XP151A12A2MR-G

TOREX

ETR1118_003

Power MOSFET

■GENERAL DESCRIPTION

The XP151A12A2MR-G is an N-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.

In order to counter static, a gate protect diode is built-in.

The small SOT-23 package makes high density mounting possible.

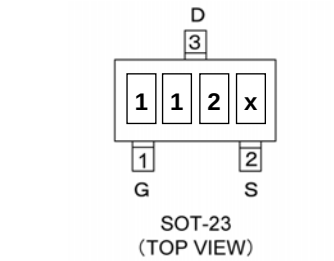
■APPLICATIONS

- ●Notebook PCs
- ●Cellular and portable phones
- ●On-board power supplies
- ●Li-ion battery systems

■FEATURES

Low On-State Resistance : Rds(on) = 0.1Ω@ Vgs = 4.5V
: Rds(on) = 0.16Ω@ Vgs = 2.5V
Ultra High-Speed Switching
Gate Protect Diode Built-in
Driving Voltage : 2.5V
N-Channel Power MOSFET
DMOS Structure
Small Package : SOT-23
Environmentally Friendly : EU RoHS Compliant, Pb Free

■PIN CONFIGURATION/ MARKING

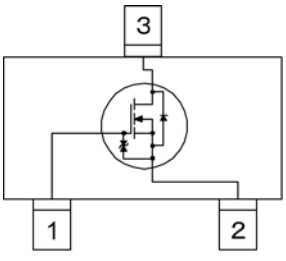


SOT-23
(TOP VIEW)

G : Gate
S : Source
D : Drain

* x represents production lot number.

■EQUIVALENT CIRCUIT



N-channel MOSFET
(1 device built-in)

■PRODUCT NAMES

PRODUCTS	PACKAGE	ORDER UNIT
XP151A12A2MR	SOT-23	3,000/Reel
XP151A12A2MR-G(*)	SOT-23	3,000/Reel

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

■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	1	A
Drain Current (Pulse)	Idp	4	A
Reverse Drain Current	Idr	1	A
Channel Power Dissipation *	Pd	0.5	W
Channel Temperature	Tch	150	℃
Storage Temperature	Tstg	-55~150	℃

* When implemented on a ceramic PCB

■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	0.7	-	1.4	V
Drain-Source On-State Resistance *1	Rds(on)	Id= 0.5A, Vgs= 4.5V	-	0.075	0.1	Ω
		Id= 0.5A, Vgs= 2.5V	-	0.120	0.160	Ω
Forward Transfer Admittance *1	| Yfs |	Id= 0.5A, Vds= 10V	-	3.3	-	S
Body Drain Diode Forward Voltage	Vf	If= 1A, Vgs= 0V	-	0.8	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	-	180	-	pF
Output Capacitance	Coss		-	120	-	pF
Feedback Capacitance	Crss		-	45	-	pF

Switching Characteristics

Ta = 25℃

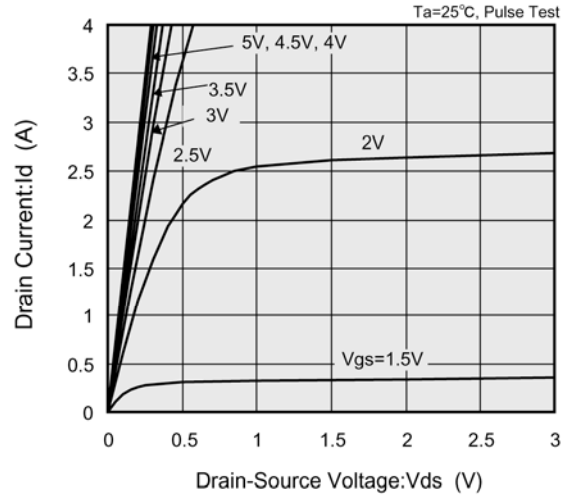
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= 5V, Id= 0.5A Vdd= 10V	-	10	-	ns
Rise Time	tr		-	15	-	ns
Turn-Off Delay Time	td (off)		-	50	-	ns
Fall Time	tf		-	45	-	ns

