

XP162A11C0PR



Power MOS FET

- ◆P-Channel Power MOS FET
- ◆DMOS Structure
- ◆Low On-State Resistance : 0.28Ω (max)
- ◆Ultra High-Speed Switching
- ◆Gate Protect Diode Built-in
- ◆SOT-89 Package

General Description

The XP162A11C0PR 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.

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: $R_{ds(on)} = 0.15\Omega$ ($V_{gs} = -10V$)
: $R_{ds(on)} = 0.28\Omega$ ($V_{gs} = -4.5V$)

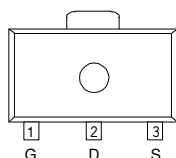
Ultra high-speed switching

Operational Voltage : $-4.5V$

Gate protect diode built-in

High density mounting : SOT-89

Pin Configuration



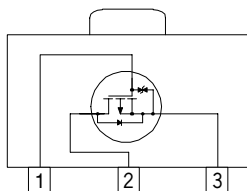
SOT-89
(TOP VIEW)

Pin Assignment

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

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Equivalent Circuit



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

Absolute Maximum Ratings

Ta=25°C			
PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	V_{ds}	-30	V
Gate - Source Voltage	V_{gs}	± 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
Continuous Channel Power Dissipation (note)	P_d	2	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	-55 ~ 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	I _{dss}	V _{ds} = - 30V , V _{gs} = 0V			- 10	μA
Gate-Source Leakage Current	I _{gss}	V _{gs} = ±20V , V _{ds} = 0V			± 10	μA
Gate-Source Cut-off Voltage	V _{gs} (off)	I _d = -1mA , V _{ds} = - 10V	- 1.0		- 2.5	V
Drain-Source On-state Resistance (note)	R _{ds} (on)	I _d = - 1.5A , V _{gs} = - 10V		0.11	0.15	Ω
		I _d = - 1.5A , V _{gs} = - 4.5V		0.2	0.28	Ω
Forward Transfer Admittance (note)	Y _{fs}	I _d = - 1.5A , V _{ds} = - 10V		2.5		S
Body Drain Diode Forward Voltage	V _f	I _f = - 2.5A , V _{gs} = 0V		- 0.85	- 1.1	V

(note) : Effective during pulse test.

Dynamic Characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Capacitance	C _{iss}	V _{ds} = - 10V , V _{gs} = 0V f = 1 MHz		280		pF
Output Capacitance	C _{oss}			200		pF
Feedback Capacitance	C _{rss}			90		pF

Switching Characteristics

Ta=25°C

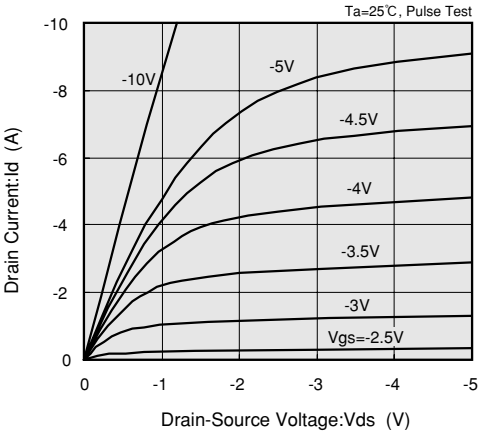
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	t _d (on)	V _{gs} = - 5V , I _d = - 1.5A V _{dd} = - 10V		10		ns
Rise Time	t _r			30		ns
Turn-off Delay Time	t _d (off)			20		ns
Fall Time	t _f			35		ns

Thermal Characteristics

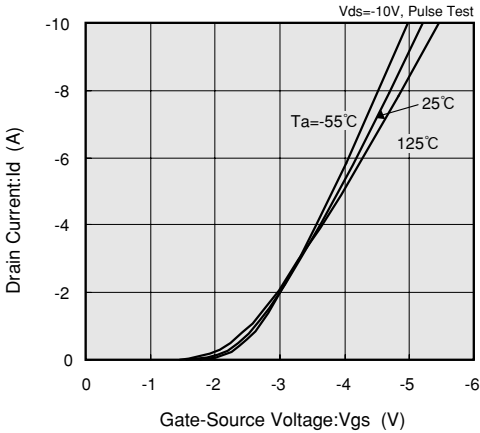
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-ambience)	R _{th} (ch-a)	Implement on a ceramic PCB		62.5		°C / W

Typical Performance Characteristics

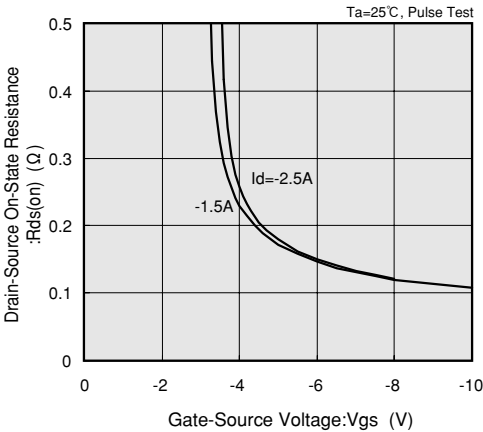
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



