

# XP152A11E5MR-G

## Power MOSFET

### ■ GENERAL DESCRIPTION

The XP152A11E5MR-G is a P-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** :  $R_{ds(on)} = 0.25\Omega @ V_{gs} = -10V$   
 :  $R_{ds(on)} = 0.45\Omega @ V_{gs} = -4.5V$

**Ultra High-Speed Switching**

**Gate Protect Diode Built-in**

**Driving Voltage** : -4.5V

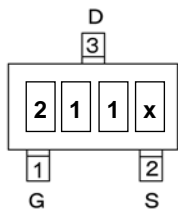
**P-Channel Power MOSFET**

**DMOS Structure**

**Small Package** : SOT-23

**Environmentally Friendly** : EU RoHS Compliant, Pb Free

### ■ PIN CONFIGURATION/MARKING

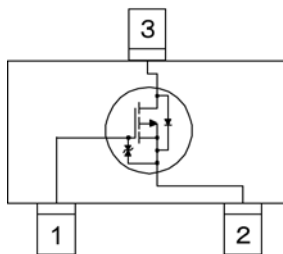


G : Gate  
 S : Source  
 D : Drain

SOT-23  
 (TOP VIEW)

\* x represents production lot number.

### ■ EQUIVALENT CIRCUIT



P-channel MOSFET  
 ( 1 device built-in )

### ■ PRODUCT NAMES

PRODUCTS	PACKAGE	ORDER UNIT
XP152A11E5MR	SOT-23	3,000/Reel
XP152A11E5MR-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.

### ■ ABSOLUTE MAXIMUM RATINGS

Ta = 25°C

PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	V <sub>dss</sub>	-30	V
Gate - Source Voltage	V <sub>gss</sub>	±20	V
Drain Current (DC)	I <sub>d</sub>	-0.7	A
Drain Current (Pulse)	I <sub>dp</sub>	-2.8	A
Reverse Drain Current	I <sub>dr</sub>	-0.7	A
Channel Power Dissipation *	P <sub>d</sub>	0.5	W
Channel Temperature	T <sub>ch</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

\* When implemented on a ceramic PCB

# XP152A11E5MR-G

## ELECTRICAL CHARACTERISTICS

### DC Characteristics

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	$I_{dss}$	$V_{ds} = -30\text{V}, V_{gs} = 0\text{V}$	-	-	-10	$\mu\text{A}$
Gate-Source Leak Current	$I_{gss}$	$V_{gs} = \pm 20\text{V}, V_{ds} = 0\text{V}$	-	-	$\pm 10$	$\mu\text{A}$
Gate-Source Cut-Off Voltage	$V_{gs(off)}$	$I_d = -1\text{mA}, V_{ds} = -10\text{V}$	-1.0	-	-3.0	V
Drain-Source On-State Resistance *1	$R_{ds(on)}$	$I_d = -0.4\text{A}, V_{gs} = -10\text{V}$	-	0.20	0.25	$\Omega$
		$I_d = -0.4\text{A}, V_{gs} = -4.5\text{V}$	-	0.35	0.45	$\Omega$
Forward Transfer Admittance *1	$ Y_{fs} $	$I_d = -0.4\text{A}, V_{ds} = -10\text{V}$	-	1	-	S
Body Drain Diode Forward Voltage	$V_f$	$I_f = -0.7\text{A}, V_{gs} = 0\text{V}$	-	-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	$C_{iss}$	$V_{ds} = -10\text{V}, V_{gs} = 0\text{V}$ $f = 1\text{MHz}$	-	160	-	pF
Output Capacitance	$C_{oss}$		-	120	-	pF
Feedback Capacitance	$C_{rss}$		-	50	-	pF

### Switching Characteristics

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	$t_d(on)$	$V_{gs} = -5\text{V}, I_d = -0.4\text{A}$ $V_{dd} = -10\text{V}$	-	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	-	$^\circ\text{C/W}$