Thermal Characteristics

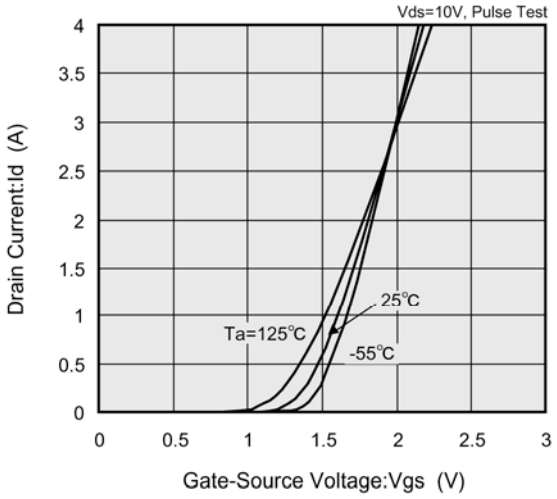
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a ceramic PCB	-	250	-	℃/W

■TYPICAL PERFOMANCE CHARACTERISTICS

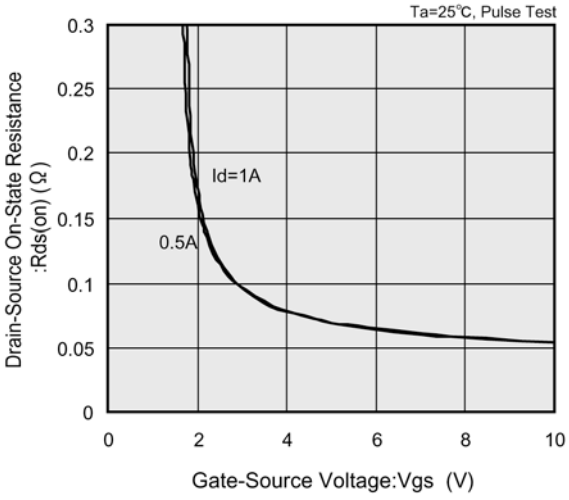
(1) Drain Current vs. Drain-Source Voltage



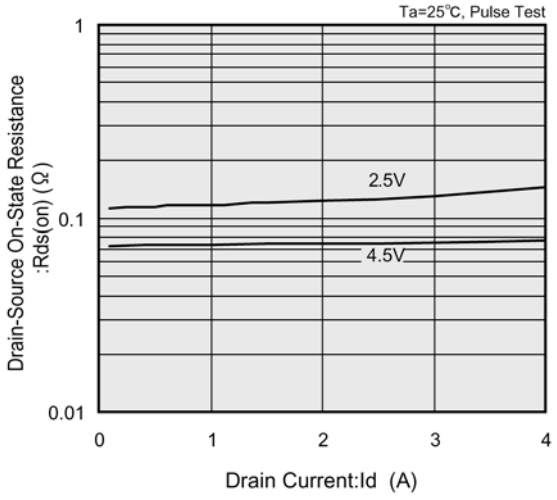
(2) Drain Current vs. Gate-Source Voltage



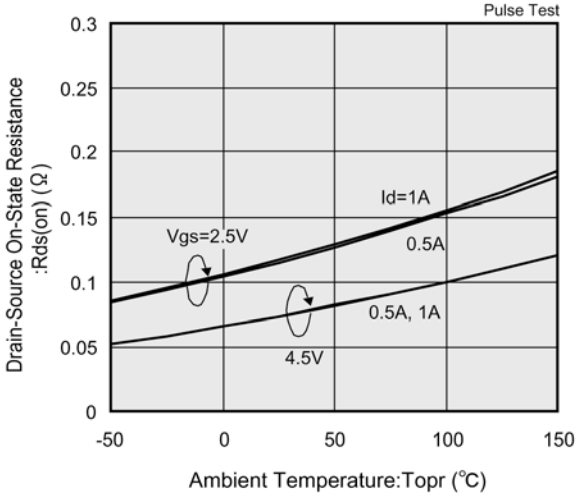
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



