

## FEATURES

- High density cell design for ultra low  $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$

## APPLICATIONS

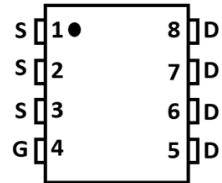
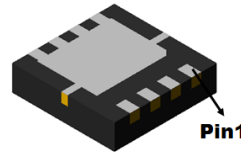
- Hard switched and high frequency circuits
- Uninterruptible power supply
- Special process technology for high ESD capability
- Excellent package for good heat dissipation
- Power switching application

## N-Channel Power MOSFET

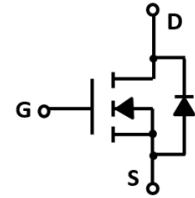
$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	$I_D$
30V	17mΩ@10V	20A
	22mΩ@4.5V	

## DESCRIPTION

The LXN38F30V 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.



**DFN3.3X3.3**



Marking 20N03/30N03

## MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted )

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	20	A
Pulsed Drain Current	$I_{DM}$	60	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	22.21	mJ
Power Dissipation	$P_D$	2	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~+150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	$T_L$	260	$^\circ\text{C}$

(1). $E_{AS}$  condition:  $V_{DD}=50\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_G=25\Omega$ , Starting  $T_J = 25^\circ\text{C}$

