

N-Channel 30V MOSFET

E030N3P5ML1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
30V	3.5 @ $V_{GS} = 10V$	87

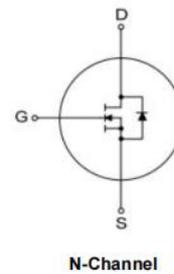
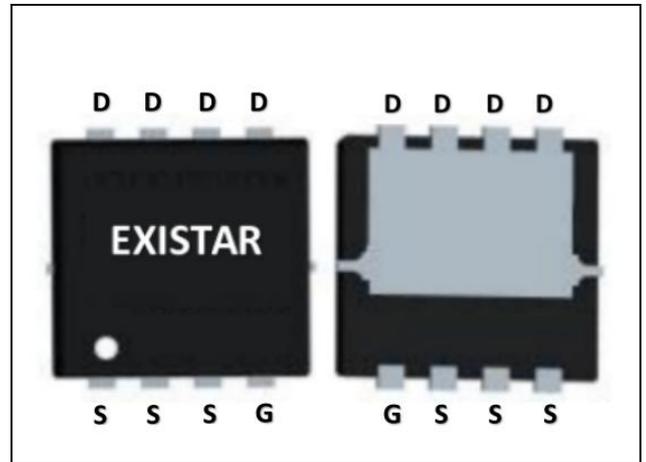
Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Applications

- DC/DC conversion
- Power switch
- PD charger
- Moto driver

PDFN3.3*3.3



Package And Ordering Information

Ordering code	Package	Marking
E030N3P5ML1	PDFN3.3*3.3	EX03N50

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
PDFN3.3*3.3	5000	1	5000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	30	V
ID, pulse	348	A
RDS(ON), max @ VGS=10V	3.5	mΩ
Qg	56	nC

Absolute Maximum Ratings at Tj=25°C Unless Otherwise Noted

Parameter	Symbol	Limit	Unit
Drain-source voltage	V _{DS}	30	V
Gate-source voltage	V _{GS}	±20	
Continuous drain current	I _D	T _C =25°C	87
		T _C =100°C	55
Pulsed drain current	I _{D,pulse}	348	A
Avalanche energy, single pulse	E _{AS}	289	mJ
Power dissipation	P _D	T _C =25°C	42
		T _C =100°C	16.7
Operating junction and storage temperature range	T _J , T _{stg}	-55 To 150	°C

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	R _{θJC}	3	°C/W
Thermal resistance, junction-to-ambient	R _{θJA}	-	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	V _{(BR)DSS}	30			V	V _{GS} = 0, I _D = 250 μA
Gate-source threshold voltage	V _{GS(th)}	1.0		2.5	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±20 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 30 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		2.5	3.5	mΩ	V _{GS} = 10 V, I _D = 20 A
Drain-source on-resistance	R _{DS(on)}		4.1	5.5	mΩ	V _{GS} = 4.5 V, I _D = 15 A
Forward transconductance	g _{fs}		40		S	V _{DS} = 5 V, I _D = 20 A

Gate resistance	R _g		1.8		Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		56		nC	V _{DS} = 15 V, I _D = 20 A, V _{GS} = 10 V
Gate-source charge	Q _{gs}		7.5			
Gate-drain charge	Q _{gd}		16			
Dynamic						
Turn-on delay time	t _{d(on)}		25		ns	V _{DS} = 15 V, V _{GS} = 10 V, R _L = 0.75 Ω, R _{GEN} = 3 Ω
Rise time	t _r		21			
Turn-off delay time	t _{d(off)}		50			
Fall time	t _f		27			
Input capacitance	C _{iss}		3280		pF	V _{DS} = 15 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}		344			
Reverse transfer capacitance	C _{rss}		302			
Body Diode						
Diode forward voltage	V _{SD}			1.2	V	V _{GS} = 0 V, I _F = 20 A
Reverse recovery time	t _{rr}		56		ns	I _S = 20 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		42		nC	

