XP161A11A1PR

Power MOS FET

- ◆ **N-Channel Power MOS FET**
- ◆ **DMOS Structure**
- ◆ **Low On-State Resistance: 0.105Ω MAX**
- ◆ **Gate Protect Diode Built-in**
- ◆ **Ultra High-Speed Switching**
- ◆ **SOT-89 Package**

Applications

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

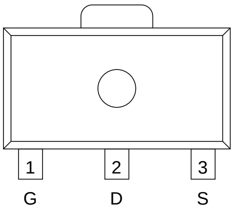
General Description

The XP161A11A1PR is a N-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-89 package makes high density mounting possible.

Features

Low on-state resistance: Rds(on)=0.065Ω(Vgs=10V)
Rds(on)=0.105Ω(Vgs=4.5V)
Ultra high-speed switching
Gate Protect Diode Built-in
Operational Voltage: 4.5V
High density mounting: SOT-89

Pin Configuration

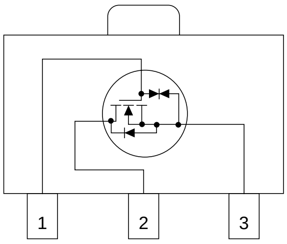


SOT-89
(TOP VIEW)

Pin Assignment

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

Equivalent Circuit



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

Absolute Maximum Ratings

Ta=25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	Vdss	30	V
Gate-Source Voltage	Vgss	±20	V
Drain Current (DC)	Id	4	A
Drain Current (Pulse)	Idp	16	A
Reverse Drain Current	Idr	4	A
Continuous Channel Power Dissipation (note)	Pd	2	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=30V, Vgs=0V			10	μA
Gate-Source Leakage Current	Igss	Vgs=±20V, Vds=0V			±10	μA
Gate-Source Cut-off Voltage	Vgs(off)	Id=1mA, Vds=10V	1.0		2.5	V
Drain-Source On-state Resistance (note)	Rds(on)	Id=2A, Vgs=10V		0.05	0.065	Ω
		Id=2A, Vgs=4.5V		0.075	0.105	Ω
Forward Transfer Admittance (note)	|Yfs|	Id=2A, Vds=10V		5.5		S
Body Drain Diode Forward Voltage	Vf	If=4A, Vgs=0V		0.85	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		270		pF
Output Capacitance	Coss			150		pF
Feedback Capacitance	Crss			55		pF

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Switching characteristics

Ta=25℃

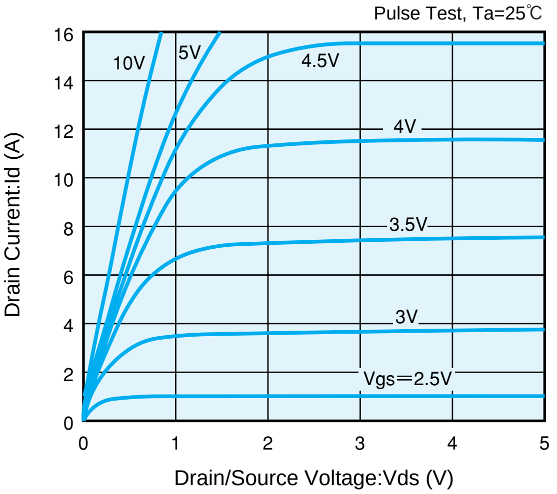
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td (on)	Vgs=5V, Id=2A Vdd=10V		10		ns
Rise Time	tr			15		ns
Turn-off Delay Time	td (off)			35		ns
Fall Time	tf			15		ns

Thermal characteristics

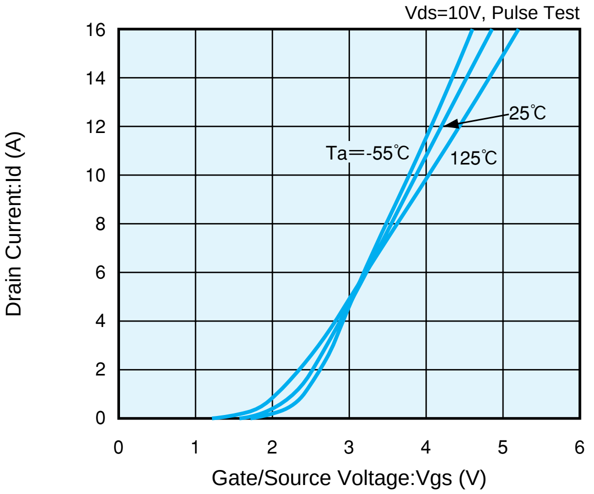
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-surroundings)	Rth (ch-a)	Implement on a glass epoxy resin PCB		62.5		℃/W