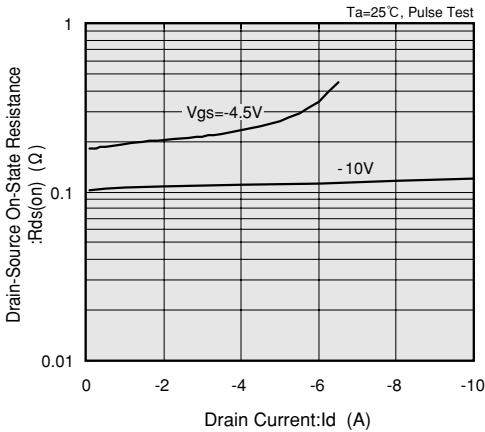
DRAIN CURRENT vs. GATE-SOURCE VOLTAGE



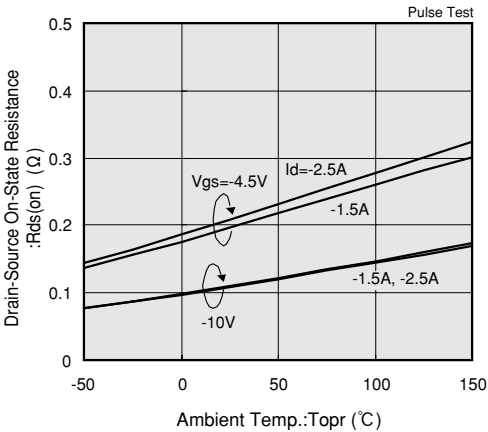
DRAIN-SOURCE ON-STATE RESISTANCE vs. GATE-SOURCE VOLTAGE



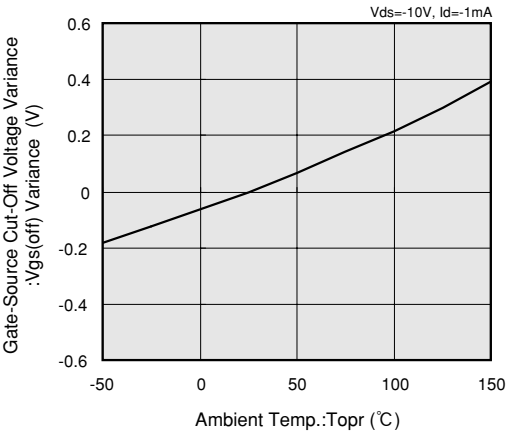
DRAIN-SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



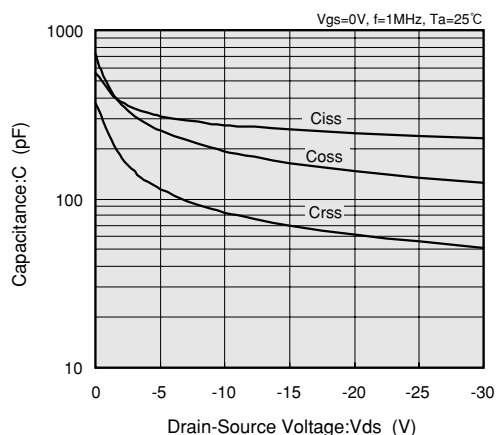
DRAIN-SOURCE ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



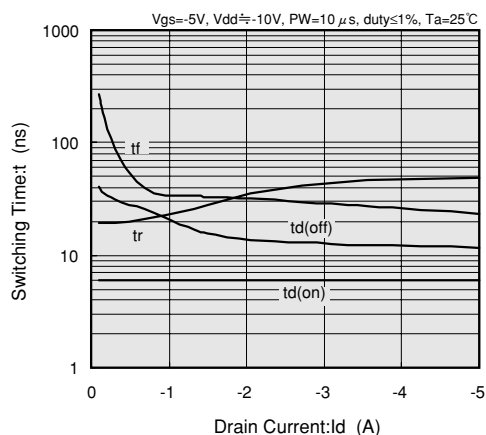
GATE-SOURCE CUT-OFF VOLTAGE VARIANCE vs. AMBIENT TEMPERATURE



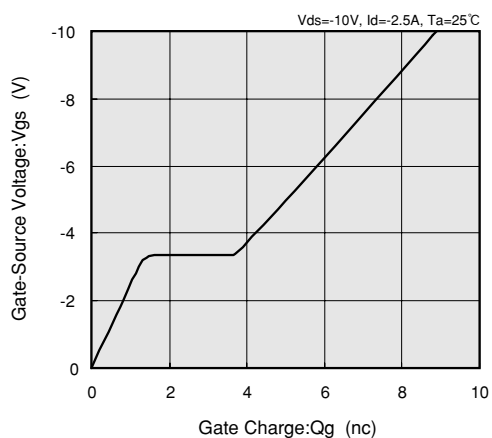
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



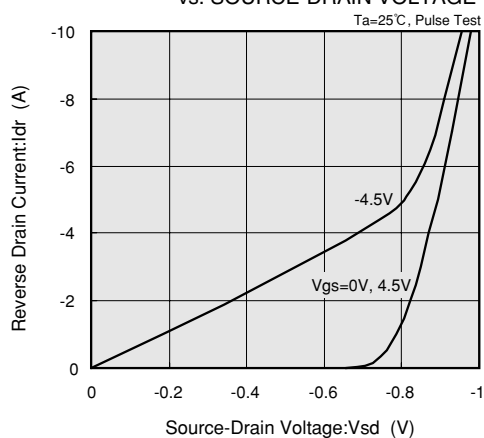
SWITCHING TIME vs. DRAIN CURRENT



GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH

