

XP162A12A6PR



Power MOS FET

- ◆P-Channel Power MOS FET
- ◆DMOS Structure
- ◆Low On-State Resistance : 0.17Ω (max)
- ◆Ultra High-Speed Switching
- ◆Gate Protect Diode Built-in
- ◆SOT-89 Package

General Description

The XP162A12A6PR 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 : $R_{ds(on)} = 0.17\Omega$ ($V_{gs} = -4.5V$)
: $R_{ds(on)} = 0.3\Omega$ ($V_{gs} = -2.5V$)

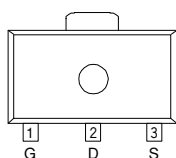
Ultra high-speed switching

Operational Voltage : $-2.5V$

Gate protect diode built-in

High density mounting : SOT-89

Pin Configuration



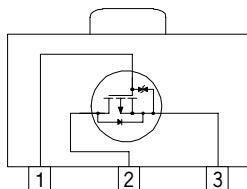
SOT-89
(TOP VIEW)

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}	-20	V
Gate - Source Voltage	V_{gs}	± 12	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}	$V_{ds} = -20V, V_{gs} = 0V$			-10	μA
Gate-Source Leakage Current	I_{gss}	$V_{gs} = \pm 12V, V_{ds} = 0V$			± 10	μA
Gate-Source Cut-off Voltage	$V_{gs} (off)$	$I_d = -1mA, V_{ds} = -10V$	-0.5		-1.2	V
Drain-Source On-state Resistance (note)	$R_{ds} (on)$	$I_d = -1.5A, V_{gs} = -4.5V$		0.13	0.17	Ω
		$I_d = -1.5A, V_{gs} = -2.5V$		0.22	0.3	Ω
Forward Transfer Admittance (note)	$ Y_{fs} $	$I_d = -1.5A, V_{ds} = -10V$		4		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}	$V_{ds} = -10V, V_{gs} = 0V$ $f = 1\text{ MHz}$		310		pF
Output Capacitance	C_{oss}			200		pF
Feedback Capacitance	C_{rss}			90		pF

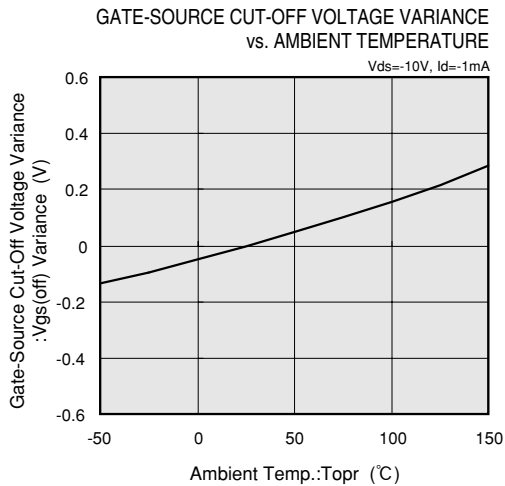
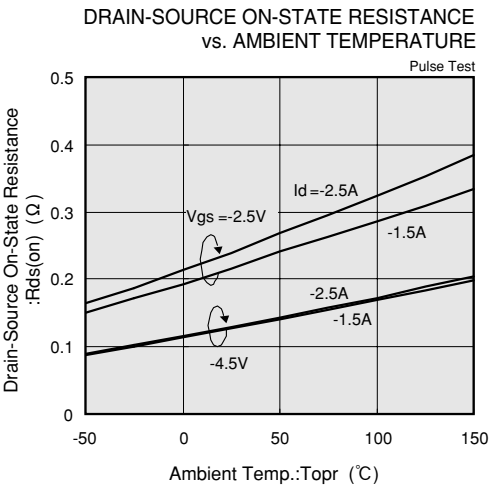
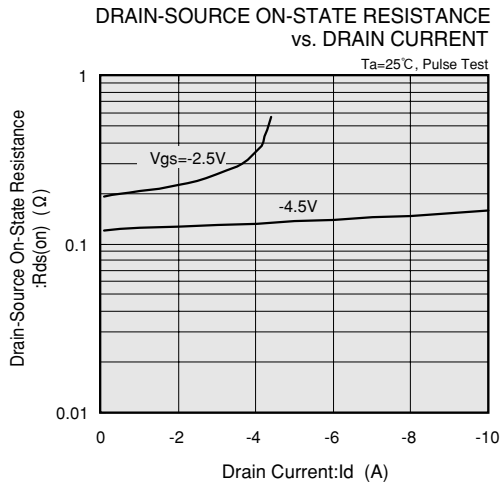
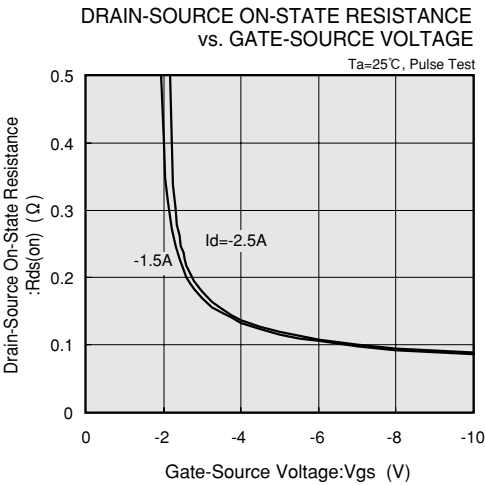
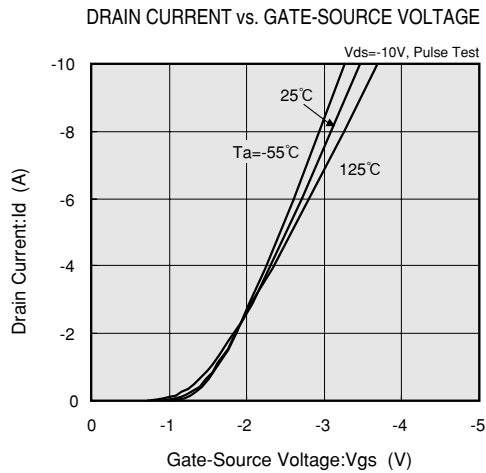
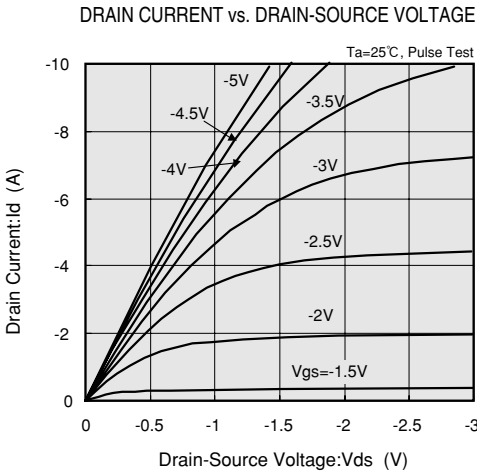
Switching Characteristics

