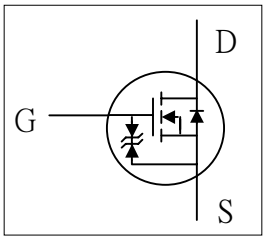
XP5N2K2EN1

Halogen-Free Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- **Capable of 0.9V Very Low Gate Drive**
- **Lower Gate Charge**
- **Fast Switching Performance**
- **RoHS Compliant & Halogen-Free**

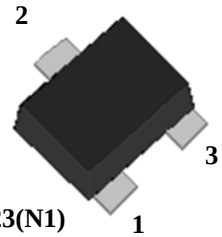


BV_{DSS}	50V
$R_{DS(ON)}$	2.2Ω
I_D	200mA
HBM ESD	2KV

Description

XP5N2K2E series are innovated 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.



SOT-723(N1)

1 : Gate
2 : Drain
3 : Source

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_A=25℃	Drain Current[3], V_{GS} @ 4.5V	200	mA
I_{DM}	Pulsed Drain Current[1]	800	mA
I_S@T_A=25℃	Source Current (Body Diode)	125	mA
I_{SM}	Pulsed Source Current[1](Body Diode)	800	mA
P_D@T_A=25℃	Total Power Dissipation	0.15	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	833	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	50	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=200mA	-	-	2.2	Ω
		V_{GS}=2.5V, I_D=200mA	-	-	2.4	Ω
		V_{GS}=1.2V, I_D=100mA	-	-	3.3	Ω
		V_{GS}=0.9V, I_D=5mA	-	-	9	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=1mA	0.25	-	0.9	V
g_{fs}	Forward Transconductance	V_{DS}=5V, I_D=200mA	-	1.5	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±8V, V_{DS}=0V	-	-	±30	uA
Q_g	Total Gate Charge	I_D=200mA	-	1.2	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=25V	-	0.2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	0.3	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=25V	-	5	-	ns
t_r	Rise Time	I_D=100mA	-	4	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=10Ω	-	29	-	ns
t_f	Fall Time	V_{GS}=5V	-	15	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	55	-	pF
C_{oss}	Output Capacitance	V_{DS}=10V	-	10	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	8	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=0.11A, V_{GS}=0V	-	-	1.3	V

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on min. copper pad of FR4 board

