain/Source Voltage



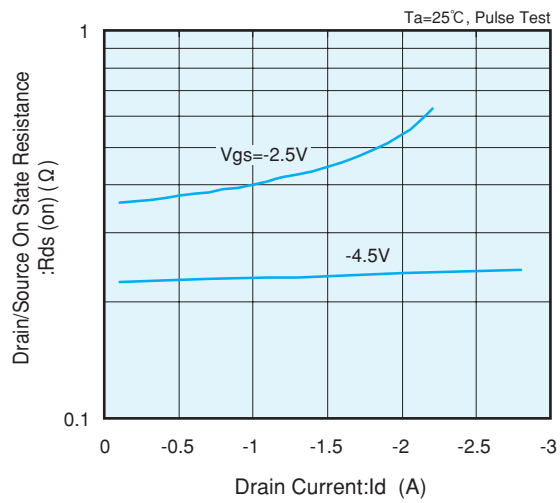
Drain Current vs. Gate/Source Voltage



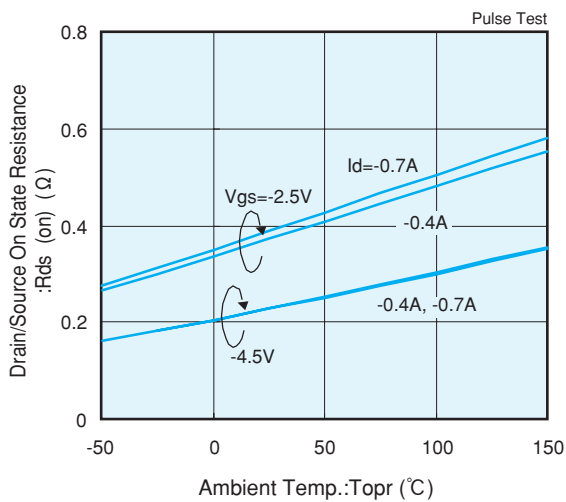
Drain/Source On State Resistance vs. Gate/Source Voltage



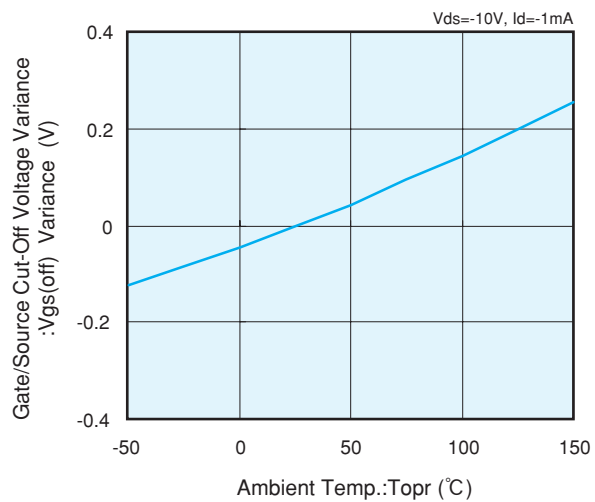
Drain/Source On State Resistance vs. Drain Current



Drain/Source On State Resistance vs. Ambient Temperature

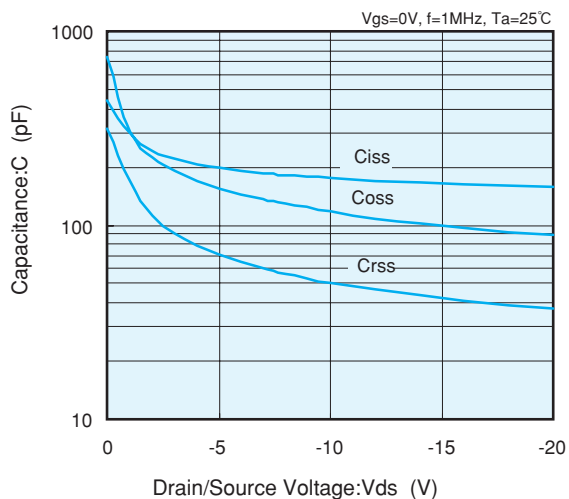


Gate/Source Cut off Voltage Variance vs. Ambient Temperature

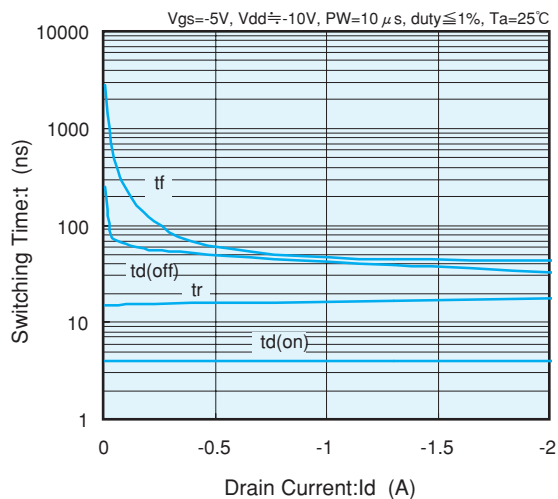


## Electrical Characteristics

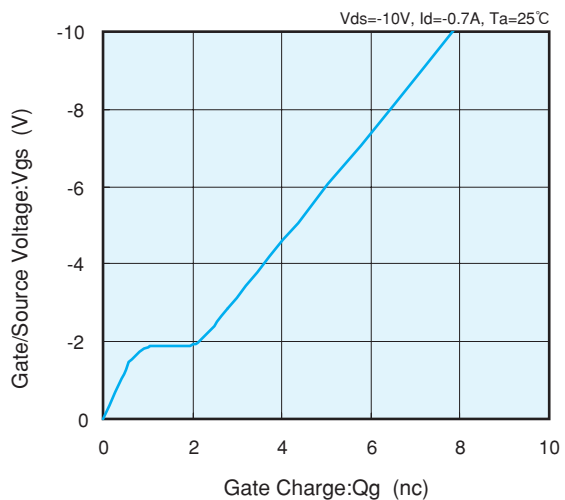
Capacitance vs. Drain/Source Voltage



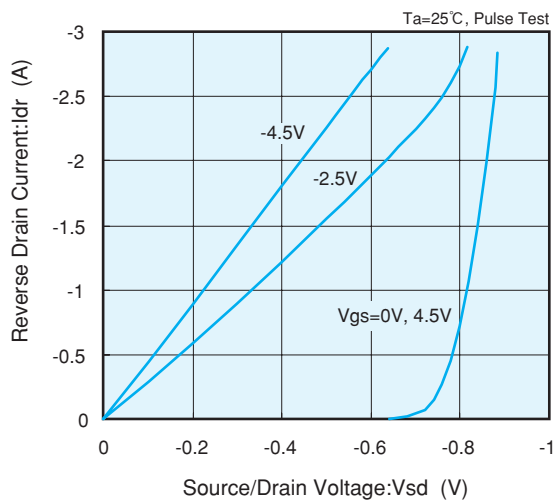
Switching Time vs. Drain Current



Gate/Source Voltage vs. Gate Charge



Reverse Drain Current vs. Source/Drain Voltage



Standardized Transition Thermal Resistance vs. Pulse Width