■ Electrical Characteristics

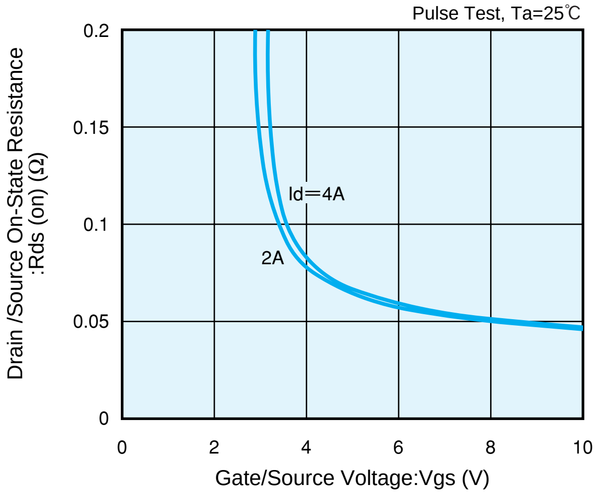
Drain Current vs. Drain /Source Voltage



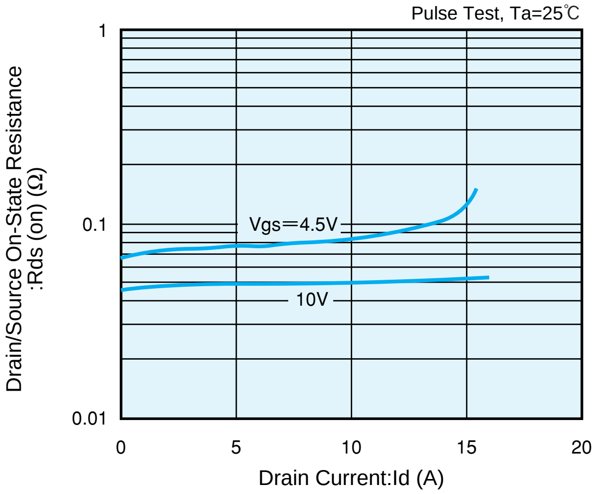
Drain Current vs. Gate/Source Voltage



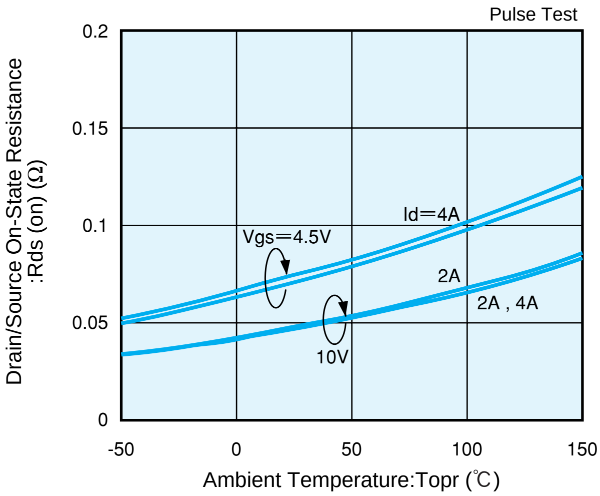
Drain/Source On-State Resistance vs. Gate/Source Voltage



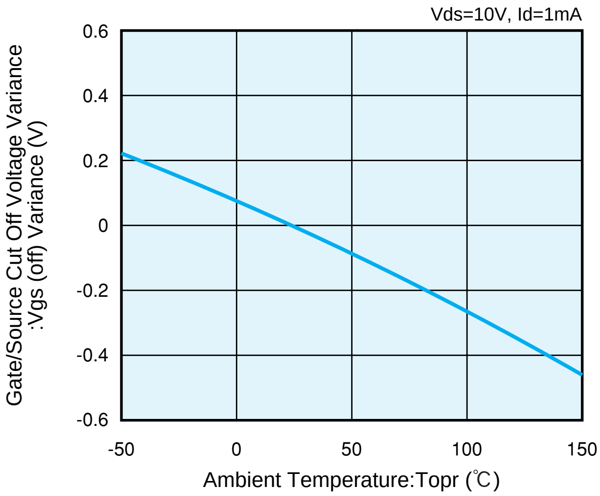
Drain/Source On-State Resistance vs. Drain Current



Drain/Source On-State Resistance vs. Ambient Temp.

