# TOIREX

# XP151A13A0MR-G

ETR1119\_003

#### **Power MOSFET**

#### ■GENERAL DESCRIPTION

The XP151A13A0MR-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.

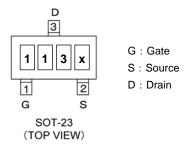
In order to counter static, a gate protect diode is built-in.

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

## ■ PIN CONFIGURATION/ MARKING



<sup>\*</sup> x represents production lot number.

# **■**FEATURES

**Low On-State Resistance** : Rds(on) =  $0.1 \Omega$  @ Vgs = 4.5 V

: Rds(on) =  $0.14 \Omega$  @ Vgs = 2.5V: Rds(on) =  $0.25 \Omega$  @ Vgs = 1.5V

Ultra High-Speed Switching
Gate Protect Diode Built-in
Driving Voltage : 1.5V
N-Channel Power MOSFET

**DMOS Structure** 

Small Package : SOT-23

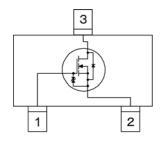
Environmentally Friendly: EU RoHS Compliant, Pb Free

## **■PRODUCT NAMES**

PRODUCTS	PACKAGE	ORDER UNIT
XP151A13A0MR	SOT-23	3,000/Reel
XP151A13A0MR-G <sup>(*)</sup>	SOT-23	3,000/Reel

<sup>(\*)</sup> The "-G" suffix denotes Halogen and Antimony free as well as being fully RoHS compliant.

### **■**EQUIVALENT CIRCUIT



N-channel MOSFET (1 device built-in)

## ■ ABSOLUTE MAXIMUM RATINGS

Ta = 25°C

	1a = 25							
PARAMETER	SYMBOL	RATINGS	UNITS					
Drain - Source Voltage	Vdss	20	V					
Gate - Source Voltage	Vgss	±8	V					
Drain Current (DC)	ld	1	Α					
Drain Current (Pulse)	Idp	4	Α					
Reverse Drain Current	ldr	1	Α					
Channel Power Dissipation *	Pd	0.5	W					
Channel Temperature	Tch	150	°C					
Storage Temperature	Tstg	-55~150	°C					

<sup>\*</sup> When implemented on a ceramic PCB

# **■**ELECTRICAL CHARACTERISTICS

DC Characteristics  $Ta = 25^{\circ}C$ 

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	ldss	Vds= 20V, Vgs= 0V	-	-	10	μΑ
Gate-Source Leak Current	Igss	Vgs= ±8V, Vds= 0V	-	-	±10	μΑ
Gate-Source Cut-Off Voltage	Vgs(off)	Id= 1mA, Vds= 10V	0.5	-	1.2	V
	Rds(on)	Id= 0.5A, Vgs= 4.5V	-	0.075	0.100	Ω
Drain-Source On-State Resistance *1		Id= 0.5A, Vgs= 2.5V	-	0.10	0.14	Ω
		Id= 0.1A, Vgs= 1.5V	-	0.17	0.25	Ω
Forward Transfer Admittance *1	Yfs	Id= 0.5A, Vds= 10V	-	4.2	-	S
Body Drain Diode Forward Voltage	Vf	If= 1A, Vgs= 0V	-	0.8	1.1	V

<sup>\*1</sup> 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	-	220	-	pF
Output Capacitance	Coss		ı	120	ı	pF
Feedback Capacitance	Crss		ı	45	ı	pF

## **Switching Characteristics**

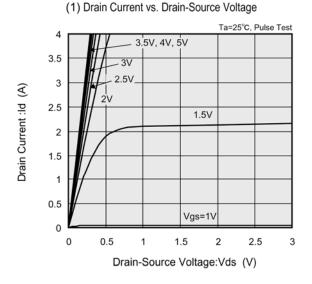
Ta = 25°C

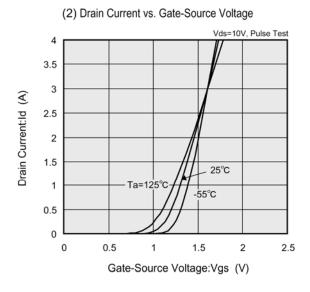
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= 5V, Id= 0.5A Vdd= 10V	-	10	1	ns
Rise Time	tr		-	15		ns
Turn-Off Delay Time	td (off)		-	75	-	ns
Fall Time	tf		-	65	-	ns