Electrical Characteristics Diagrams

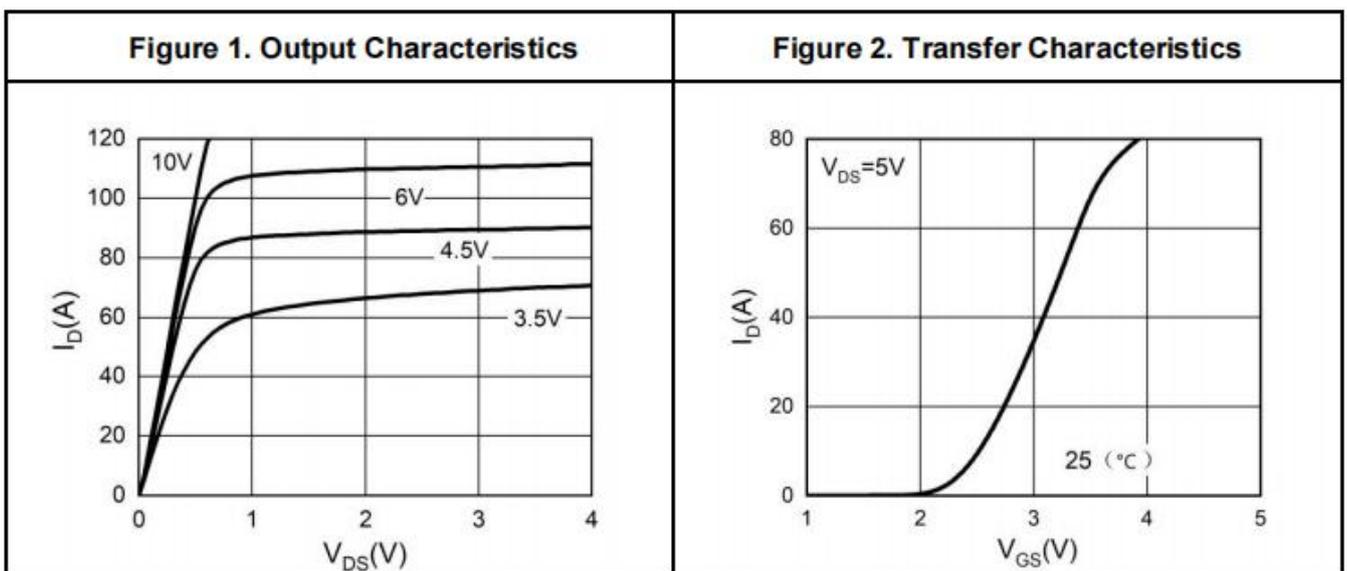


Figure 3. Power Dissipation

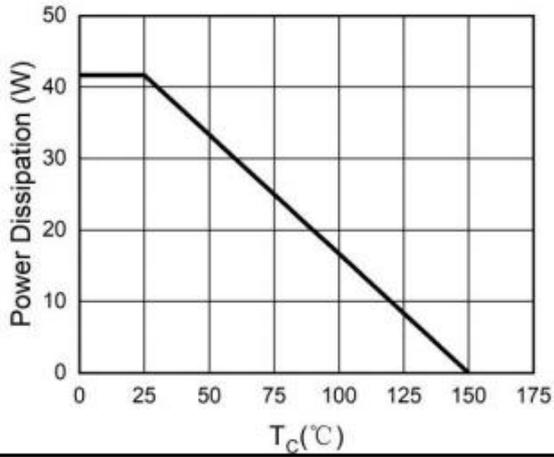


Figure 4. Drain Current

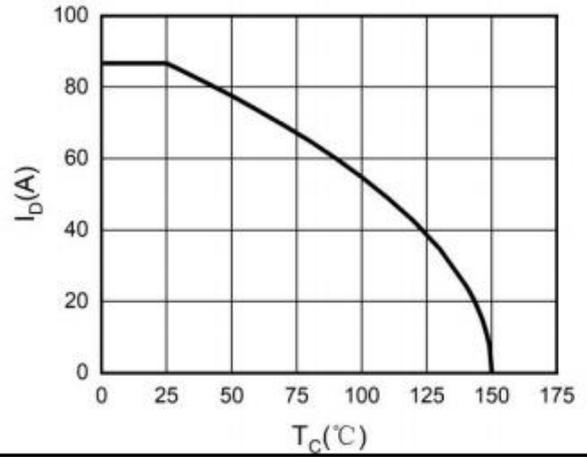


Figure 5. BV_{DSS} vs Junction Temperature

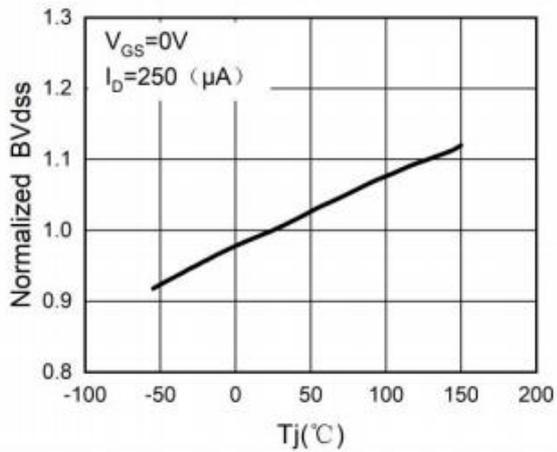


