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# XP162A11C0PR-G

ETR1125\_003

## Power MOSFET

### ■ GENERAL DESCRIPTION

The XP162A11C0PR-G is a P-channel Power MOSFET 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.

A gate protect diode is built-in to prevent static damage.

The small SOT-89 package makes high density mounting possible.

### ■ APPLICATIONS

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

### ■ FEATURES

**Low On-State Resistance** :  $R_{ds(on)} = 0.15\Omega$  @  $V_{gs} = -10V$   
:  $R_{ds(on)} = 0.28\Omega$  @  $V_{gs} = -4.5V$

**Ultra High-Speed Switching**

**Driving Voltage** : -4.5V

**Gate Protect Diode Built-in**

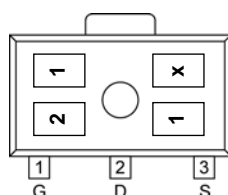
**P-Channel Power MOSFET**

**DMOS Structure**

**Small Package** : SOT-89

**Environmentally Friendly** : EU RoHS Compliant, Pb Free

### ■ PIN CONFIGURATION/MARKING

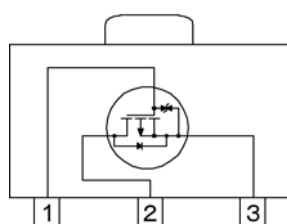


G : Gate  
S : Source  
D : Drain

SOT-89  
(TOP VIEW)

\* x represents production lot number.

### ■ EQUIVALENT CIRCUIT



P-channel MOSFET  
( 1 device built-in )

### ■ PRODUCT NAME

PRODUCTS	PACKAGE	ORDER UNIT
XP162A11C0PR	SOT-89	1,000/Reel
XP162A11C0PR-G <sup>(*)</sup>	SOT-89	1,000/Reel

<sup>(\*)</sup> The "-G" suffix denotes Halogen and Antimony free as well as being fully RoHS compliant.

### ■ ABSOLUTE MAXIMUM RATINGS

$T_a = 25^\circ\text{C}$

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	$V_{ds}$	-30	V
Gate-Source Voltage	$V_{gs}$	$\pm 20$	V
Drain Current (DC)	$I_d$	-2.5	A
Drain Current (Pulse)	$I_{dp}$	-10	A
Reverse Drain Current	$I_{dr}$	-2.5	A
Channel Power Dissipation *	$P_d$	2	W
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55~150	$^\circ\text{C}$

\* When implemented on a ceramic PCB

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## ELECTRICAL CHARACTERISTICS

### DC Characteristics

Ta = 25°C

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds= -30V, Vgs= 0V	-	-	-10	μA
Gate-Source Leak 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*1	Rds(on)	Id= -1.5A, Vgs= -10V	-	0.11	0.15	Ω
		Id= -1.5A, Vgs= -4.5V	-	0.20	0.28	Ω
Forward Transfer Admittance*1	Yfs	Id= -1.5A, Vds= -10V	-	2.5	-	S
Body Drain Diode Forward Voltage	Vf	If= -2.5A, Vgs= 0V	-	-0.85	-1.1	V

\*1 Effective during pulse test.

### Dynamic Characteristics

Ta = 25°C

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Capacitance	Ciss	Vds= -10V, Vgs=0V f= 1MHz	-	280	-	pF
Output Capacitance	Coss		-	200	-	pF
Feedback Capacitance	Crss		-	90	-	pF