Ta=25°C						
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	$t_d (on)$	$V_{gs} = -5V, I_d = -1.5A$ $V_{dd} = -10V$		5		ns
Rise Time	t_r			15		ns
Turn-off Delay Time	$t_d (off)$			55		ns
Fall Time	t_f			55		ns

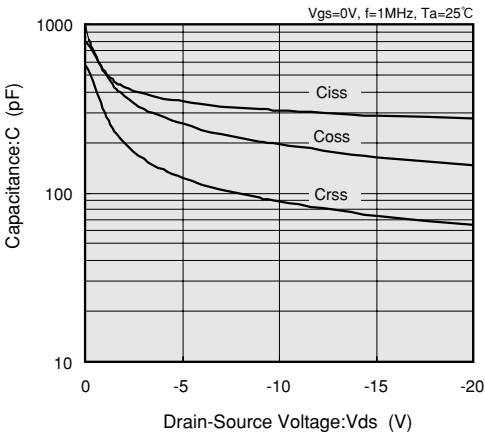
Thermal Characteristics

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

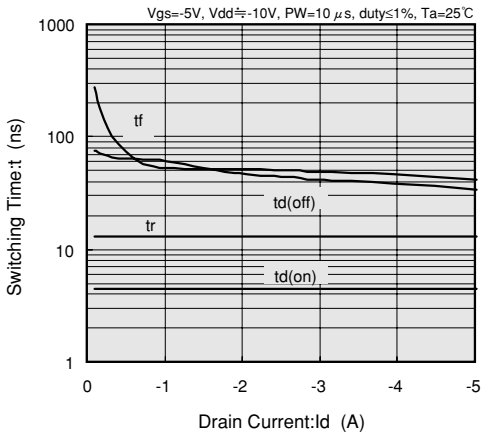
Typical Performance Characteristics



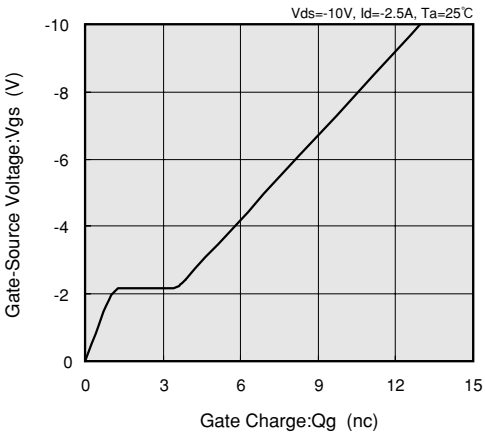
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



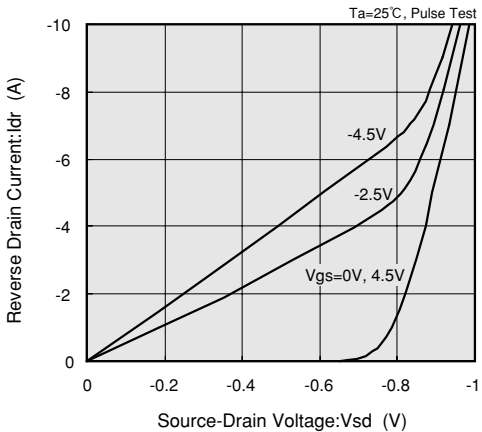
SWITCHING TIME vs. DRAIN CURRENT



GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH

