XPX30N03A2

30V N-Channel Enhancement Mode Power MOSFET

RoHS COMPLIANT

Description

The XPX30N03A2 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

V_{DS} =30V,I_D =80A

$R_{DS(ON)}$ =3.2mΩ @ V_{GS}=10V

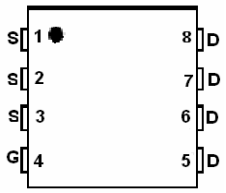
$R_{DS(ON)}$ =4.3mΩ @ V_{GS}=4.5V

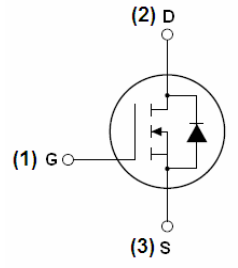
General Features

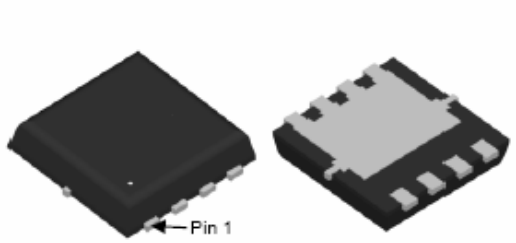
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

Application

- Secondary side synchronous rectifier
- High side switch in POL DC/DC converter







Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
30N03A2	XPX30N03A2	DFN 3x3-8	-	-	5000

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	80	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	58	A
Pulsed Drain Current (Note 1)	I_{DM}	290	A
Maximum Power Dissipation	P_D	54	W
Derating factor		3.2	W/℃
Single pulse avalanche energy (Note 5)	E_{AS}	156	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance,Junction-to-Case (Note 2)	$R_{\theta JC}$	3.5	℃/W

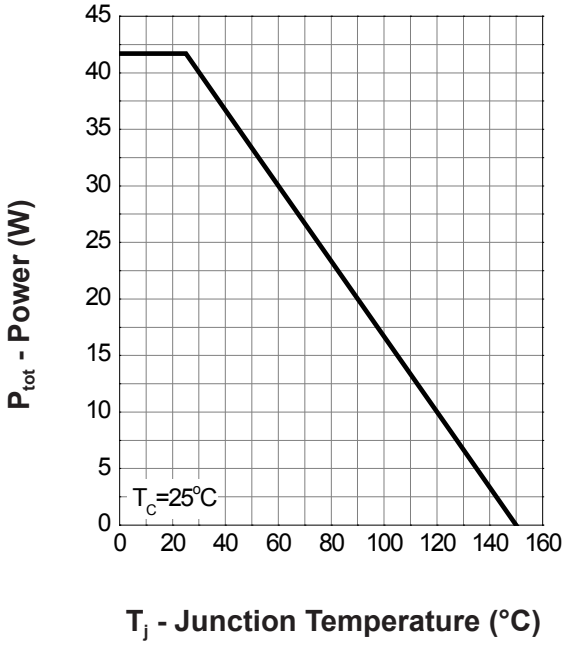
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.4	1.8	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [e]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=15A	-	3.2	4.2	mΩ
		T_J=125°C	-	4.5	-	
		V_{GS}=4.5V, I_{DS}=15A	-	4.3	5.5	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=15A	-	18	-	S
Diode Characteristics						
V_{SD} [e]	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V	-	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=12A, dI_{SD}/dt=100A/μs	-	33	-	ns
t_a	Charge Time		-	17.5	-	
t_b	Discharge Time		-	16	-	
Q_{rr}	Reverse Recovery Charge		-	24	-	nC
Dynamic Characteristics [f]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1	2	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	1270	1651	pF
C_{oss}	Output Capacitance		-	740	-	
C_{rss}	Reverse Transfer Capacitance		-	63	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	13	24	ns
t_r	Turn-on Rise Time		-	10	18	
$t_{d(OFF)}$	Turn-off Delay Time		-	27	49	
t_f	Turn-off Fall Time		-	32	58	
Gate Charge Characteristics [f]						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_{DS}=12A	-	20	28	nC
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_{DS}=12A	-	8.8	-	
Q_{gth}	Threshold Gate Charge		-	2.2	-	
Q_{gs}	Gate-Source Charge		-	3.8	-	
Q_{gd}	Gate-Drain Charge		-	2	-	