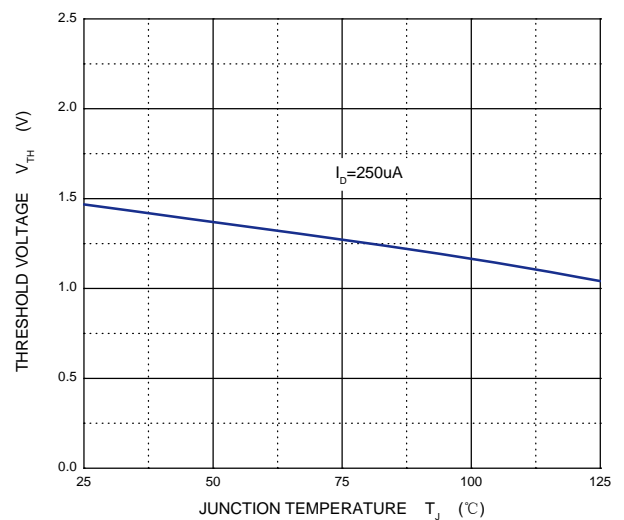
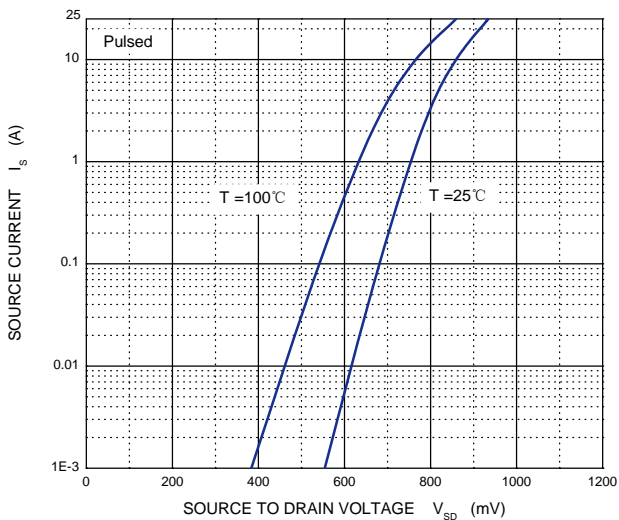
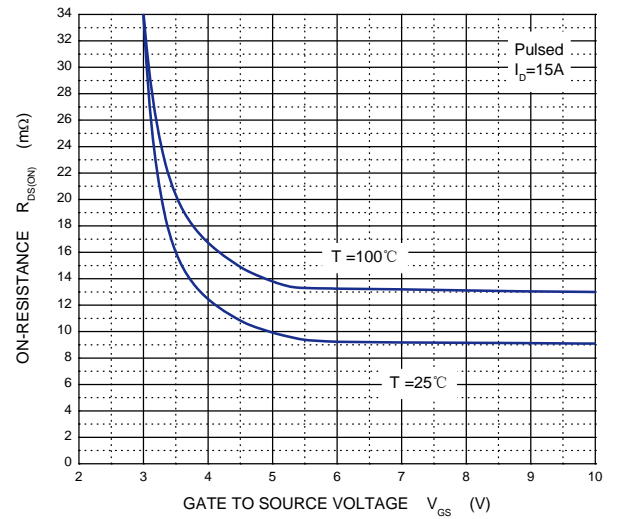
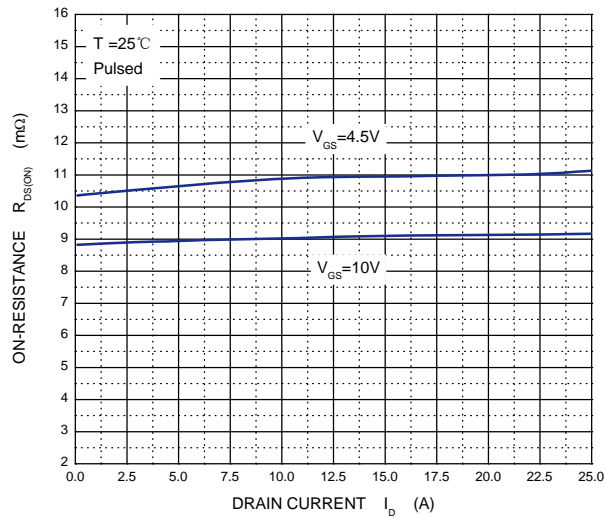
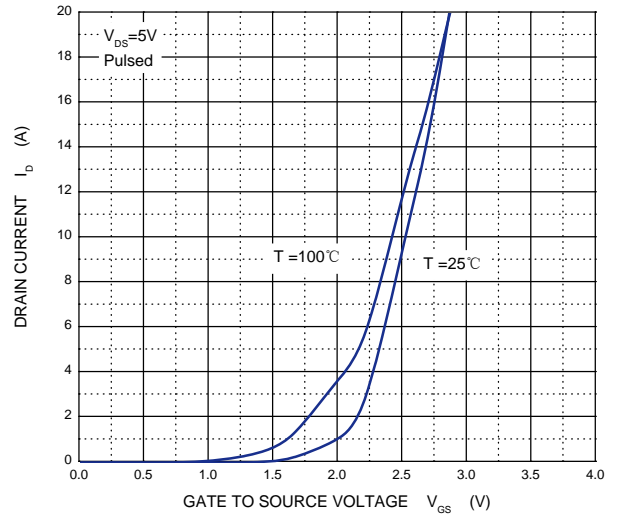
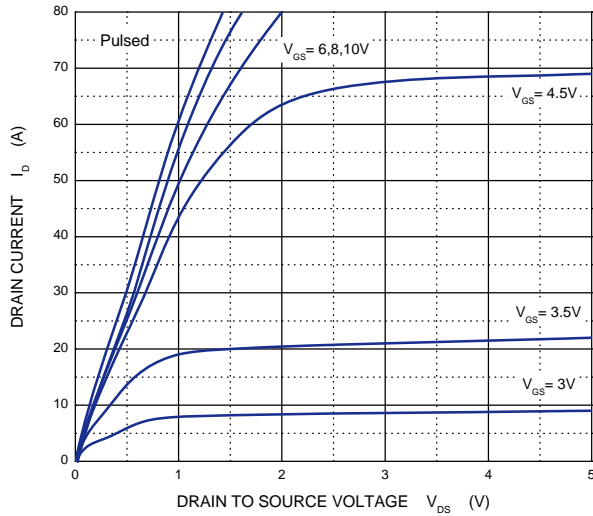


**Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)**

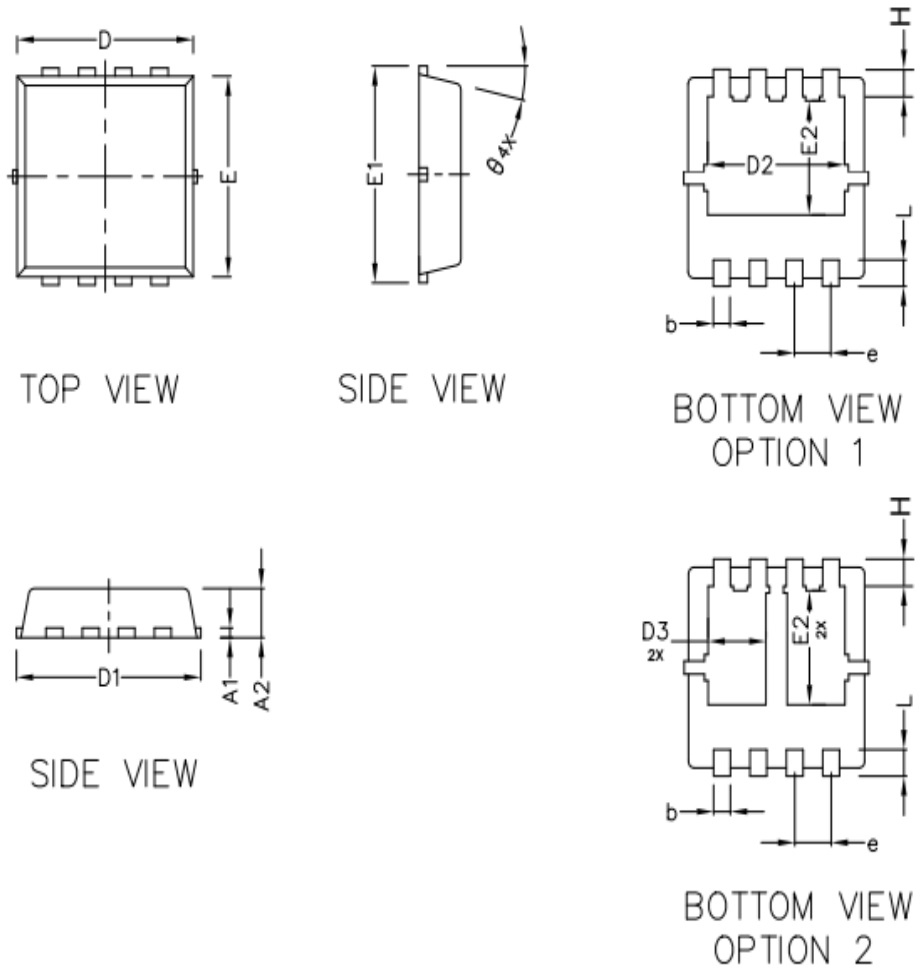
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
<b>On characteristics (note1)</b>						
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.5	2.2	V
Static drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A		17	20	mΩ
Static drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A		22	30	mΩ
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		572		pF
Output capacitance	C <sub>oss</sub>			81		
Reverse transfer capacitance	C <sub>rss</sub>			65		
<b>Switching characteristics (note 2)</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		6.2		nC
Gate-source charge	Q <sub>gs</sub>			2.4		
Gate-drain charge	Q <sub>gd</sub>			2.5		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, I <sub>D</sub> = 2A, V <sub>GS</sub> = 10V, R <sub>G</sub> = 3Ω, R <sub>L</sub> = 0.75Ω		5		ns
Turn-on rise time	t <sub>r</sub>			12		
Turn-off delay time	t <sub>d(off)</sub>			19		
Turn-off fall time	t <sub>f</sub>			6		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note1)	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A			1.2	V
Continuous drain-source diode forward current	I <sub>S</sub>				20	A
Pulsed drain-source diode forward current	I <sub>SM</sub>				60	A

Notes:

1. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production.



**DFN3.3X3.3 Package information**



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.152 BSC		
A2	0.700	0.800	0.900
b	0.250	-	0.400
D	3.050	3.150	3.250
D1	3.200	3.300	3.400
D2	2.350	2.450	2.550
D3	0.935	1.035	1.135
E1	3.200	3.300	3.400
E	2.900	3.000	3.100
E2	1.635	1.735	1.835
e	0.650 REF		
L	0.300	0.400	0.500
H	0.250	-	0.630
θ	12° TYPE		