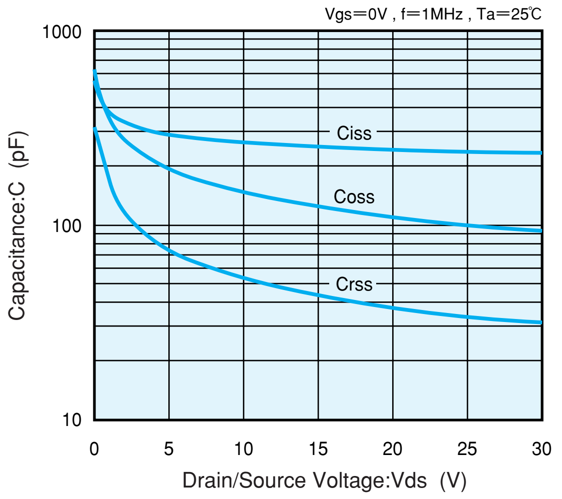


Gate/Source Cut Off Voltage Variance vs. Ambient Temp.

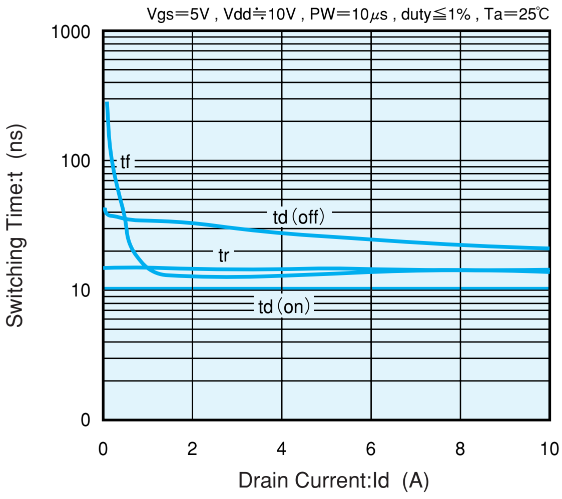


Electrical Characteristics

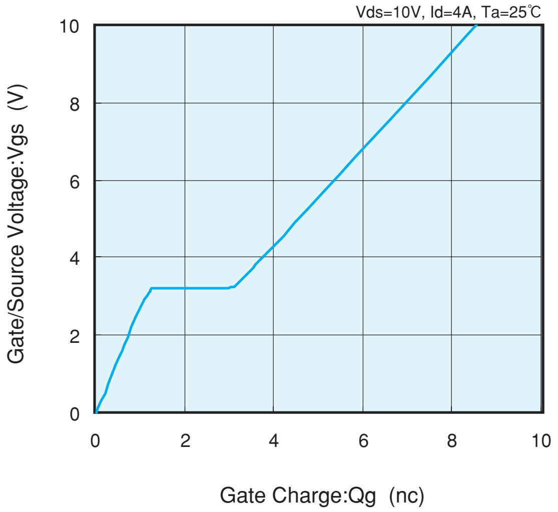
Capacitance vs. Drain/Source Voltage



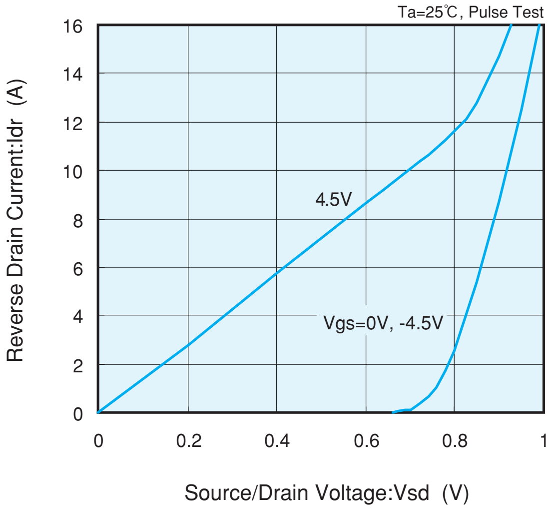
Switching Time vs. Drain Current



Gate/Source Voltage vs. Gate Charge



Reverse Drain Current vs. Source/Drain Voltage



Standardized Transition Thermal Resistance vs. Pulse Width