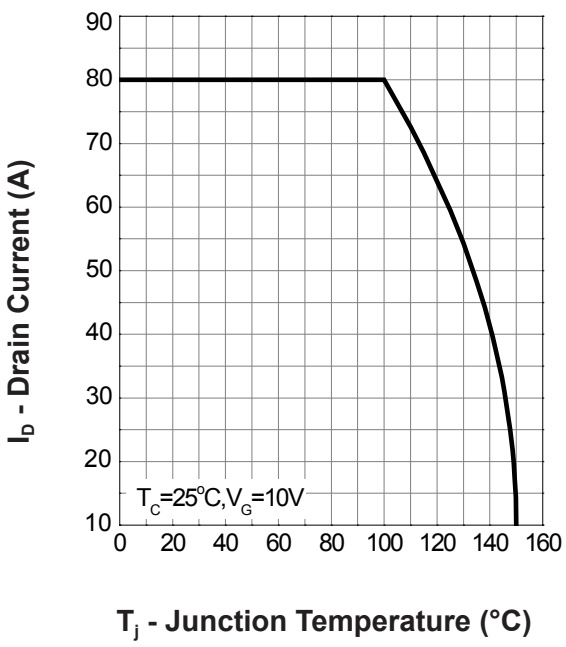
Note e：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note f：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