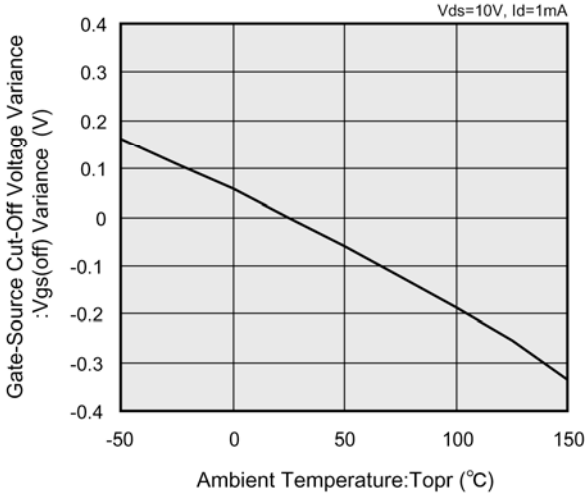
(4) Drain-Source On-State Resistance vs. Drain Current



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

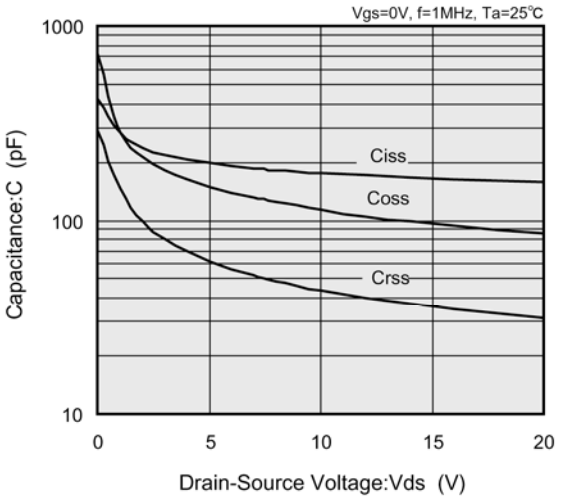


(6) Gate Source Cut-Off Voltage Variance vs. Ambient Temperature

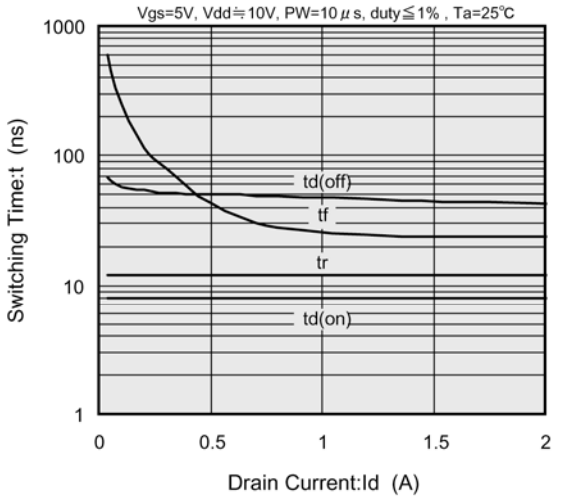


■TYPICAL PERFOMANCE CHARACTERISTICS (Continued)

