

# XP2N1K2EN1

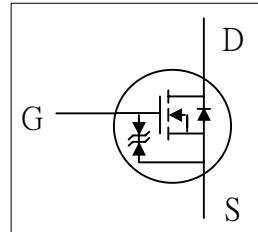
**Halogen-Free Product**



*N-CHANNEL ENHANCEMENT MODE*

*POWER MOSFET*

- ▼ Capable of 1.2V Low Gate Drive
- ▼ Lower Gate Charge
- ▼ Fast Switching Performance
- ▼ RoHS Compliant & Halogen-Free

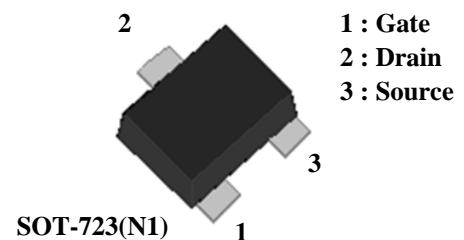


$BV_{DSS}$	20V
$R_{DS(ON)}$	1.2 $\Omega$
$I_D$	200mA
HBM ESD	2KV

## Description

XP2N1K2E series are innovative design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The SOT-723 Package with very small footprint is suitable for all commercial-industrial surface mount application.



## Absolute Maximum Ratings @ $T_J=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 8$	V
$I_D @ T_A=25^\circ\text{C}$	Drain Current <sup>3</sup> , $V_{GS}$ @ 2.5V	200	mA
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	400	mA
$I_S @ T_A=25^\circ\text{C}$	Source Current (Body Diode)	125	mA
$I_{SM}$	Pulsed Source Current <sup>1</sup> (Body Diode)	800	mA
$P_D @ T_A=25^\circ\text{C}$	Total Power Dissipation	0.15	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

## Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	833	$^\circ\text{C}/\text{W}$

**Electrical Characteristics @T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	-	-	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =2.5V, I <sub>D</sub> =200mA	-	-	1.2	Ω
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =200mA	-	-	1.4	Ω
		V <sub>GS</sub> =1.5V, I <sub>D</sub> =40mA	-	-	2.4	Ω
		V <sub>GS</sub> =1.2V, I <sub>D</sub> =20mA	-	-	4.8	Ω
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =1mA	0.3	-	1	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =200mA	-	1.8	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V	-	-	10	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	-	-	±30	uA
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =200mA	-	0.7	-	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =10V	-	0.2	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =2.5V	-	0.2	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =10V	-	2	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =150mA	-	10	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time	R <sub>G</sub> =10Ω	-	30	-	ns
t <sub>f</sub>	Fall Time	V <sub>GS</sub> =5V	-	16	-	ns
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V	-	44	-	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> =10V	-	14	-	pF
C <sub>riss</sub>	Reverse Transfer Capacitance	f=1.0MHz	-	10	-	pF

**Source-Drain Diode**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =0.13A, V <sub>GS</sub> =0V	-	-	1.2	V

**Notes:**

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on min. copper pad of FR4 board

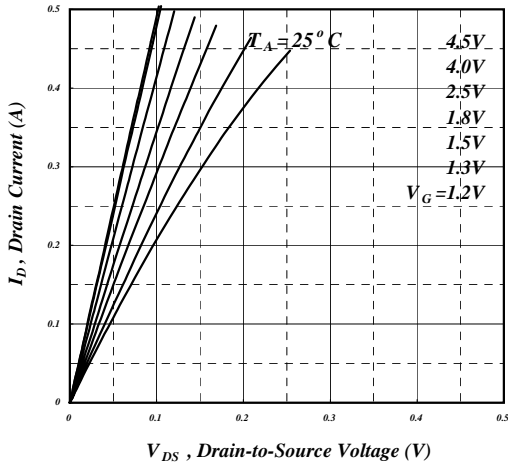
THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