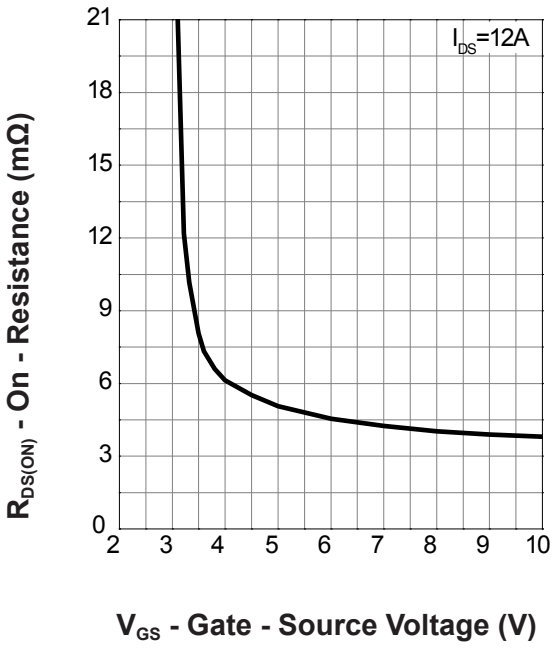
Power Dissipation



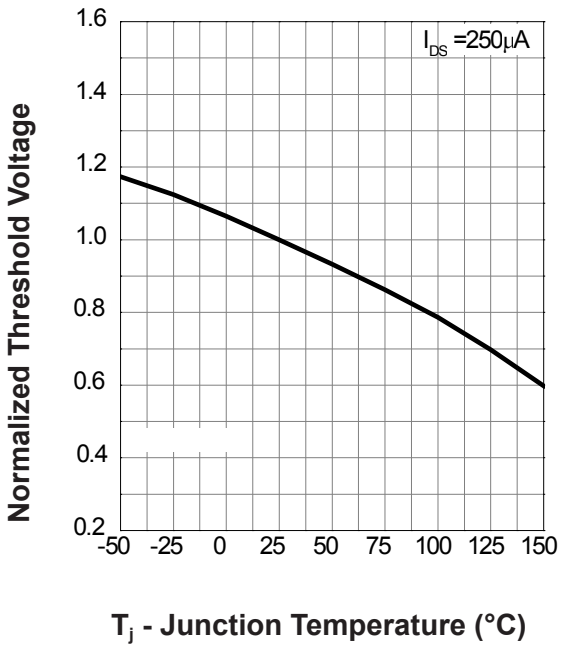
Drain Current



Gate-Source On Resistance

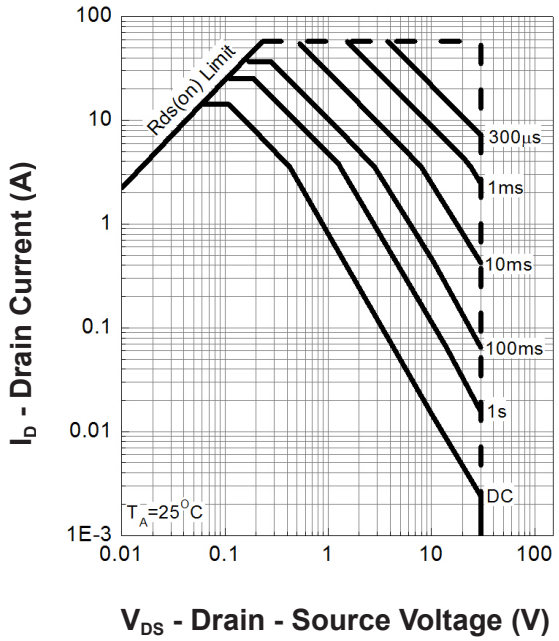


Gate Threshold Voltage

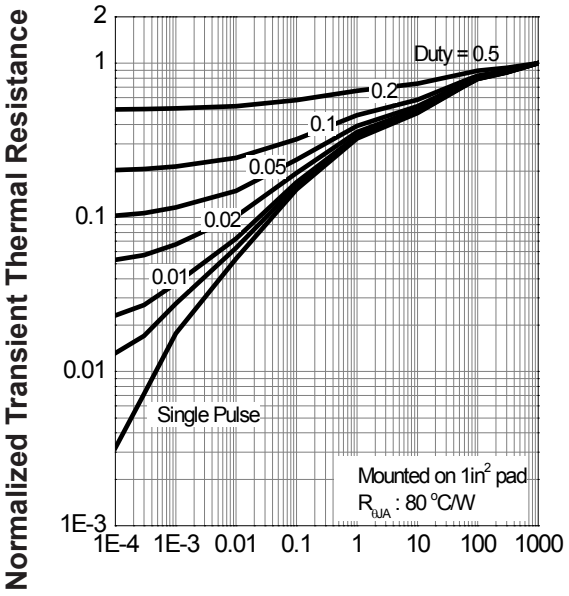


Typical Operating Characteristics(Cont.)

