XP162A12A6PR-G

Power MOSFET

■GENERAL DESCRIPTION

The XP162A12A6PR 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 : Rds(on)=0.17Ω @Vgs=-4.5V

: Rds(on)=0.3Ω Vgs=-2.5V

Ultra High-Speed Switching

Driving Voltage : -2.5V

Gate Protect Diode Built-in

P-Channel Power MOSFET

DMOS Structure

Package : SOT-89

## ■PIN CONFIGURATION/ MARKING
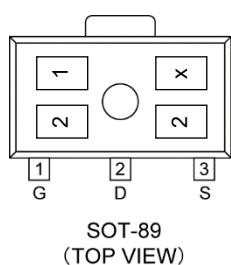
G : Gate
S : Source
D : Drain

SOT-89
(TOP VIEW)

* x represents production lot number.

■PRODUCT NAME

PRODUCT	PACKAGE	ORDER UNIT
XP162A12A6PR-G*	SOT-89	1,000pcs/Reel

(*) The "-G" suffix denotes Halogen and Antimony free as well as being fully RoHS compliant

■EQUIVALENT CIRCUIT
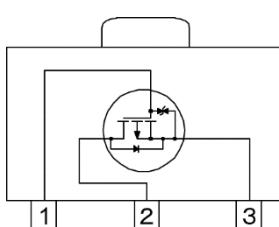
P-channel MOSFET
(1 device built-in)

■ABSOLUTE MAXIMUM RATINGS

Ta = 25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	Vdss	-20	V
Gate-Source Voltage	Vgss	±12	V
Drain Current (DC)	Id	-2.5	A
Drain Current (Pulse)	Idp	-10	A
Reverse Drain Current	Idr	-2.5	A
Channel Power Dissipation *	Pd	2	W
Channel Temperature	Tch	150	℃
Storage Temperature Ramge	Tstg	-55~150	℃

* When implemented on a ceramic PCB (900mm^2 x 0.8mm)

■ELECTRICAL CHARACTERISTICS

DC Characteristics
Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds= -20V, Vgs= 0V	-	-	-10	μA
Gate-Source Leak Current	Igss	Vgs= ±12V, 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*1	Rds(on)	Id=-1.5A, Vgs= -4.5V	-	0.13	0.17	Ω
		Id=-1.5A, Vgs= -2.5V	-	0.22	0.30	Ω
Forward Transfer Admittance*1	| Yfs |	Id=-1.5A, Vds= -10V	-	4	-	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℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Capacitance	Ciss	Vds=-10V, Vgs=0V f= 1MHz	-	310	-	pF
Output Capacitance	Coss		-	200	-	pF
Feedback Capacitance	Crss		-	90	-	pF

Switching Characteristics
Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= -5V, Id= -1.5A Vdd= -10V	-	5	-	ns
Rise Time	tr		-	15	-	ns
Turn-Off Delay Time	td (off)		-	55	-	ns
Fall Time	tf		-	55	-	ns

Thermal Characteristics

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

# ■TYPICAL PERFORMANCE CHARACTERISTICS

(1) Drain Current vs. Drain-Source Voltage
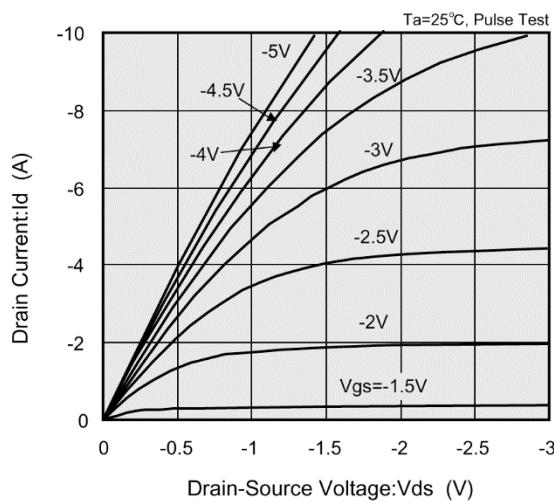

