

XP152A11E5MR



Power MOS FET

- ◆P-Channel Power MOS FET
- ◆DMOS Structure
- ◆Low On-State Resistance : 0.45Ω (max)
- ◆Ultra High-Speed Switching
- ◆Gate Protect Diode Built-in
- ◆SOT-23 Package

General Description

The XP152A11E5MR 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.

In order to counter static, a gate protect diode is built-in. The small SOT-23 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 : $R_{ds(on)} = 0.25\Omega$ ($V_{gs} = -10V$)
: $R_{ds(on)} = 0.45\Omega$ ($V_{gs} = -4.5V$)

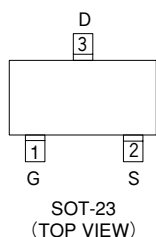
Ultra high-speed switching

Gate Protect Diode Built-in

Operational Voltage : $-4.5V$

High density mounting : SOT-23

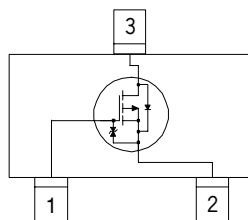
Pin Configuration



Pin Assignment

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

Equivalent Circuit



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

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	-0.7	A
Drain Current (Pulse)	Idp	-2.8	A
Reverse Drain Current	Idr	-0.7	A
Continuous Channel Power Dissipation (note)	Pd	0.5	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-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		- 3.0	V
Drain-Source On-state Resistance (note)	R _{ds} (on)	I _d = - 0.4A , V _{gs} = - 10V		0.2	0.25	Ω
		I _d = - 0.4A , V _{gs} = - 4.5V		0.35	0.45	Ω
Forward Transfer Admittance (note)	Y _{fs}	I _d = - 0.4A , V _{ds} = - 10V		1		S
Body Drain Diode Forward Voltage	V _f	I _f = - 0.7A , V _{gs} = 0V		-0.8	- 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		160		pF
Output Capacitance	C _{oss}			120		pF
Feedback Capacitance	C _{rss}			50		pF

Switching Characteristics

Ta=25°C

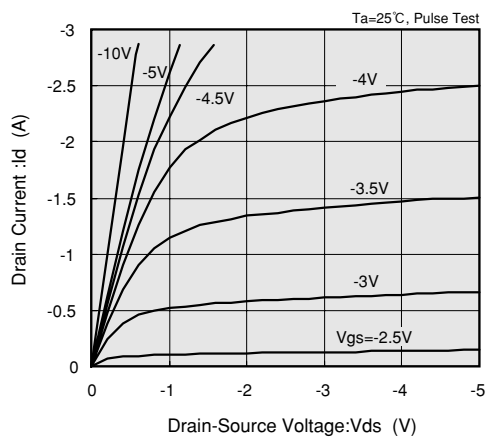
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	t _d (on)	V _{gs} = - 5V , I _d = - 0.4A V _{dd} = - 10V		10		ns
Rise Time	t _r			25		ns
Turn-off Delay Time	t _d (off)			25		ns
Fall Time	t _f			40		ns

Thermal Characteristics

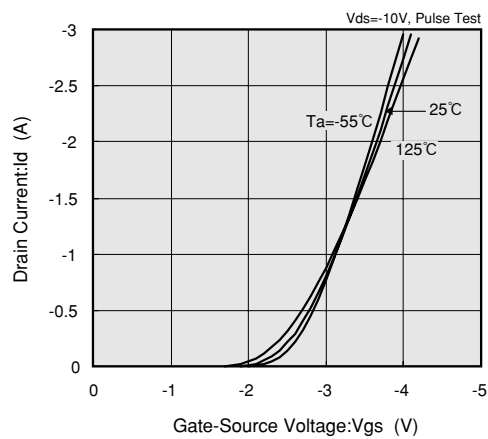
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-ambience)	R _{th} (ch-a)	Implement on a ceramic PCB		250		°C / W

Typical Performance Characteristics

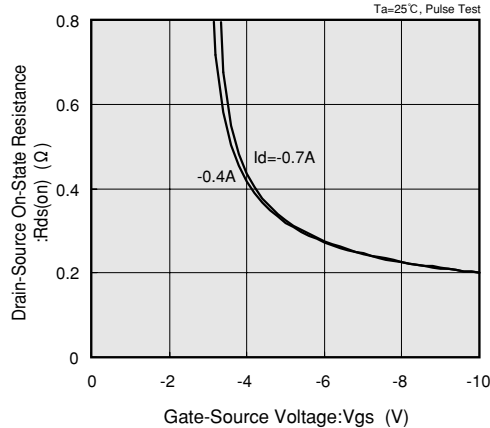
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



