

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

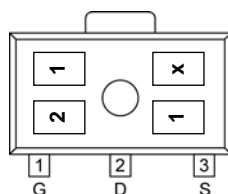
■ FEATURES

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

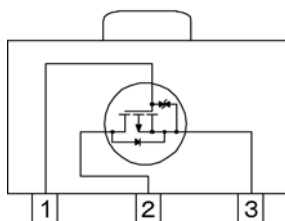


G : Gate
S : Source
D : Drain

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 ^(*) | SOT-89 | 1,000/Reel |

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

■ ABSOLUTE MAXIMUM RATINGS

Ta = 25°C

| PARAMETER | SYMBOL | RATINGS | UNITS |
|-----------------------------|--------|---------|-------|
| Drain-Source Voltage | Vdss | -30 | V |
| Gate-Source Voltage | Vgss | ±20 | 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 | °C |
| Storage Temperature | Tstg | -55~150 | °C |

* 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= -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

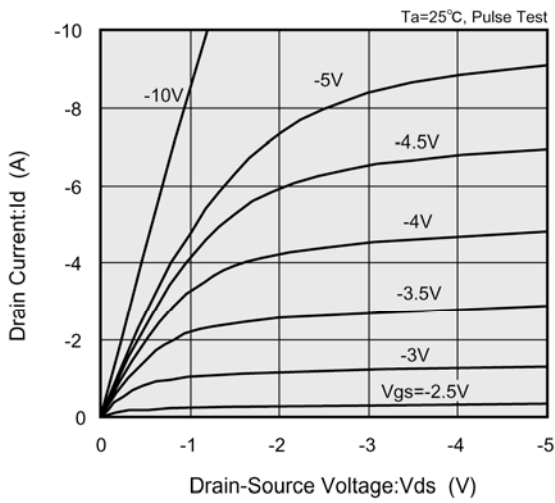
| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---------------------|----------|----------------------------------|------|------|------|-------|
| Turn-On Delay Time | td (on) | Vgs= -5V, Id= -1.5A Vdd= -10V | - | 10 | - | ns |
| Rise Time | tr | | - | 30 | - | ns |
| Turn-Off Delay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

Thermal Characteristics

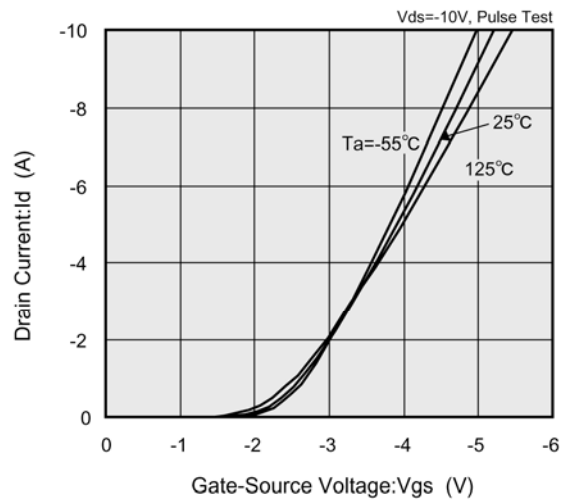
| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---------------------------------------|------------|----------------------------|------|------|------|-------|
| Thermal Resistance (Channel-Ambience) | Rth (ch-a) | Implement on a ceramic PCB | - | 62.5 | - | °C/W |

TYPICAL PERFORMANCE CHARACTERISTICS

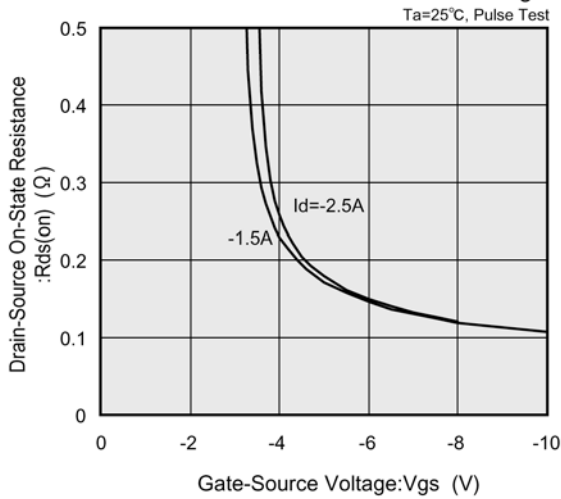
(1) Drain Current vs. Drain-Source Voltage