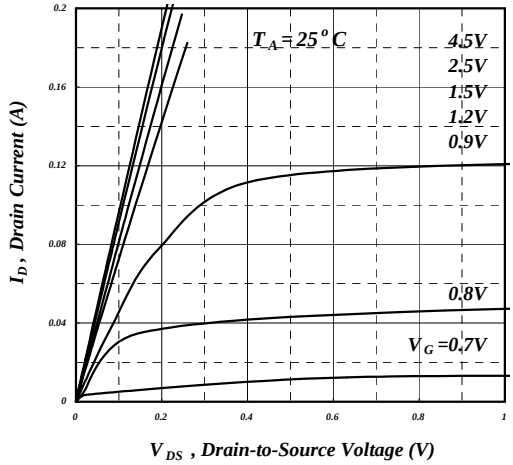


Fig 1. Typical Output Characteristics

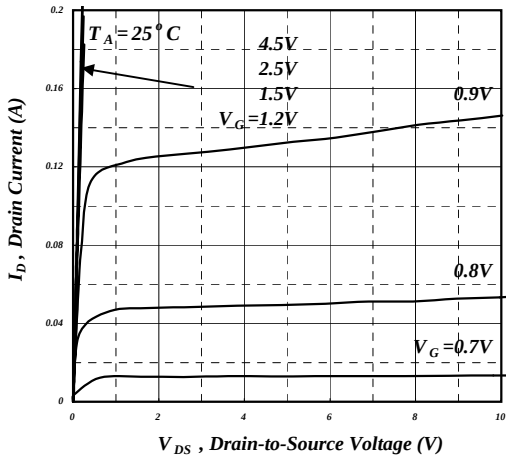


Fig 2. Typical Output Characteristics

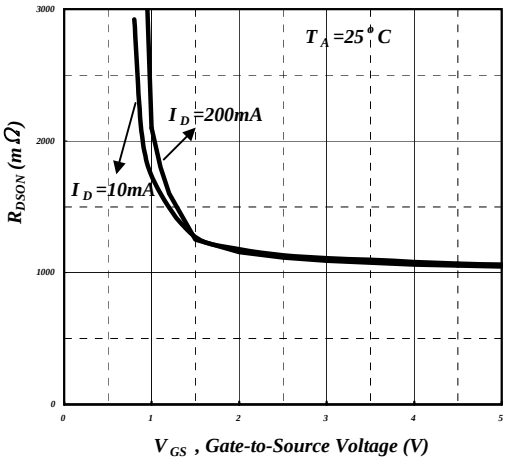


Fig 3. On-Resistance v.s. Gate Voltage

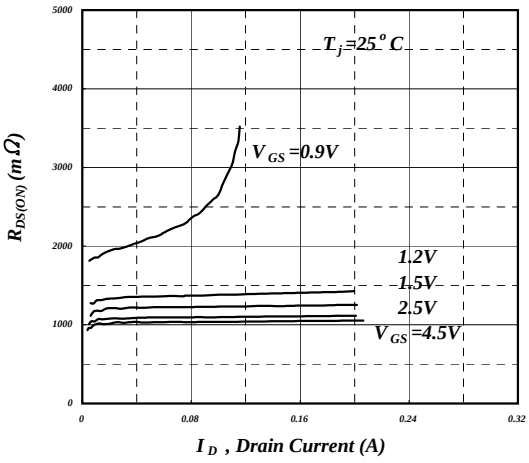


Fig 4. Typ. Drain-Source on State Resistance

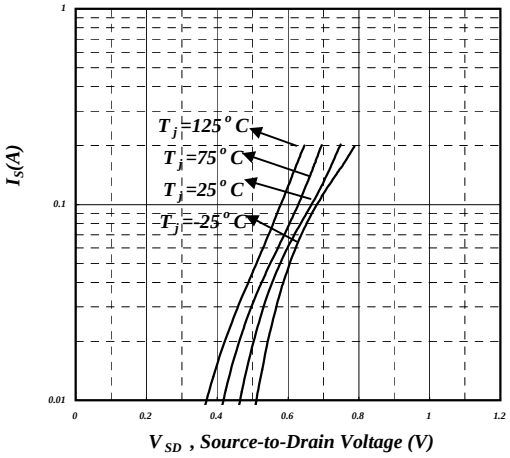


Fig 5. Forward Characteristic of Reverse Diode

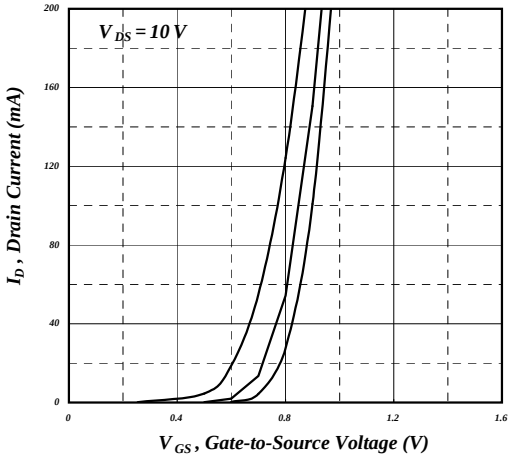


Fig 6. Transfer Characteristics

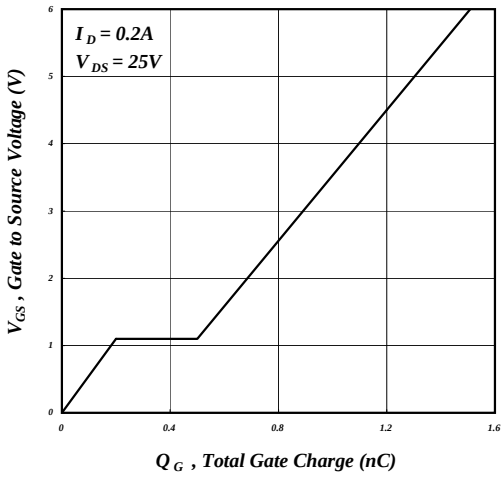


Fig 7. Gate Charge Characteristics

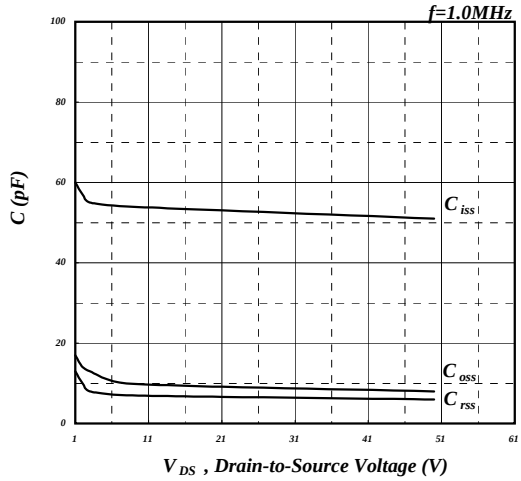


Fig 8. Typical Capacitance Characteristics

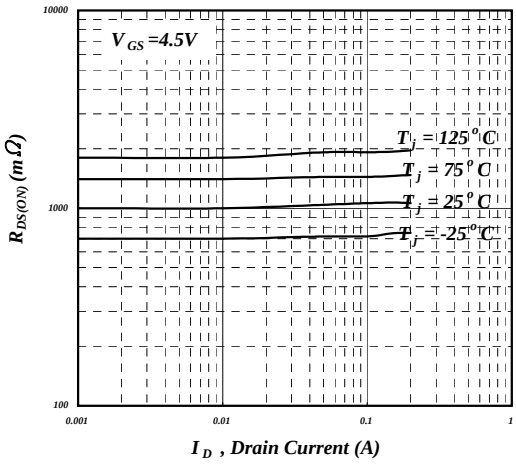


Fig 9. Static Drain-Source On-State Resistance vs. Drain Current

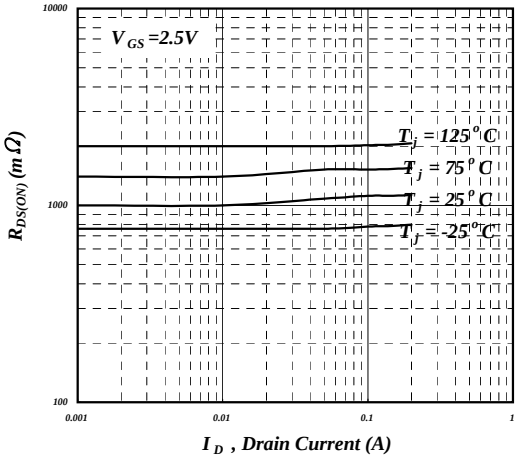


Fig 10. Static Drain-Source On-State Resistance vs. Drain Current