### (2) Drain Current vs. Gate-Source Voltage
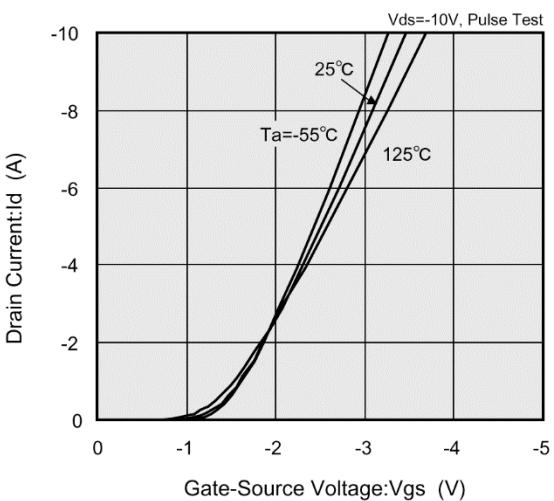
### (3) Drain-Source On-State Resistance vs. Gate-Source Voltage
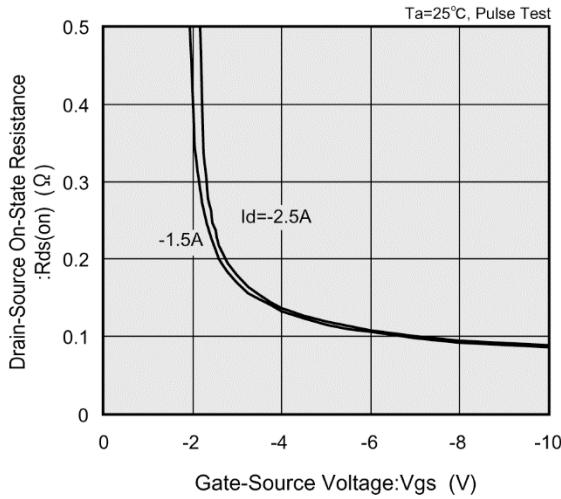
(4) Drain-Source On-State Resistance vs. Drain Current
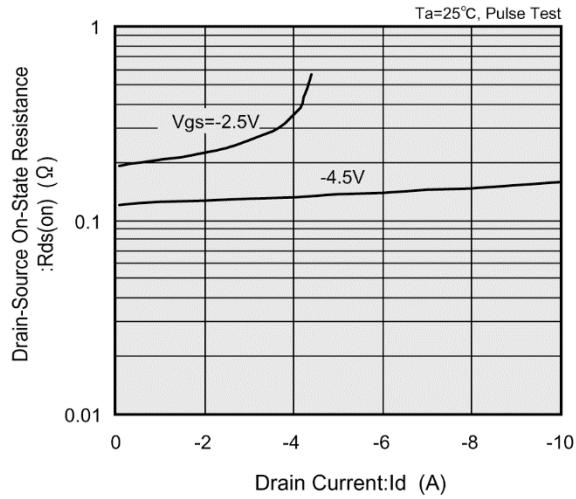
(5) Drain-Source On-State Resistance vs. Ambient Temperature
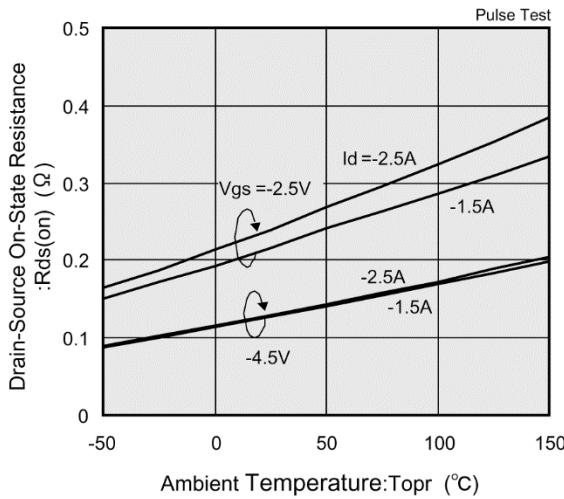

