XPX04N600AS

600V N-Channel Depletion Mode MOSFET

Description

The XPX04N600AS uses advanced Depletion planar

technology

This have low gate charge and operation .

This device is suitable for use as a Switching applic ation.

General Features

V_{DS} = 600V I_D =0.04A

$R_{DS(ON)}$ < 700Ω @ V_{GS}=10V

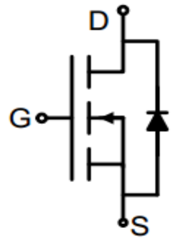
ESD≥300V

Application

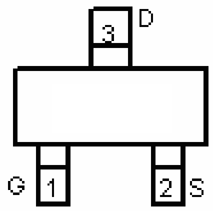
Load Switch

PWM Application

Power management



Schematic Diagram



Marking and Pin Assignment

SOT-23-3L

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
XPX04N600AS	SOT-23		3000

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	600	V
VGSS	Gate-Source Voltage	±20	V
ID	Continuous Drain CurrentTA = 25℃	0.04	A
	Continuous Drain CurrentTA = 100℃	0.02	A
IDM	Pulsed Drain Current note1	0.12	A
dv/dt	Peak Diode Recovery dv/dt	5.0	V/ns
VESD(G-S)	Gate source ESD (HBM-C= 100pF, R=1.5kΩ)	300	V
PD	Power Dissipation TA = 25℃	0.5	W
RθJA	Thermal Resistance, Junction to Ambient	250	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +150	℃

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}= -5V, I_D=250μA	600	-	-	V
ID(off)	Off-state Drain to Source Current	V_{DS}=600V, V_{GS}= -5V,T_J=25°C	-	-	0.1	μA
		V_{DS}=480V, V_{GS}=-5V,T_J=125°C	-	-	10	μA
IGSS	Gate to Source Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	On-state drain current	V_{GS}=0V, V_{DS}=25V	12	-	-	mA
VGS(th)	Gate Threshold Voltage	V_{DS}=3V, I_D=8μA	-2.7	-1.8	-1.0	V
RDS(on)	Static Drain-Source on-Resistance note2	V_{GS}=0V, I_D=3mA	-	350	700	Ω
		V_{GS}=10V, I_D=16mA	-	400	800	
C_{iss}	Input Capacitance	V_{DS} =25V, V_{GS} =-5V, f = 1.0MHz	-	52	-	pF
Coss	Output Capacitance		-	4.53	-	pF
Crss	Reverse Transfer Capacitance		-	1.08	-	pF
Q_g	Total Gate Charge	V_{DS} =400V, I_D =0.01A, V_{GS} =-5V to 5V	-	1.14	-	nC
Q_{gs}	Gate-Source Charge		-	0.5	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	0.37	-	nC
td(on)	Turn-on Delay Time	V_{DS}=300V, I_D=0.01A, R_{GEN}=6Ω, V_{GS} =-5V to 7V	-	9.9	-	ns
t_r	Turn-on Rise Time		-	55.8	-	ns
td(off)	Turn-off Delay Time		-	56.4	-	ns
t_f	Turn-off Fall Time		-	136	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.03	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	0.12	A
VSD	Diode Forward Voltage	I_F=16mA, VGS=-5V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} =-5V, I_F=0.01A, di/dt=100A/μs	-	243	-	ns
Q_{rr}	Reverse Recovery Charge		-	636	-	nC

Notes:

1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2、 Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

