

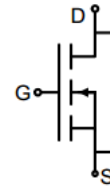
N-Channel Enhancement Mode Power MOSFET

Description

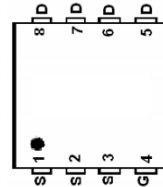
The XPX100N7U5RD uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

- V_{DS} 100V
- I_D (at $V_{GS} = 10V$) 71A
- $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 7.5m Ω
- $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 10m Ω
- 100% Avalanche Tested
- RoHS Compliant



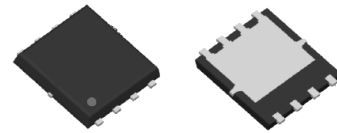
Schematic diagram



Marking and pin assignment

Application

- Power switch
- DC/DC converters
- Synchronous Rectification



DFN5*6

Device	Package	Marking	Packaging
XPX100N7U5RD	DFN5*6	XPX100N7U5RD	5000pcs/Reel

Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	100	V
Continuous Drain Current	I_D	71	A
Pulsed Drain Current (note1)	I_{DM}	284	A
Gate-Source Voltage	V_{GSS}	± 20	V
Power Dissipation	P_D	79	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	47	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	R_{thJC}	1.58	$^\circ\text{C/W}$

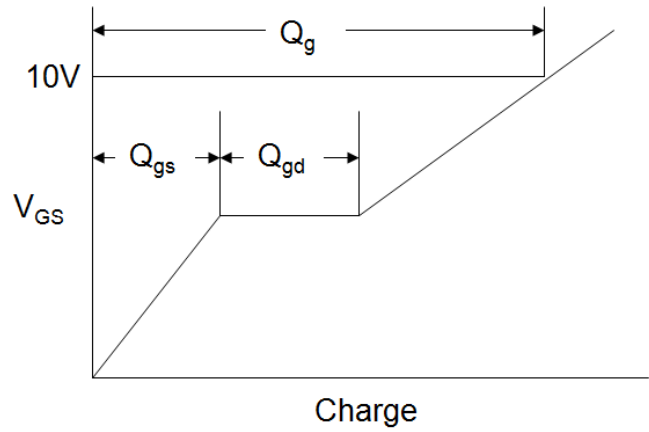
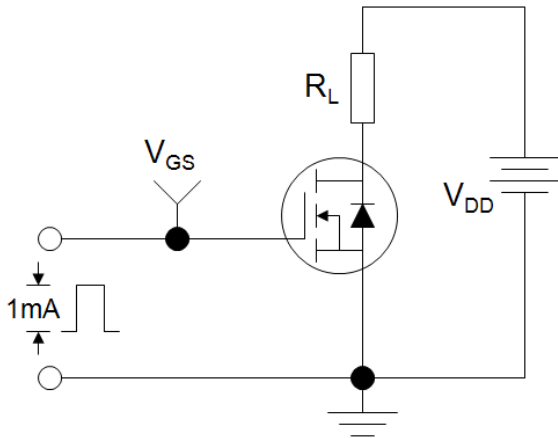
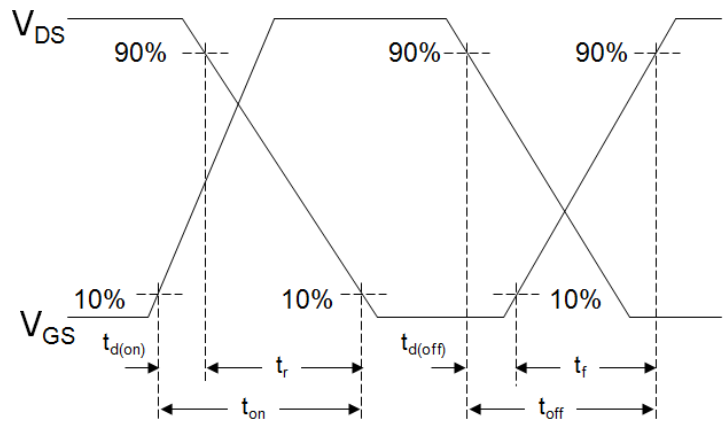
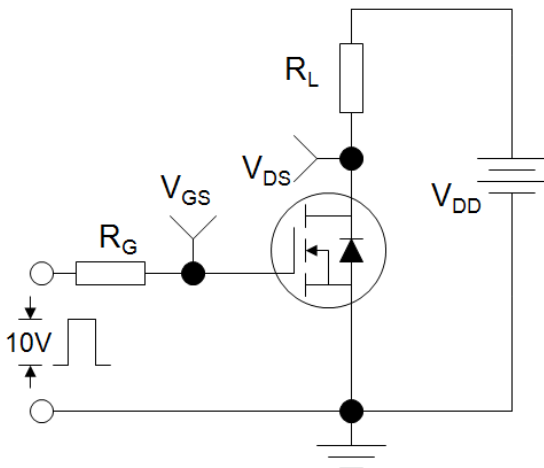
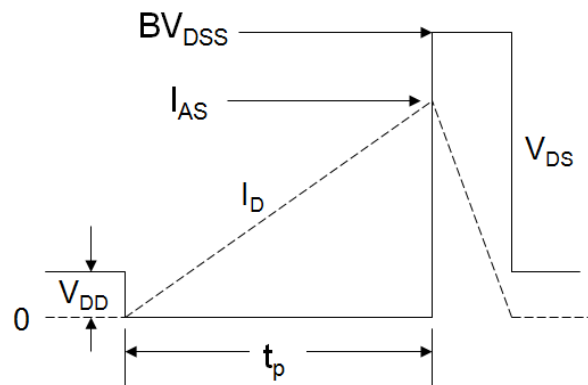
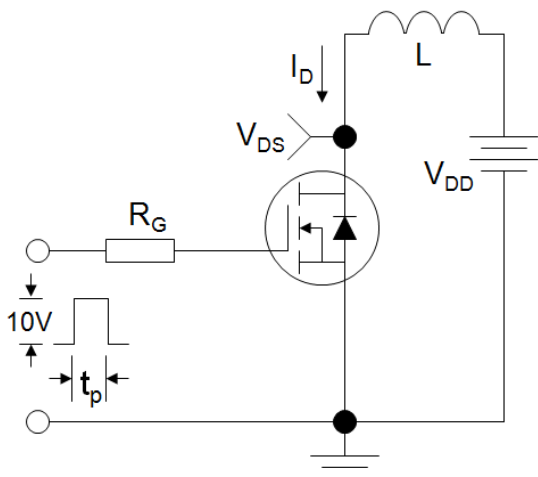
N-Channel Enhancement Mode Power MOSFET