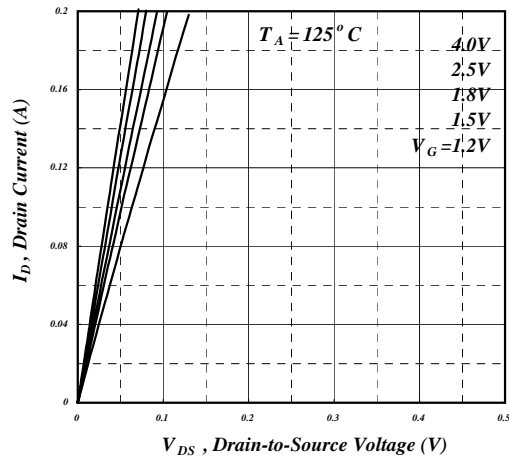
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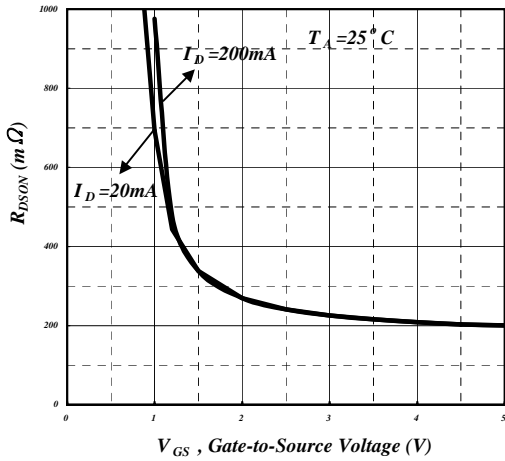
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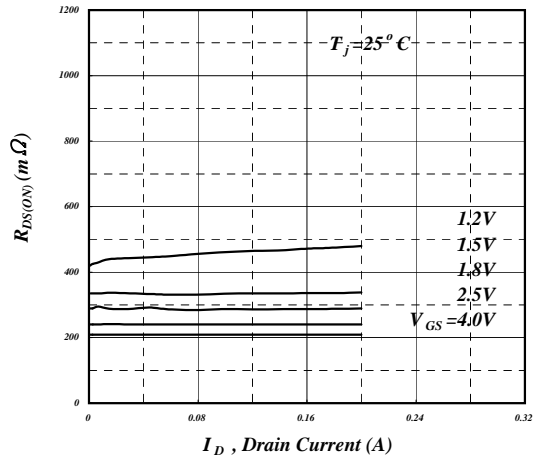
**Fig 1. Typical Output Characteristics**



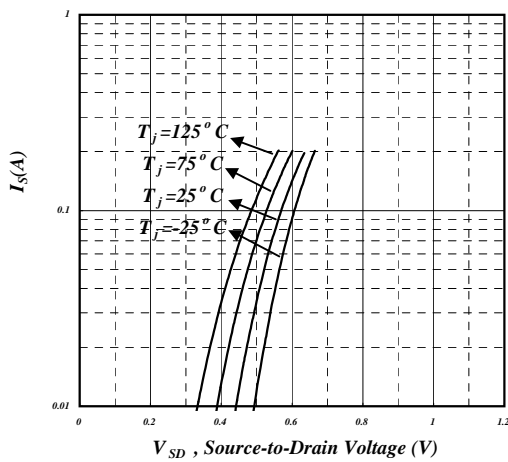
**Fig 2. Typical Output Characteristics**



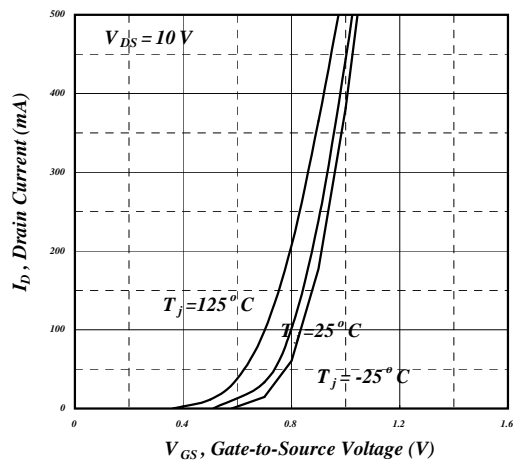
**Fig 3. On-Resistance v.s. Gate Voltage**