### (6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature
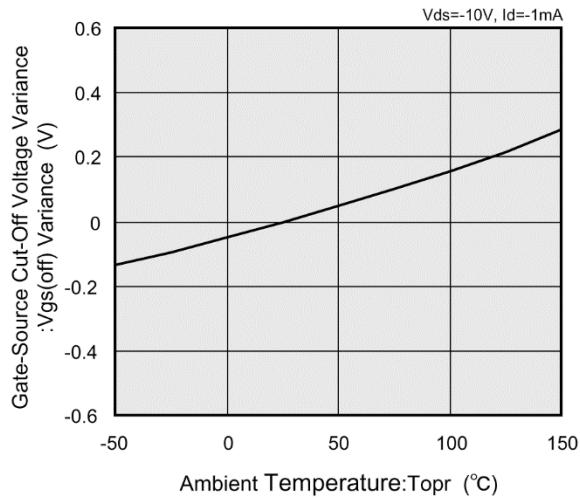
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

(7) Capacitance vs. Drain-Source Voltage

Vgs=0V, f=1MHz, Ta=25℃

Capacitance:C (pF) vs Drain-Source Voltage:Vds (V)

Ciss
Coss
Crss
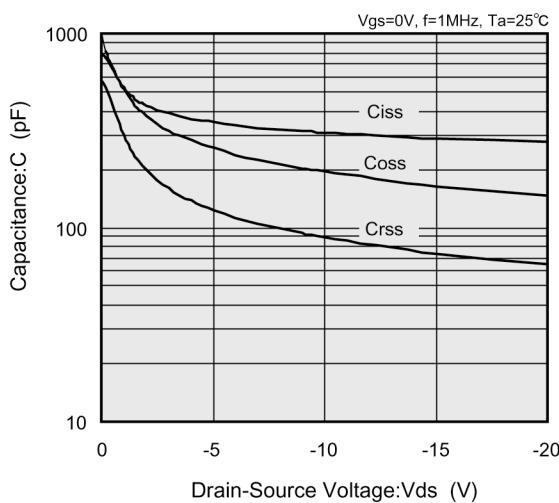
(8) Switching Time vs. Drain Current

Vgs=-5V, Vdd≒-10V, PW=10μs, duty≦1%, Ta=25℃

Switching Time:t (ns) vs Drain Current:Id (A)

tf
td(off)
tr
td(on)
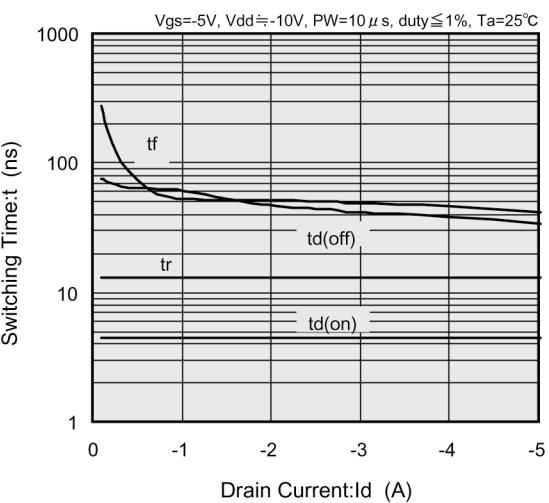
(9) Gate-Source Voltage vs. Gate Charge

Vds=-10V, Id=-2.5A, Ta=25℃

Gate-Source Voltage:Vgs (V) vs Gate Charge:Qg (nc)
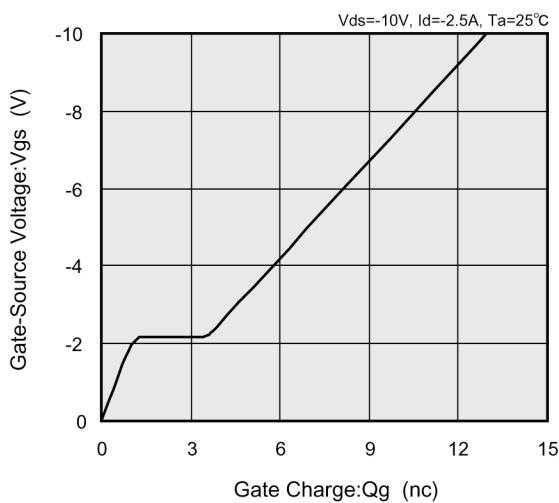
(10) Reverse Drain Current vs. Source-Drain Voltage