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.65	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$	--	6.5	7.5	m Ω
		$V_{GS} = 4.5V, I_D = 50A$	--	8.5	10	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=30A$	--	91	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 50V,$ $f = 1.0\text{MHz}$	--	2626	--	pF
Output Capacitance	C_{oss}		--	457	--	
Reverse Transfer Capacitance	C_{rss}		--	38	--	
Total Gate Charge	Q_g	$V_{DD} = 50V,$ $I_D = 50A,$ $V_{GS} = 10V$	--	44.5	--	nC
Gate-Source Charge	Q_{gs}		--	10.4	--	
Gate-Drain Charge	Q_{gd}		--	6.8	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 50V,$ $I_D = 50A,$ $R_G = 3\Omega$	--	10.3	--	ns
Turn-on Rise Time	t_r		--	62	--	
Turn-off Delay Time	$t_{d(off)}$		--	30	--	
Turn-off Fall Time	t_f		--	98	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	71	A
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 50A, V_{GS} = 0V$	--	--	1.2	V

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G

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Gate Charge Test Circuit

EAS Test Circuit

Switch Time Test Circuit


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Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

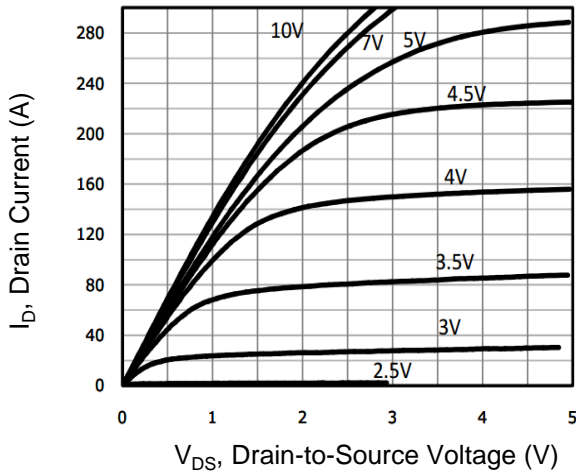


Figure 2. Transfer Characteristics

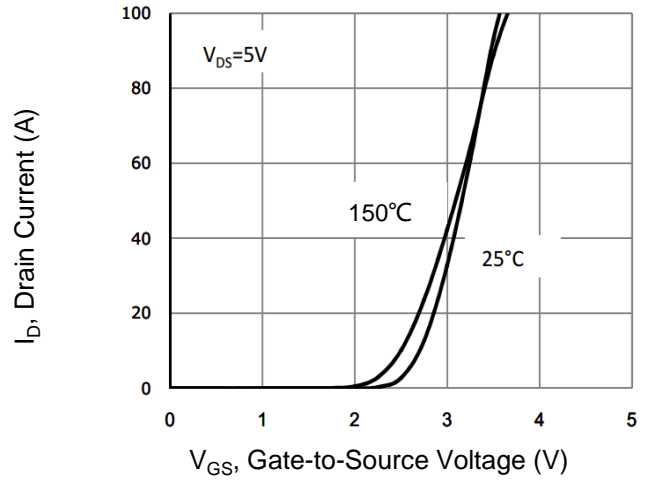


Figure 3. $R_{DS(on)}$ -Drain Current

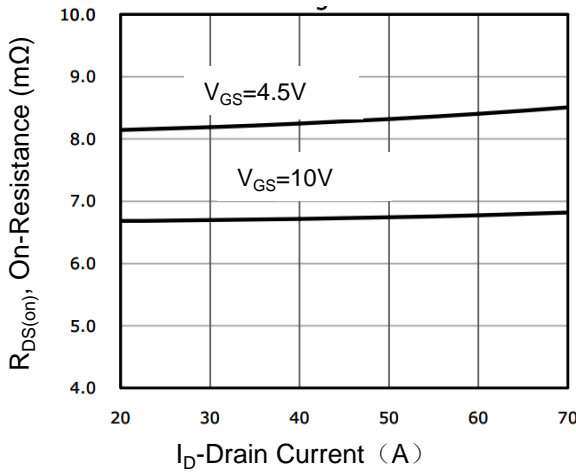


Figure 4. Gate Charge

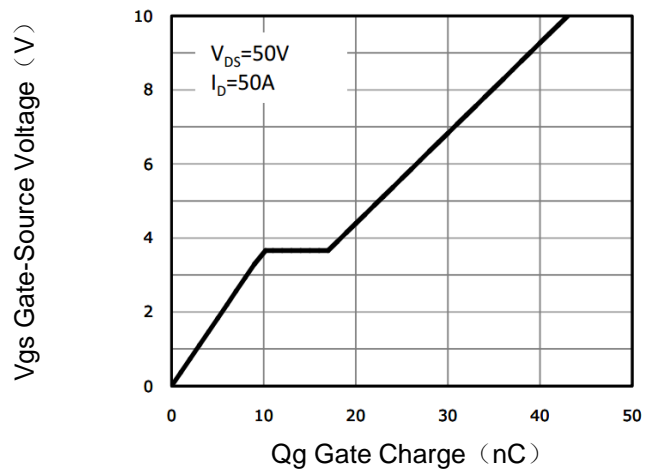


Figure 5. Capacitance vs V_{ds}

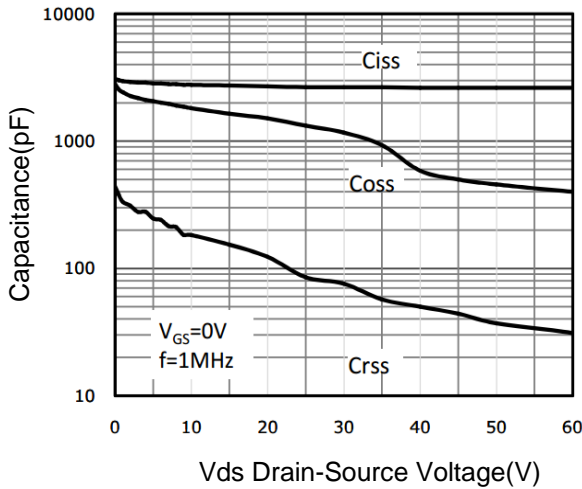
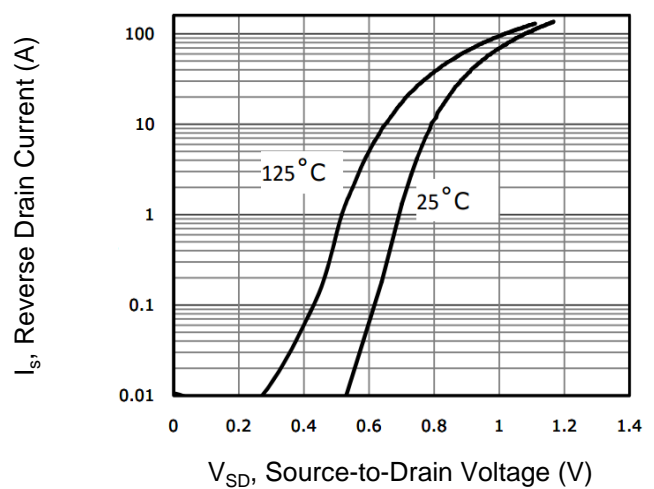