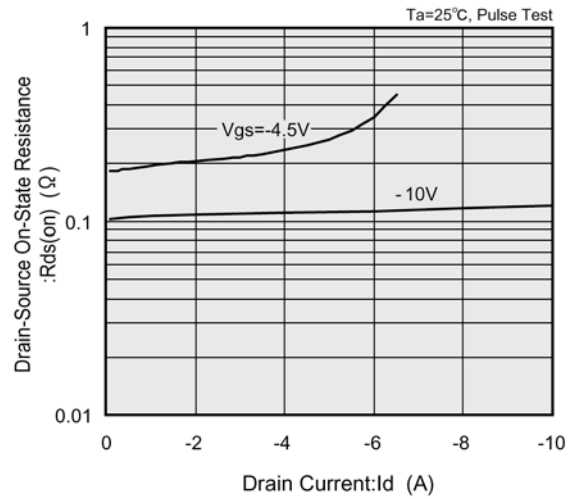
(2) Drain Current vs. Gate-Source Voltage



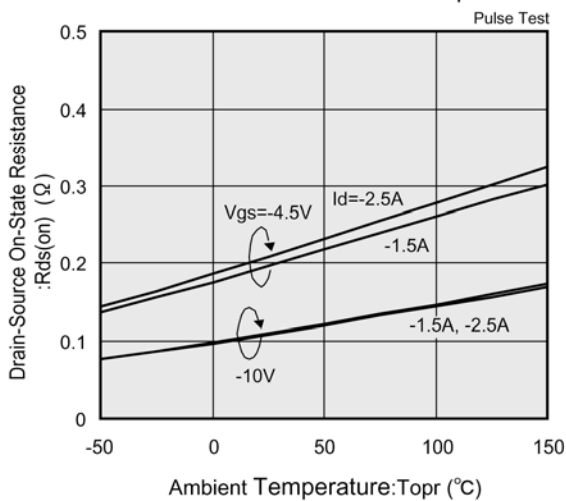
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



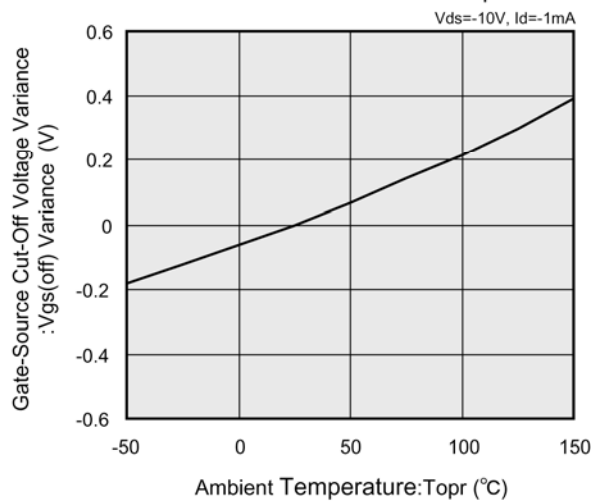
(4) Drain-Source On-State Resistance vs. Drain Current