### Switching Characteristics

Ta = 25°C

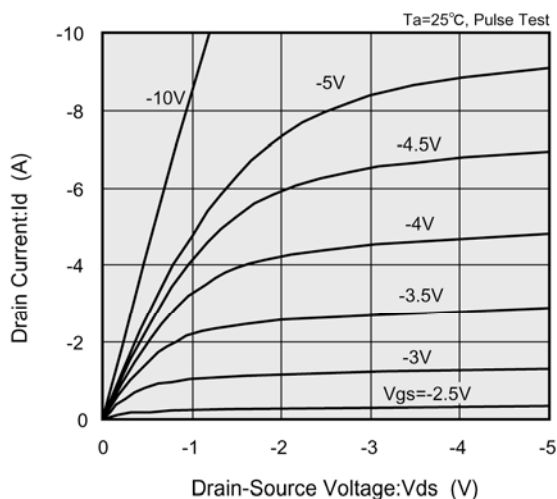
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= -5V, Id= -1.5A Vdd= -10V	-	10	-	ns
Rise Time	tr		-	30	-	ns
Turn-Off Delay Time	td (off)		-	20	-	ns
Fall Time	tf		-	35	-	ns

### Thermal Characteristics

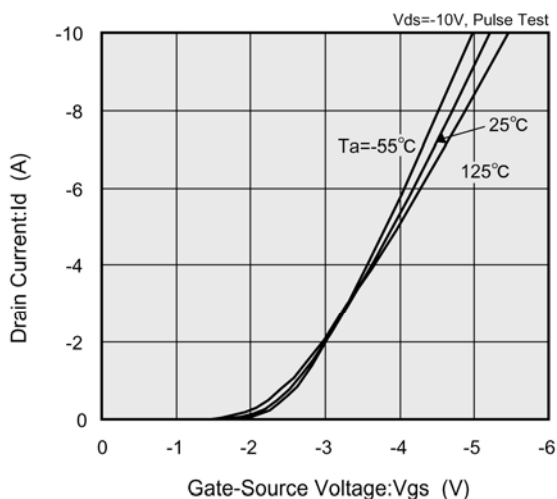
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a ceramic PCB	-	62.5	-	°C/W

## ■ TYPICAL PERFORMANCE CHARACTERISTICS

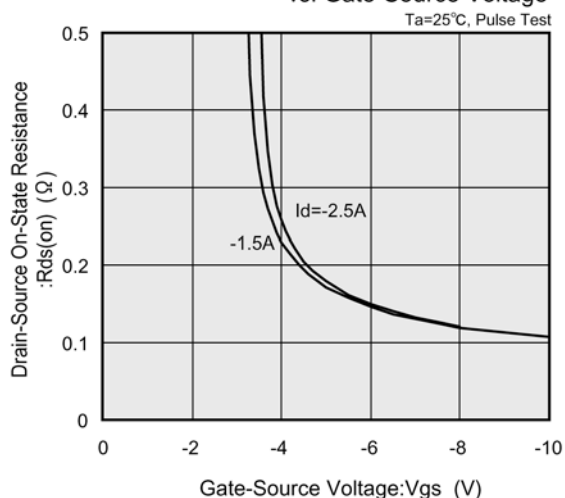
(1) Drain Current vs. Drain-Source Voltage



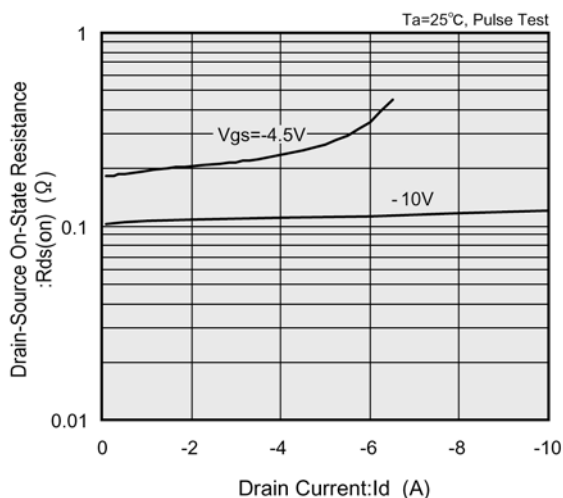
(2) Drain Current vs. Gate-Source Voltage