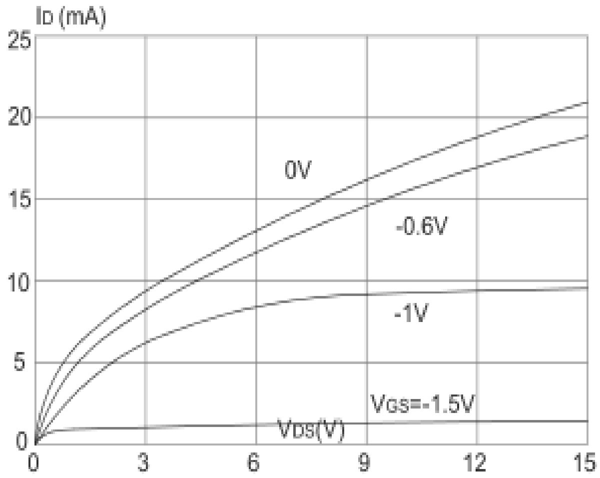


Figure1: Output Characteristics

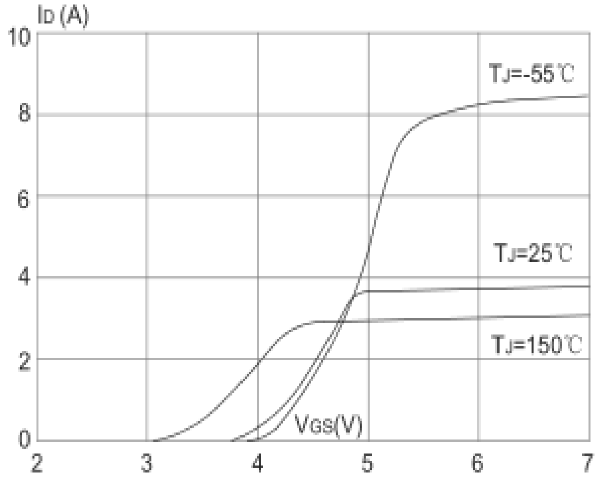


Figure 2: Typical Transfer Characteristics

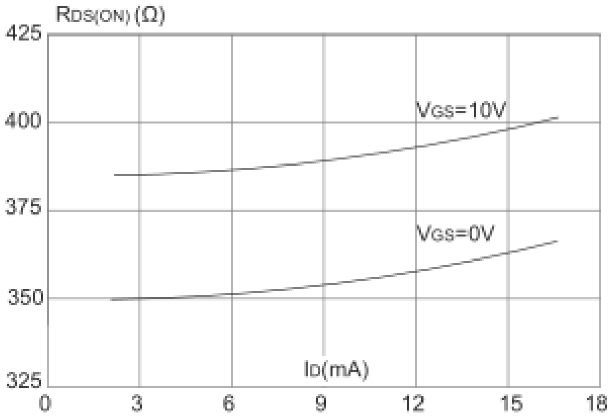


Figure 3: On-resistance vs. Drain Current

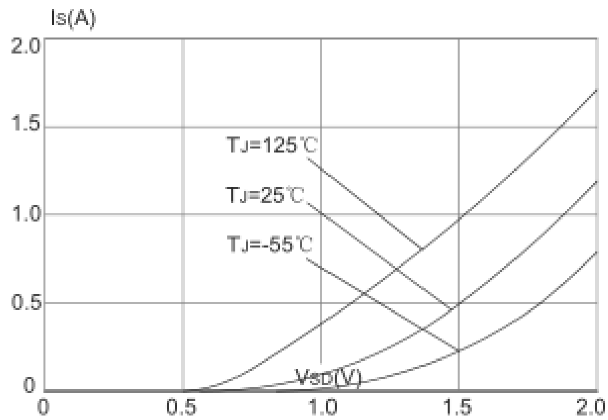


Figure 4: Body Diode Characteristics

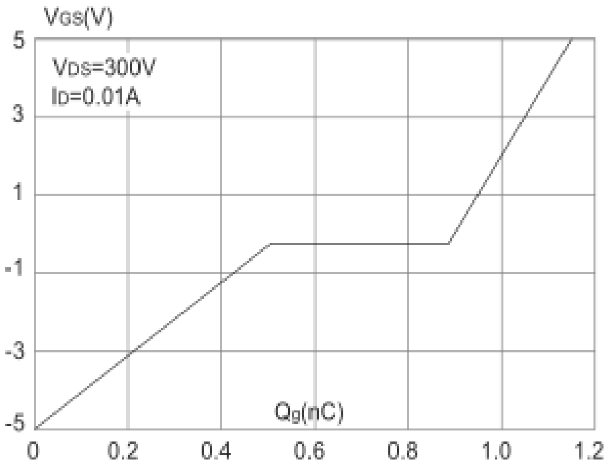


Figure 5: Gate Charge Characteristics

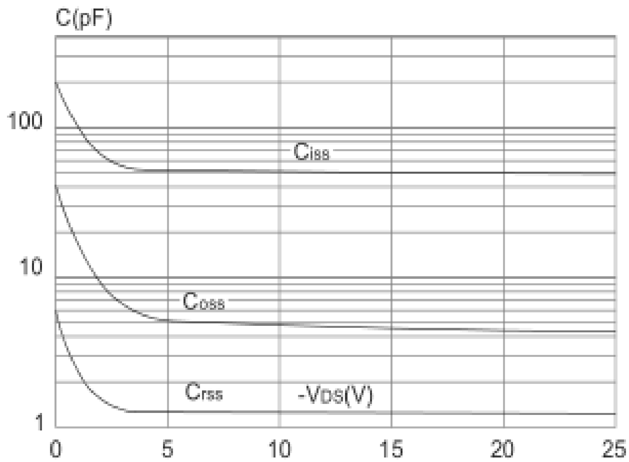


Figure 6: Capacitance Characteristics

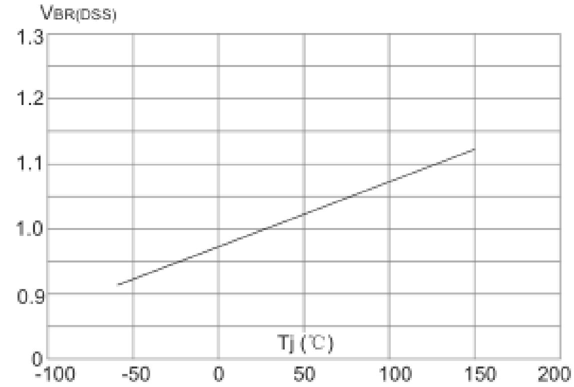


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