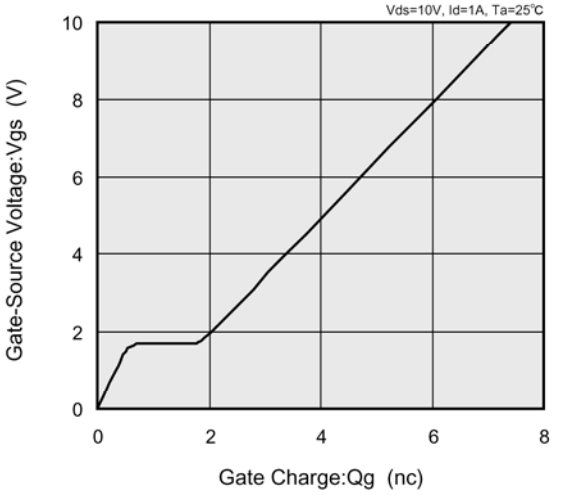
(7) Capacitance vs. Drain-Source Voltage



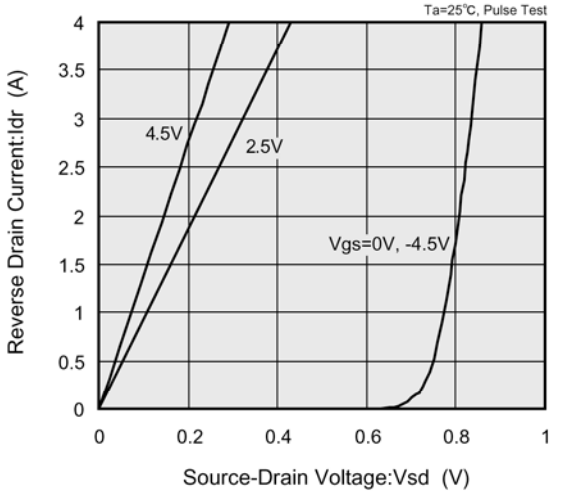
(8) SwitchingTime vs. Drain Current



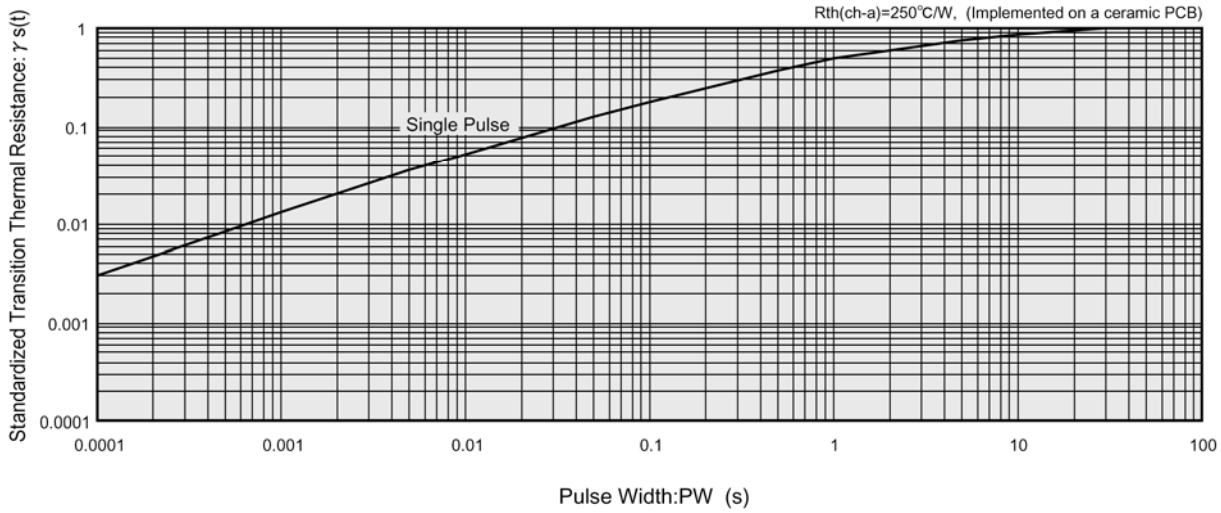
(9) Gate-Source Voltage vs. Gate Charge



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



(11) Standardized transition Thermal Resistance vs. Pulse Width



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