**Fig 4. Typ. Drain-Source on State Resistance**



**Fig 5. Forward Characteristic of Reverse Diode**



**Fig 6. Transfer Characteristics**

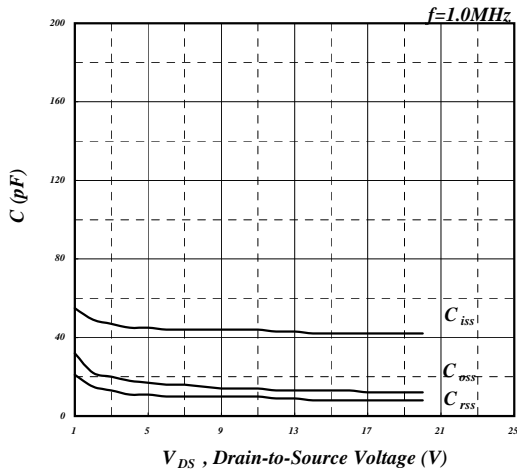


Fig 7. Typical Capacitance Characteristics

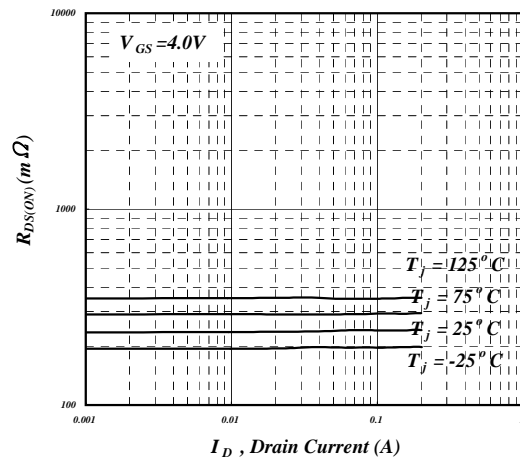


Fig 8. Static Drain-Source On-State Resistance vs. Drain Current

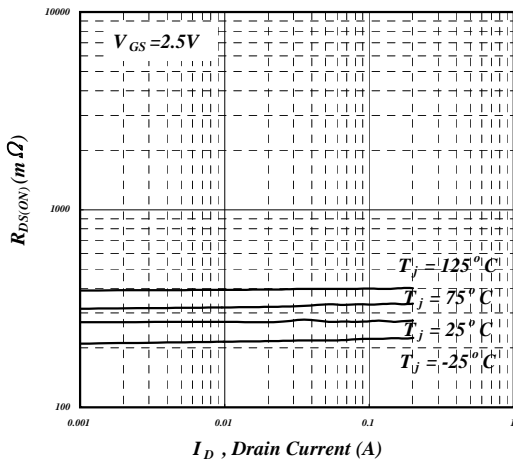


Fig 9. Static Drain-Source On-State Resistance vs. Drain Current

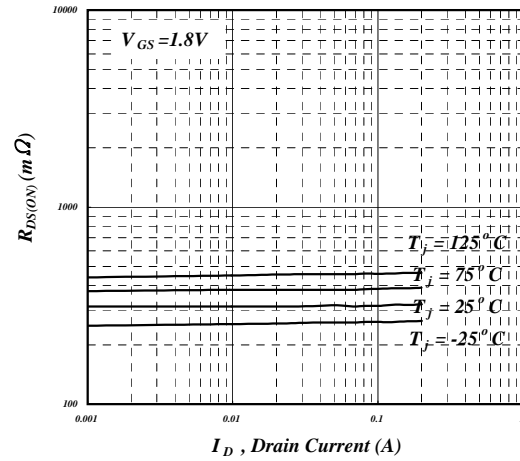


Fig 10. Static Drain-Source On-State Resistance vs. Drain Current

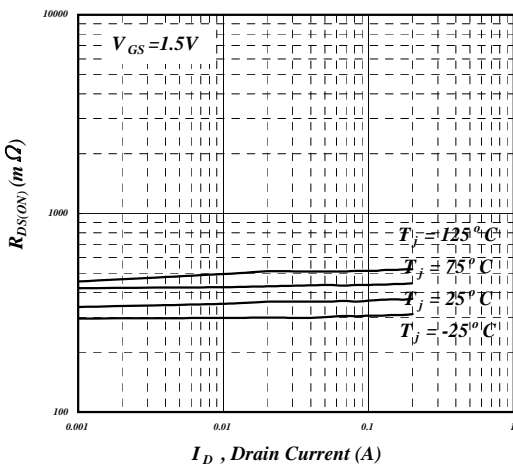


Fig 11. Static Drain-Source On-State Resistance vs. Drain Current

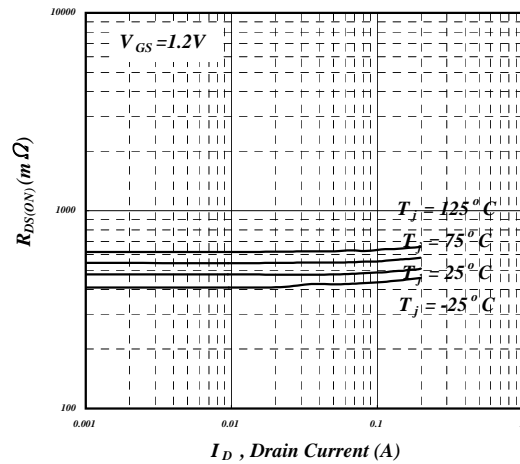
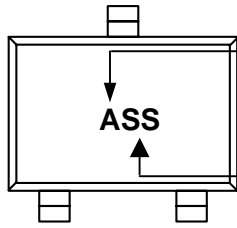


Fig 12. Static Drain-Source On-State Resistance vs. Drain Current

### MARKING INFORMATION



Part Number : A

Date Code : SS

SS:2004,2008,2012,2016,2020...

SS:2003,2007,2011,2015,2019...

SS:2002,2006,2010,2014,2018...

SS:2001,2005,2009,2013,2017...