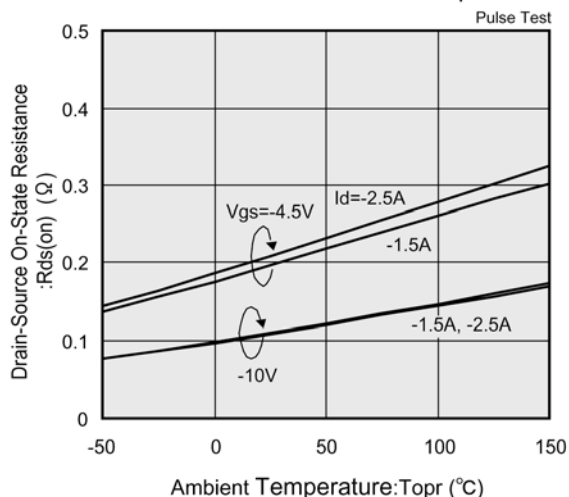
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



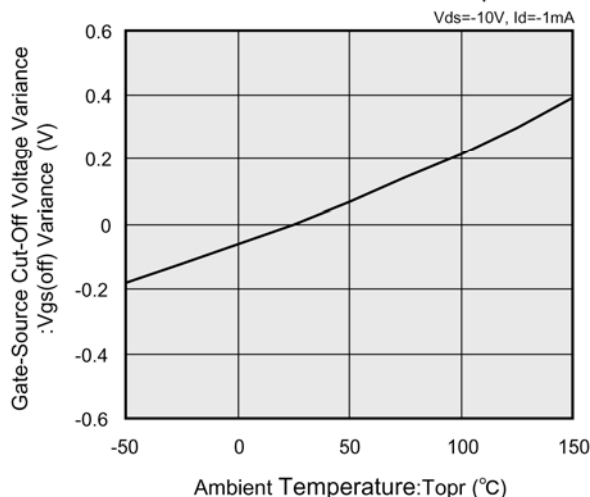
(4) Drain-Source On-State Resistance vs. Drain Current



(5) Drain-Source On-State Resistance vs. Ambient Temperature



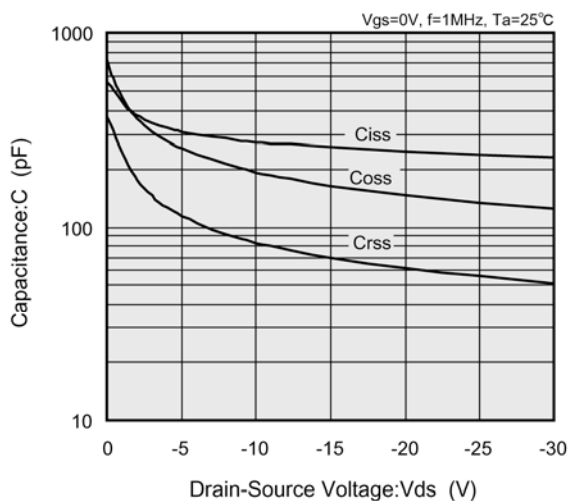
(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature



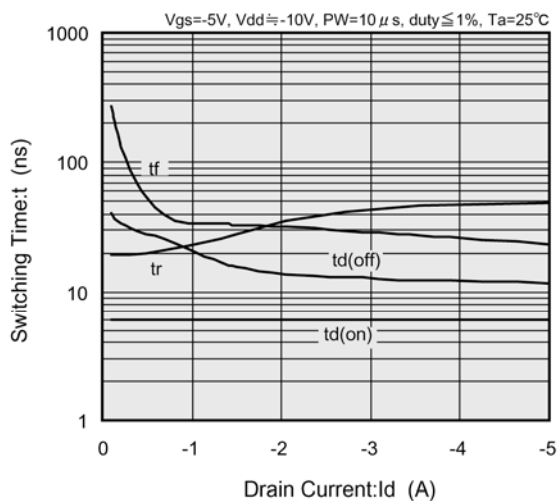
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## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