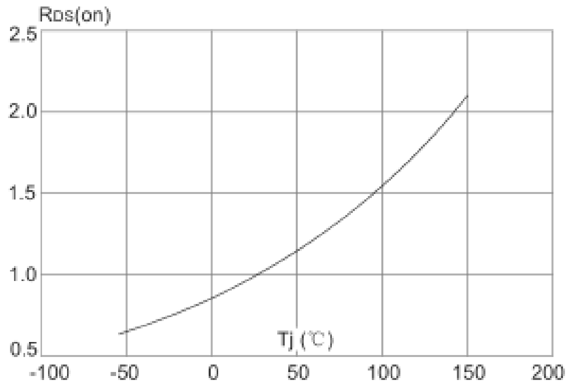


Figure 8: Normalized on Resistance vs. Junction Temperature

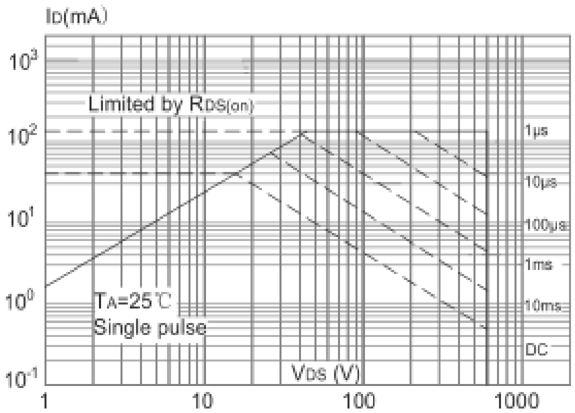


Figure 9: Maximum Safe Operating Area

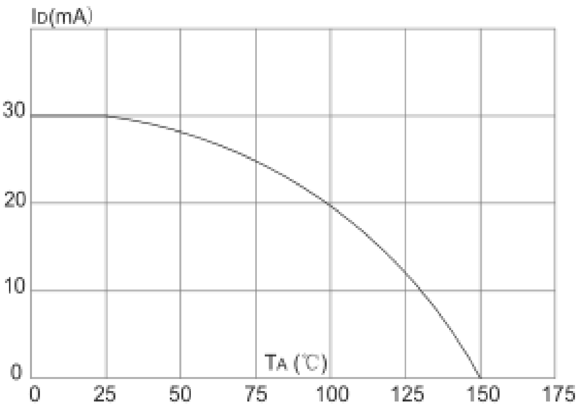


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

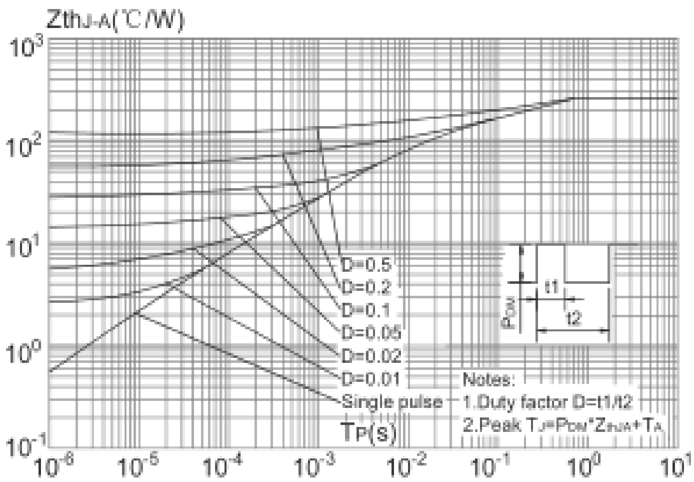
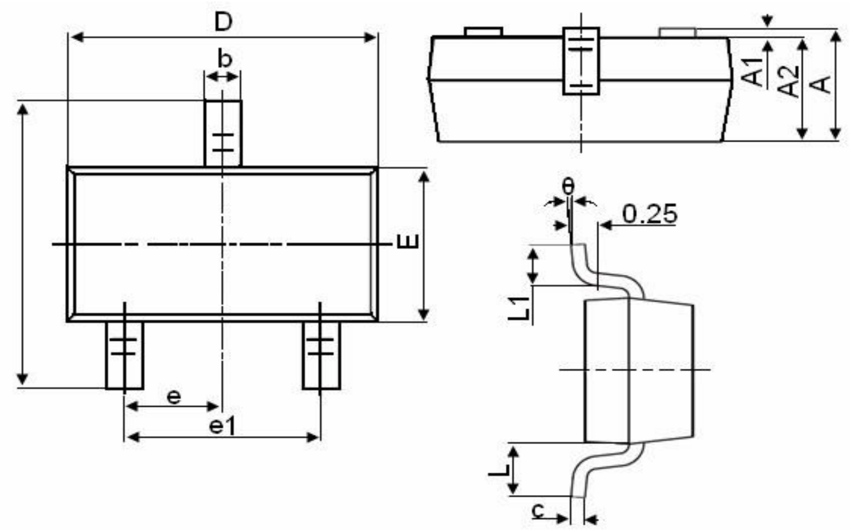


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Mechanical Data-SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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