

XP151A13A0MR-G

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.

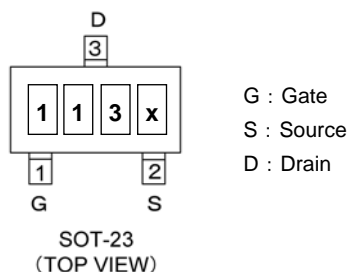
In order to counter static, a gate protect diode is built-in.

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

■ APPLICATIONS

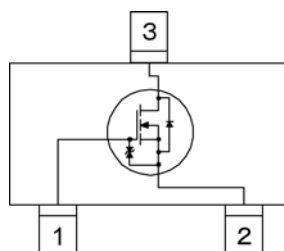
- Notebook PCs
- Cellular and portable phones
- On-board power supplies
- Li-ion battery systems

■ PIN CONFIGURATION/MARKING



* x represents production lot number.

■ EQUIVALENT CIRCUIT



N-channel MOSFET
(1 device built-in)

■ FEATURES

Low On-State Resistance : $R_{ds(on)} = 0.1 \Omega @ V_{gs} = 4.5V$
 : $R_{ds(on)} = 0.14 \Omega @ V_{gs} = 2.5V$
 : $R_{ds(on)} = 0.25 \Omega @ V_{gs} = 1.5V$

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 ^(*)	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°C

PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	Vdss	20	V
Gate - Source Voltage	Vgss	±8	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	°C
Storage Temperature	Tstg	-55~150	°C

* When implemented on a ceramic PCB

XP151A13A0MR-G

ELECTRICAL CHARACTERISTICS

DC Characteristics

 $T_a = 25^\circ\text{C}$

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	I_{dss}	$V_{ds} = 20V, V_{gs} = 0V$	-	-	10	μA
Gate-Source Leak Current	I_{gss}	$V_{gs} = \pm 8V, V_{ds} = 0V$	-	-	± 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 *1	$R_{ds(on)}$	$I_d = 0.5A, V_{gs} = 4.5V$	-	0.075	0.100	Ω
		$I_d = 0.5A, V_{gs} = 2.5V$	-	0.10	0.14	Ω
		$I_d = 0.1A, V_{gs} = 1.5V$	-	0.17	0.25	Ω
Forward Transfer Admittance *1	$ Y_{fs} $	$I_d = 0.5A, V_{ds} = 10V$	-	4.2	-	S
Body Drain Diode Forward Voltage	V_f	$I_f = 1A, V_{gs} = 0V$	-	0.8	1.1	V

*1 Effective during pulse test.

Dynamic Characteristics

 $T_a = 25^\circ\text{C}$

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Capacitance	C_{iss}	$V_{ds} = 10V, V_{gs} = 0V$ $f = 1MHz$	-	220	-	pF
Output Capacitance	C_{oss}		-	120	-	pF
Feedback Capacitance	C_{rss}		-	45	-	pF

Switching Characteristics

 $T_a = 25^\circ\text{C}$

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	$t_d(on)$	$V_{gs} = 5V, I_d = 0.5A$ $V_{dd} = 10V$	-	10	-	ns
Rise Time	t_r		-	15	-	ns
Turn-Off Delay Time	$t_d(off)$		-	75	-	ns
Fall Time	t_f		-	65	-	ns

Thermal Characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	$R_{th(ch-a)}$	Implement on a ceramic PCB	-	250	-	$^\circ\text{C/W}$