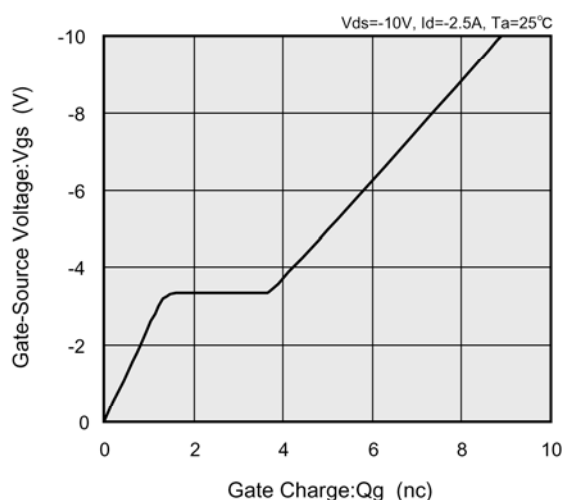
(7) Capacitance vs. Drain-Source Voltage



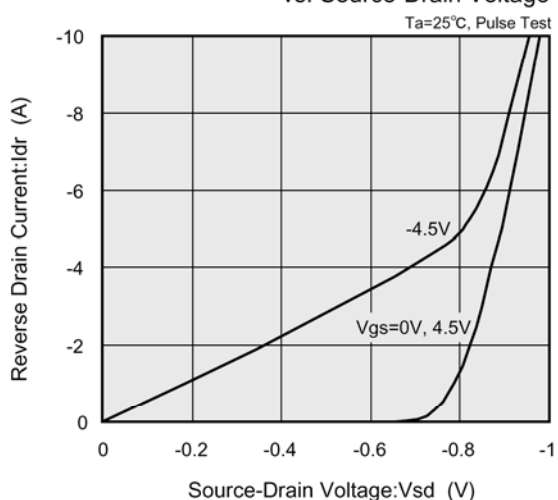
(8) Switching Time vs. Drain Current



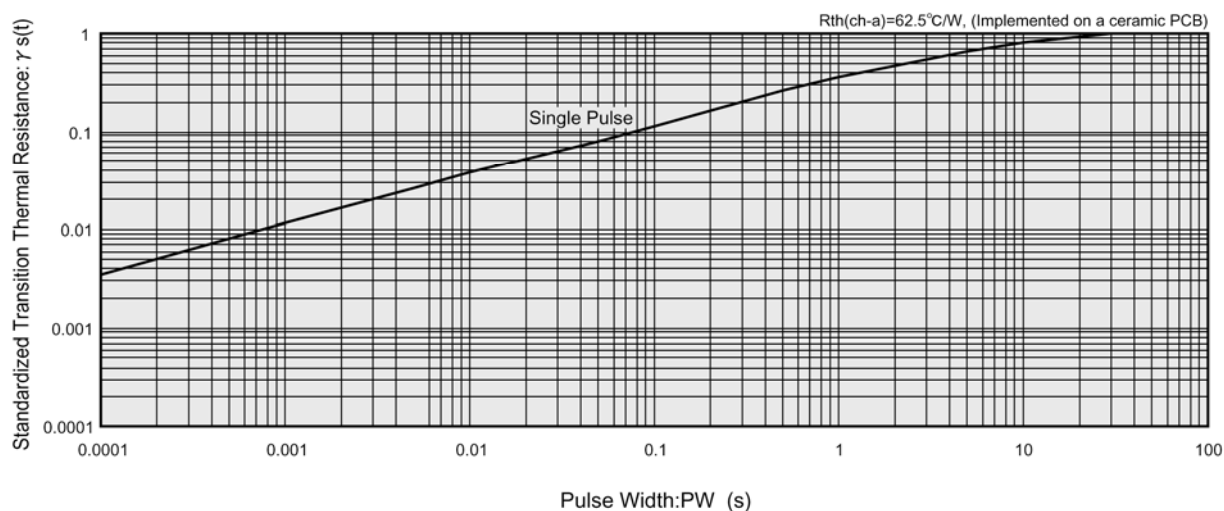
(9) Gate-Source Voltage vs. Gate Charge



(10) Reverse Drain Current vs. Source-Drain Voltage



(11) Standardized transition Thermal Resistance vs. Pulse Width



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