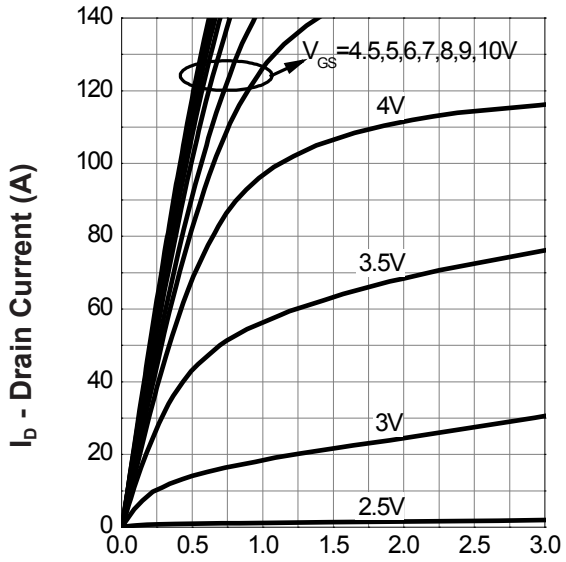
Safe Operation Area



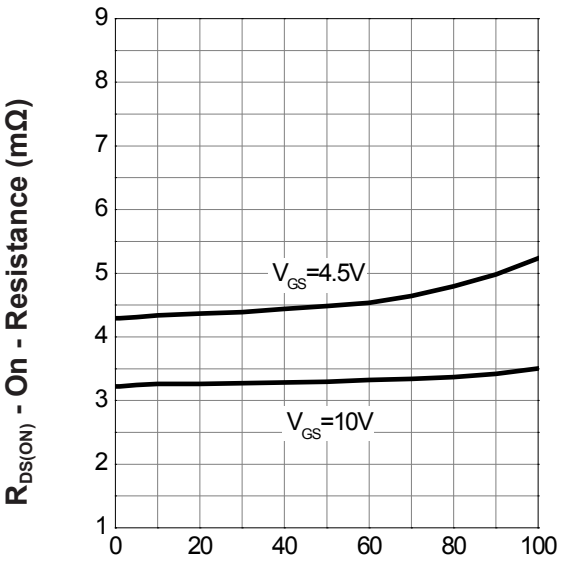
Thermal Transient Impedance



Output Characteristics

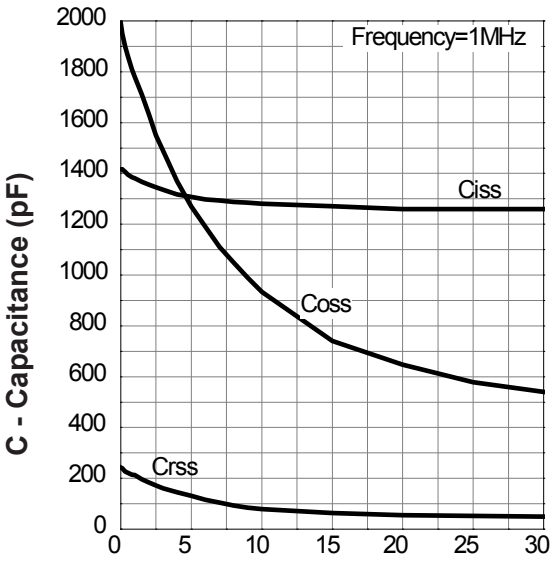


Drain-Source On Resistance



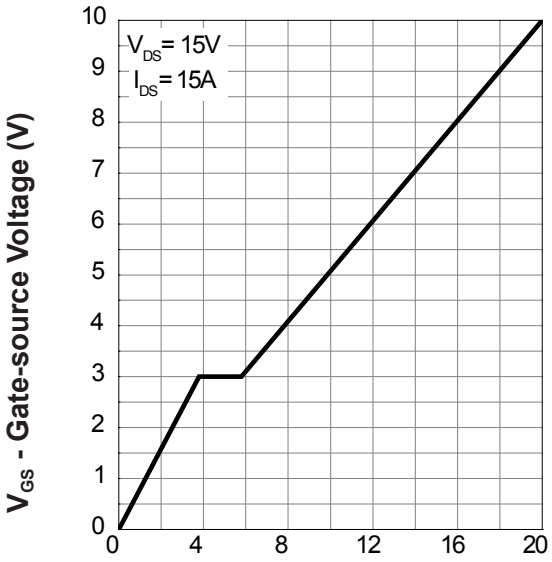
Typical Operating Characteristics(Cont.)

Capacitance



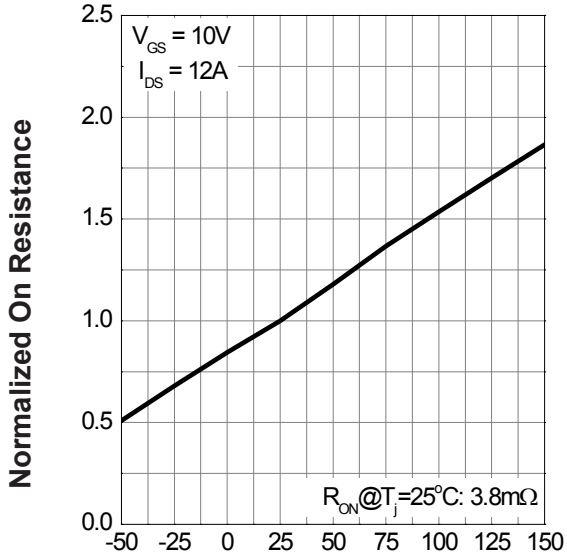
V_{DS} - Drain-Source Voltage (V)