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

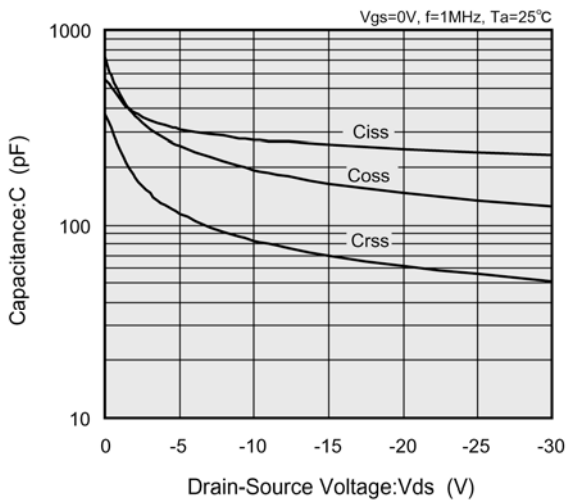


(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature

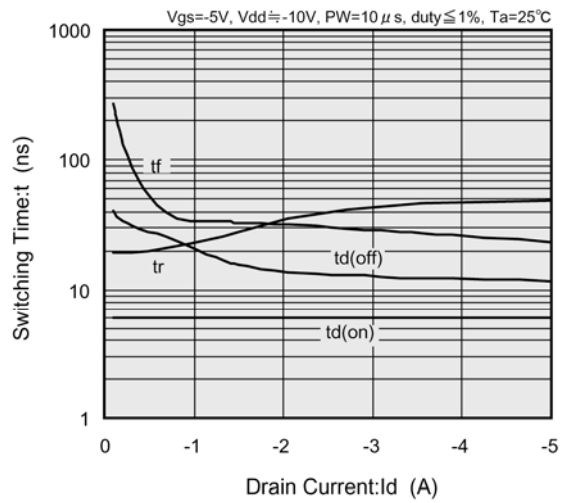


TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

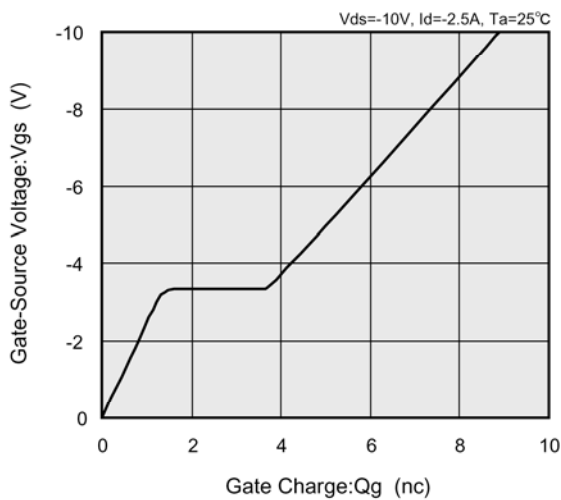
(7) Capacitance vs. Drain-Source Voltage



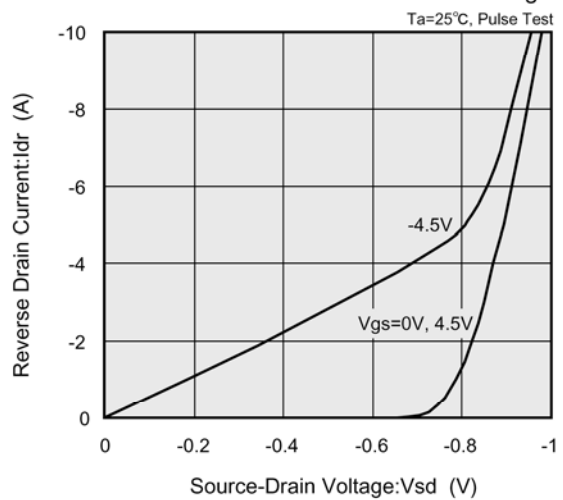
(8) Switching Time vs. Drain Current



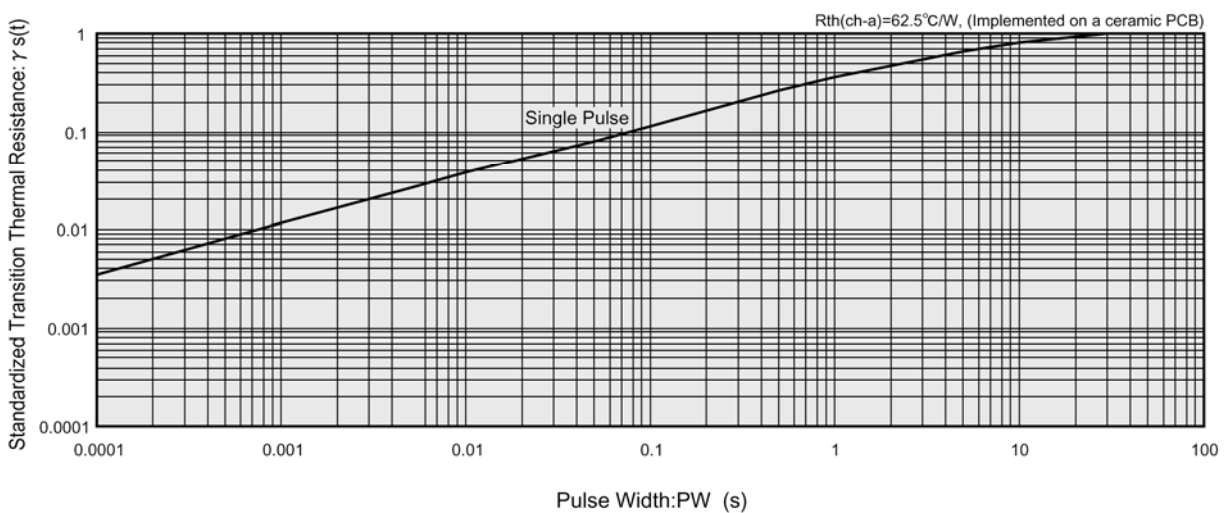
(9) Gate-Source Voltage vs. Gate Charge



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



(11) Standardized transition Thermal Resistance vs. Pulse Width



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