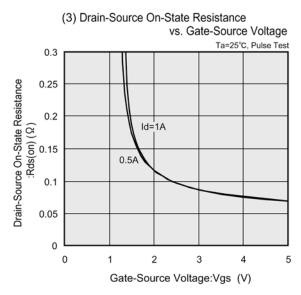
#### Thermal Characteristics

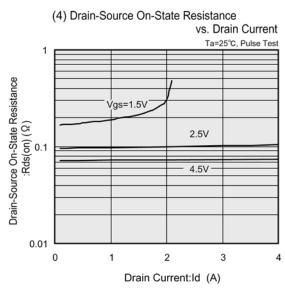
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a ceramic PCB	-	250	-	°C/W

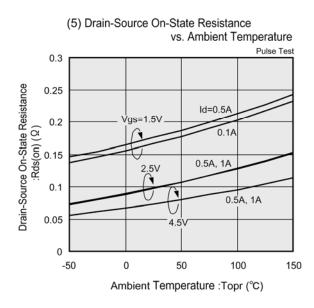
# ■TYPICAL PERFOMANCE CHARACTERISTICS

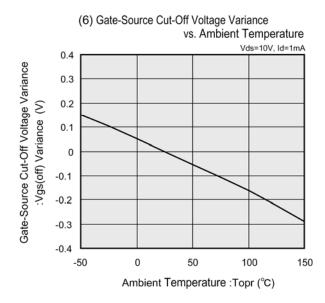




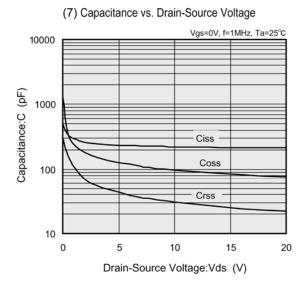


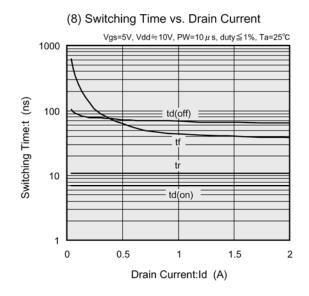


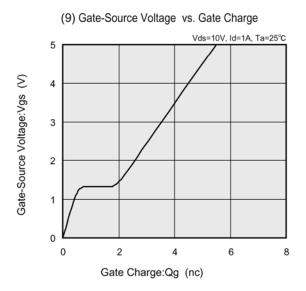


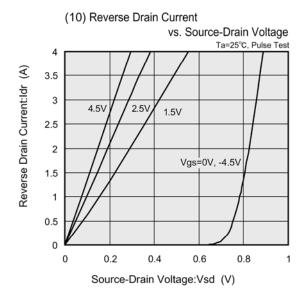


# ■TYPICAL PERFOMANCE CHARACTERISTICS (Continued)

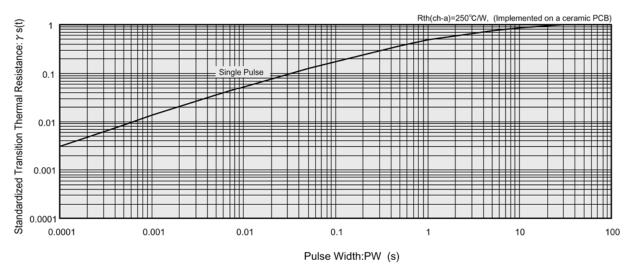








(11) Standardized transition Thermal Resistance vs. Pulse Width



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