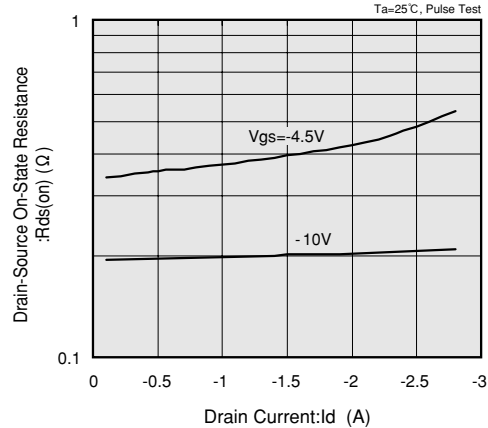
DRAIN CURRENT vs. GATE-SOURCE VOLTAGE



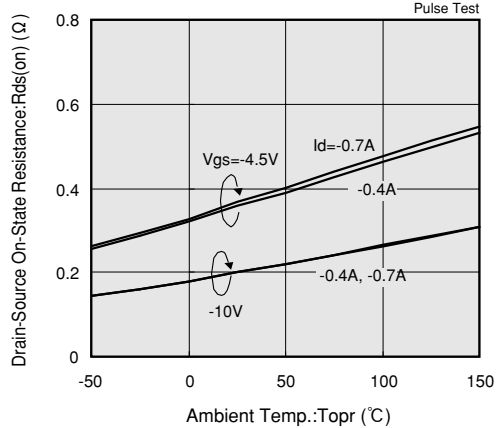
DRAIN-SOURCE ON-STATE RESISTANCE vs. GATE-SOURCE VOLTAGE



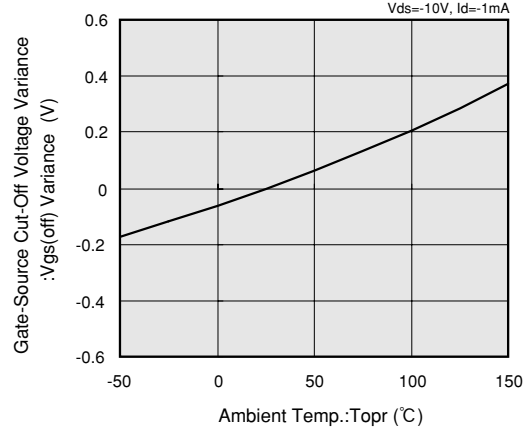
DRAIN-SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



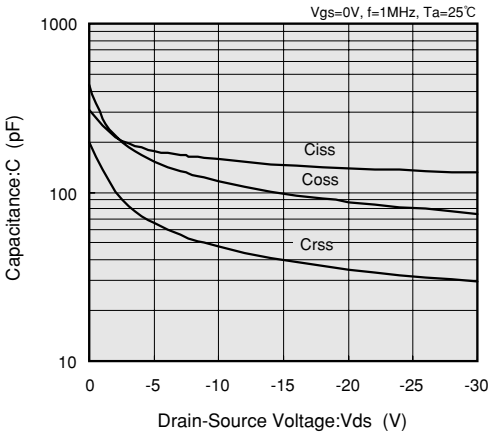
DRAIN-SOURCE ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



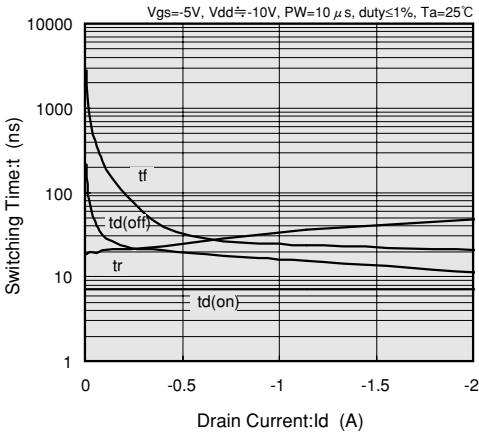
GATE-SOURCE CUT-OFF VOLTAGE VARIANCE vs. AMBIENT TEMPERATURE



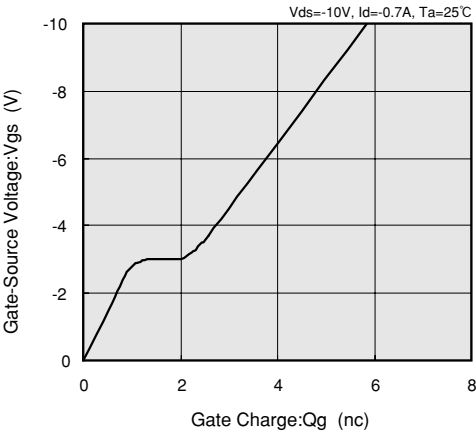
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



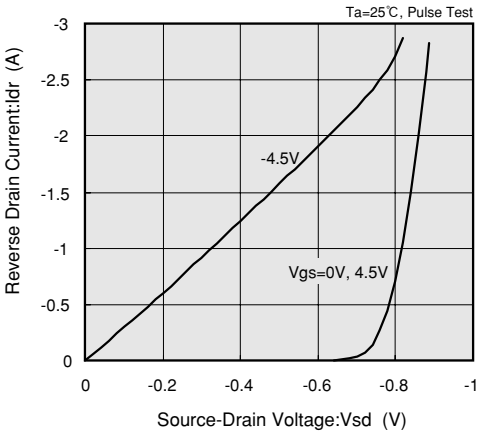
SWITCHING TIME vs. DRAIN CURRENT



GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH