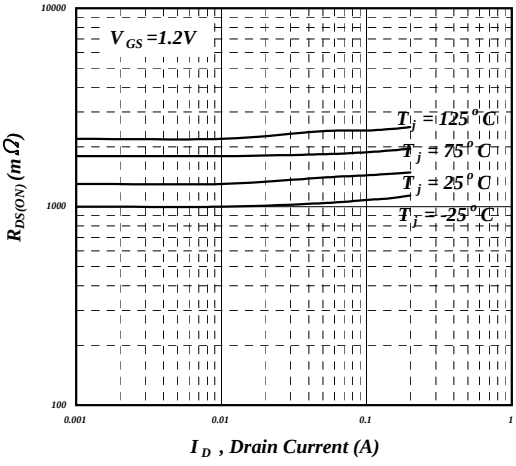


Fig 11. Static Drain-Source On-State Resistance vs. Drain Current

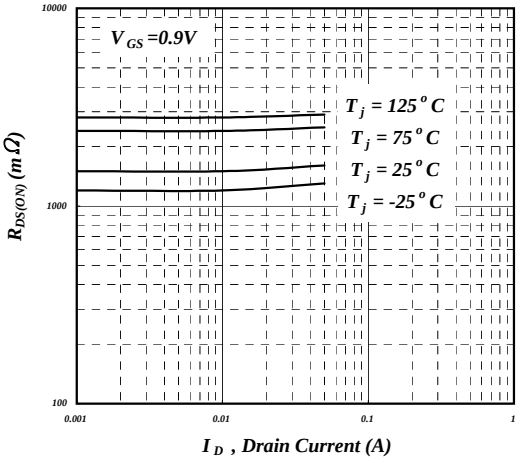
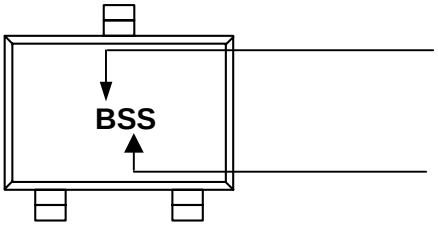


Fig 12. Static Drain-Source On-State Resistance vs. Drain Current

MARKING INFORMATION



Part Number : B

Date Code : SS

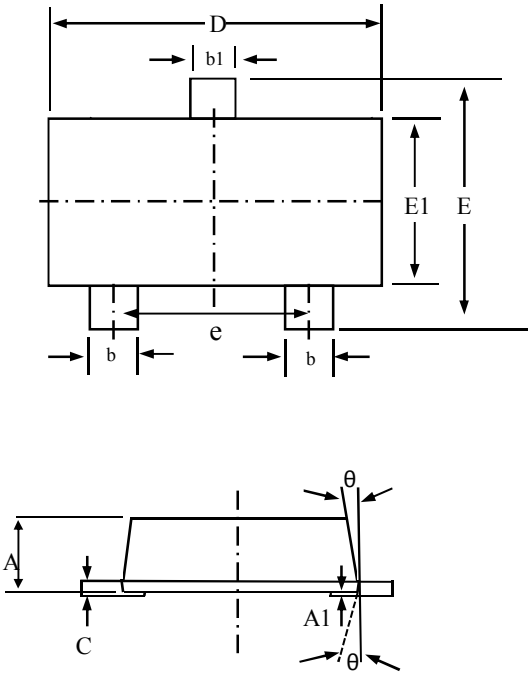
SS:2004,2008,2012,2016,2020,2024...

SS:2003,2007,2011,2015,2019,2023...

SS:2002,2006,2010,2014,2018,2022...

SS:2001,2005,2009,2013,2017,2021...

Package Outline : SOT-723



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.34	0.44	0.54
A1	0.00	0.03	0.05
b	0.17	0.22	0.27
b1	0.22	0.30	0.37
c	0.01	0.08	0.15
D	1.10	1.20	1.30
E	1.10	1.20	1.30
E1	0.70	0.80	0.90
e	0.80 (Typ)		
θ	7° (ref.)		

1.All Dimension Are In Millimeters.

2.Dimension Does Not Include Mold Protrusions.

Draw No. M1-723-G-v01

SOT-723 FOOTPRINT：