Figure 6. Source-Drain Diode Forward



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Figure 7. Drain-Source On-Resistance

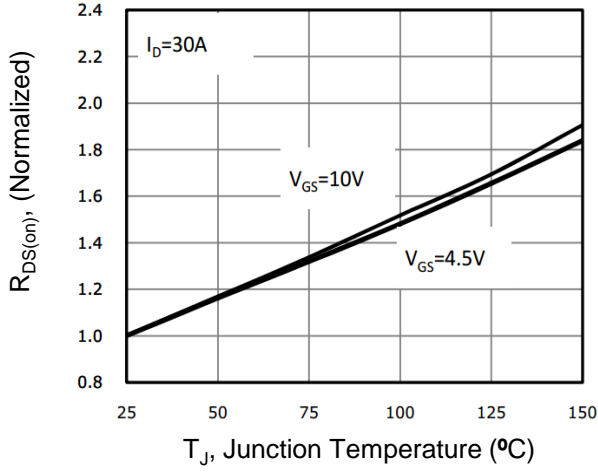


Figure 8. Safe Operation Area

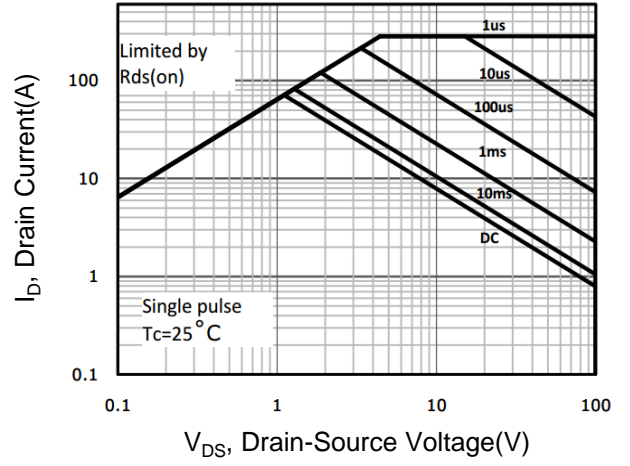
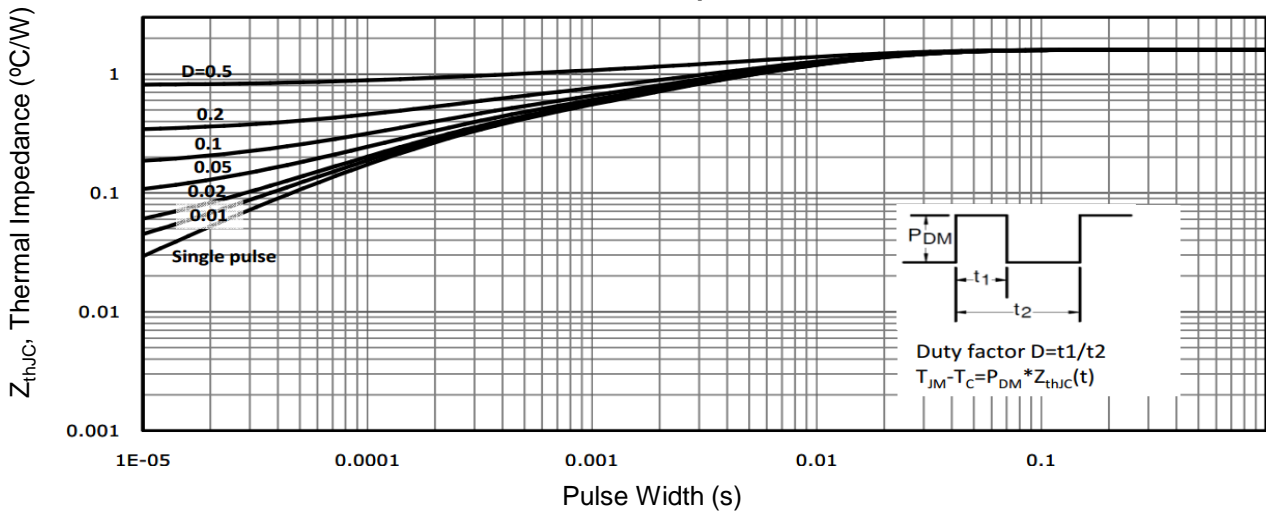
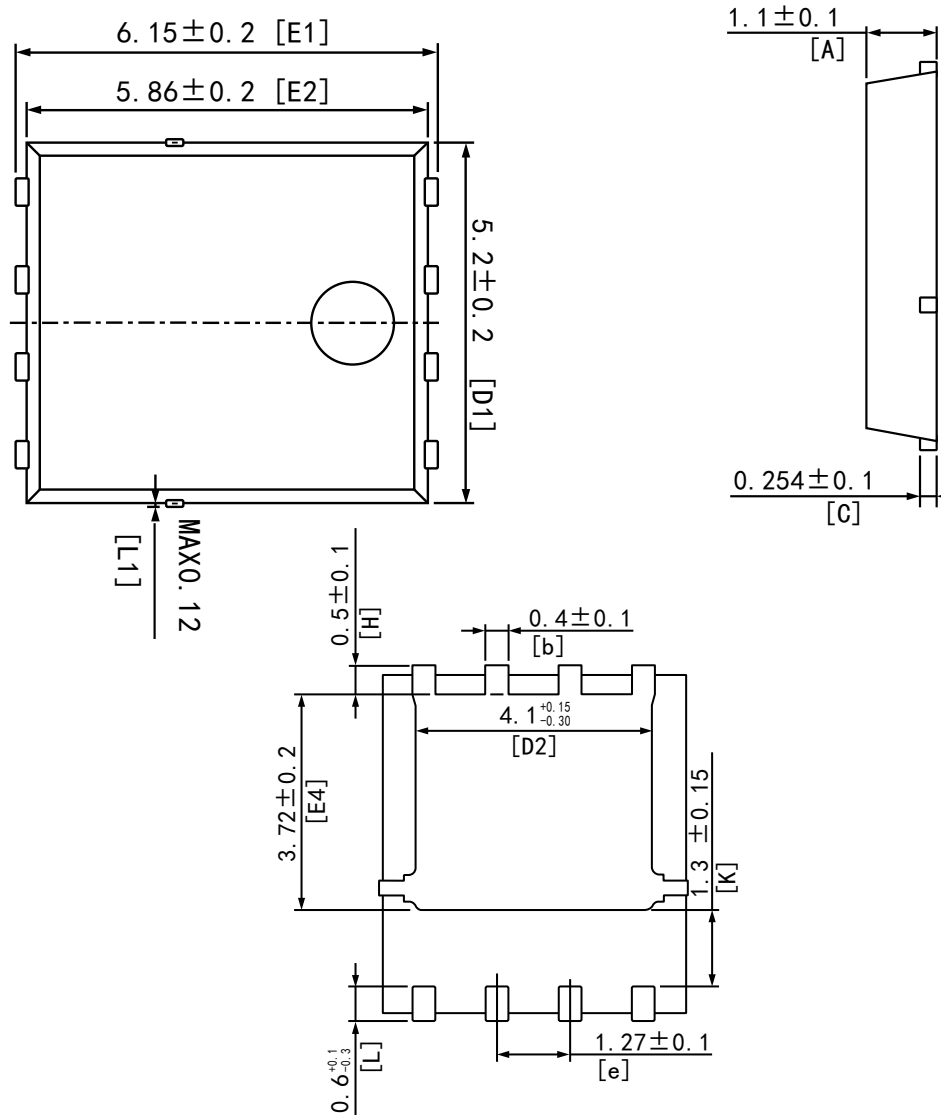


Figure 9. Normalized Maximum Transient Thermal Impedance



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DFN5×6-8L Package Information



DIN	MIN	NOM	MAX
A	1.0	1.1	1.2
b	0.3	0.4	0.5
C	0.154	0.254	0.354
D1	5.0	5.2	5.4
D2	3.80	4.10	4.25
E1	5.95	6.15	6.35
E2	5.66	5.86	6.06
E4	3.52	3.72	3.92
e	1.17	1.27	1.37
H	0.4	0.5	0.6
K	1.15	1.30	1.45
L	0.3	0.6	0.7
L1	—	—	0.12

All dimensions in mm