Gate Charge



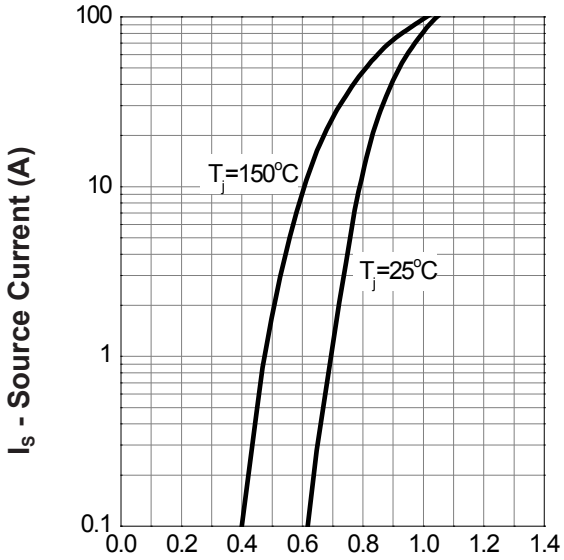
Q_G - Gate Charge (nC)

Drain-Source On Resistance



T_j - Junction Temperature (°C)

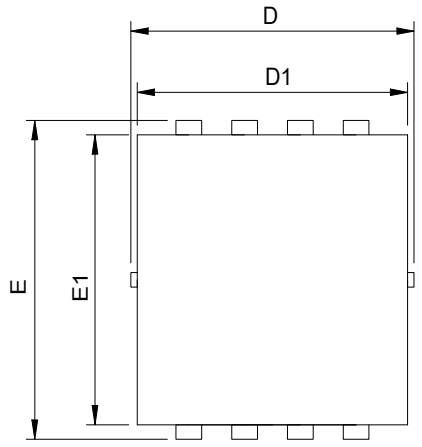
Source-Drain Diode Forward



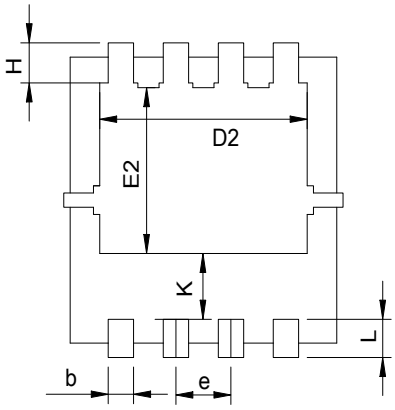
V_{SD} - Source - Drain Voltage (V)

Package Information

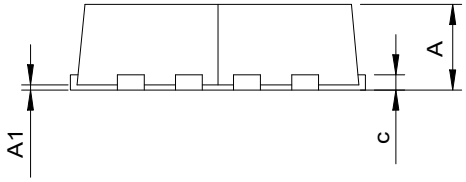
DFN3.3x3.3A-8_EP1_P



Top View



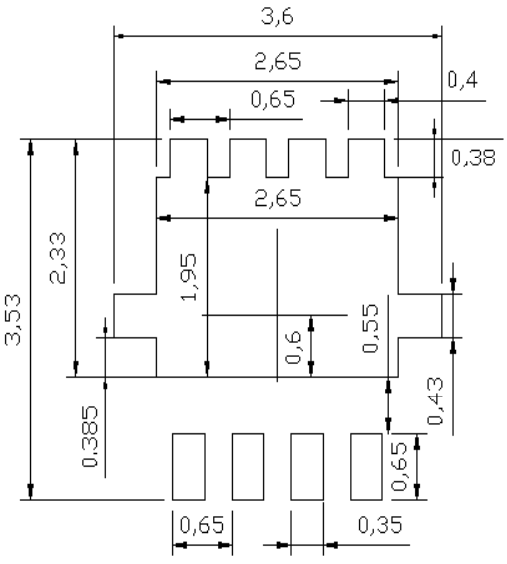
Bottom View



Side View

SYMBOL	DFN3.3x3.3A-8_EP1_P			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.59	0.093	0.102
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.98	0.065	0.078
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm

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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