Ta=25℃, Pulse Test

Reverse Drain Current:Idr (A) vs Source-Drain Voltage:Vsd (V)

-4.5V
-2.5V
Vgs=0V, 4.5V
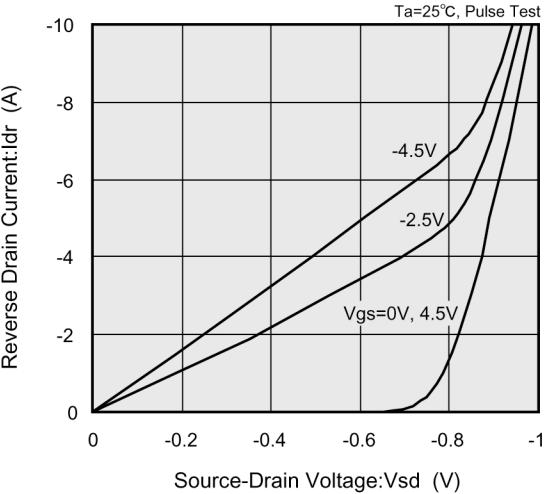
(11) Standardized transition Thermal Resistance vs. Pulse Width

Rth(ch-a)=62.5℃/W, (Implemented on a ceramic PCB)

Standardized Transition Thermal Resistance:γs(t) vs Pulse Width:PW (s)

Single Pulse
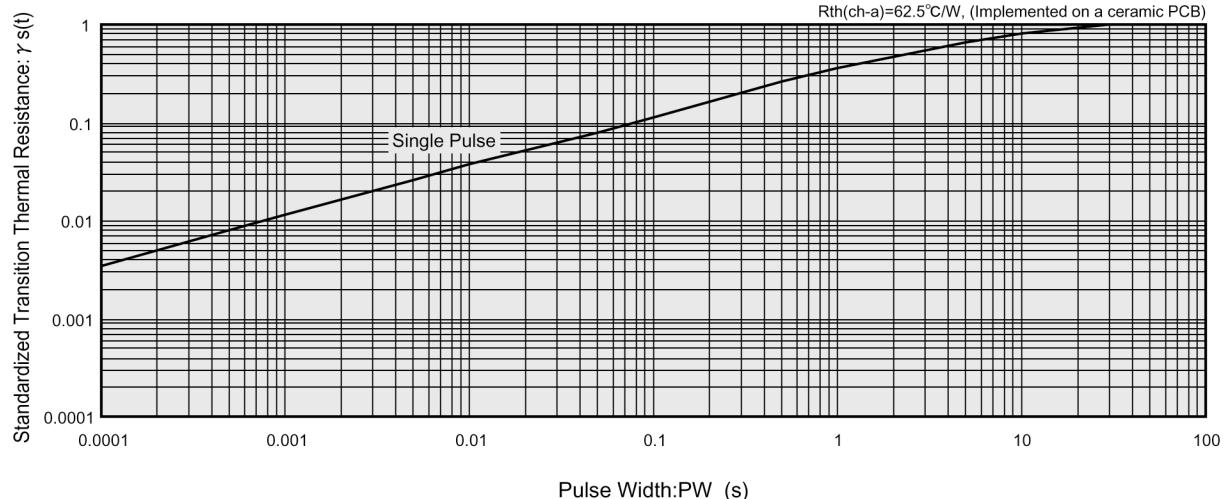
■PACKAGING INFORMATION

For the latest package information go to, www.torexsemi.com/technical-support/packages

PACKAGE	OUTLINE / LAND PATTERN	THERMAL CHARACTERISTICS
SOT-89	SOT-89 PKG	SOT-89 Power Dissipation

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