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

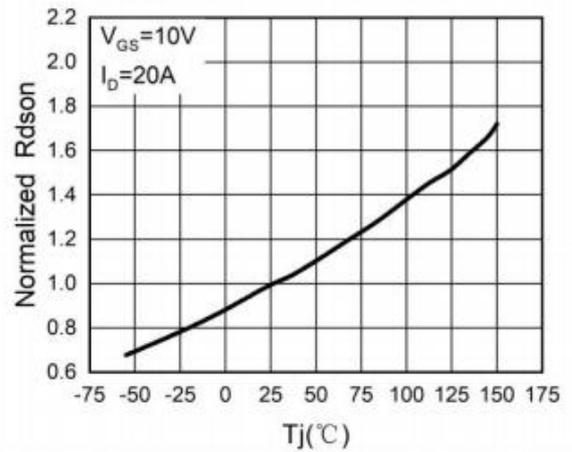


Figure 7. Gate Charge Waveforms

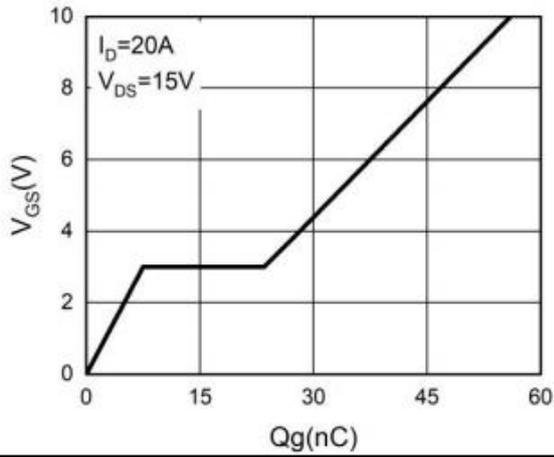


Figure 8. Capacitance

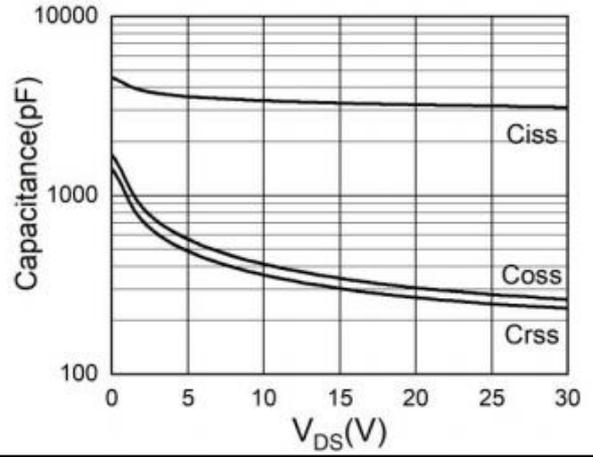


Figure 9. Body-Diode Characteristics

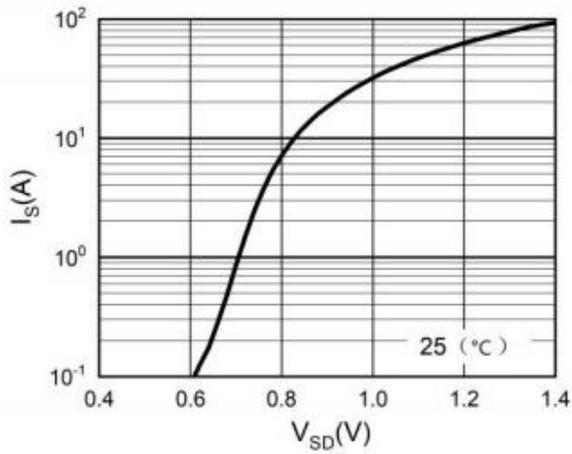
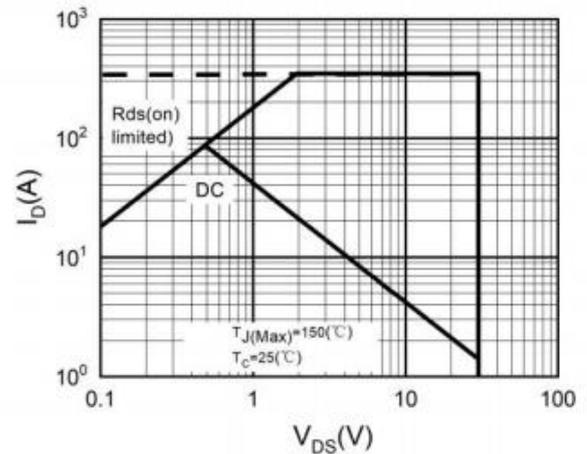
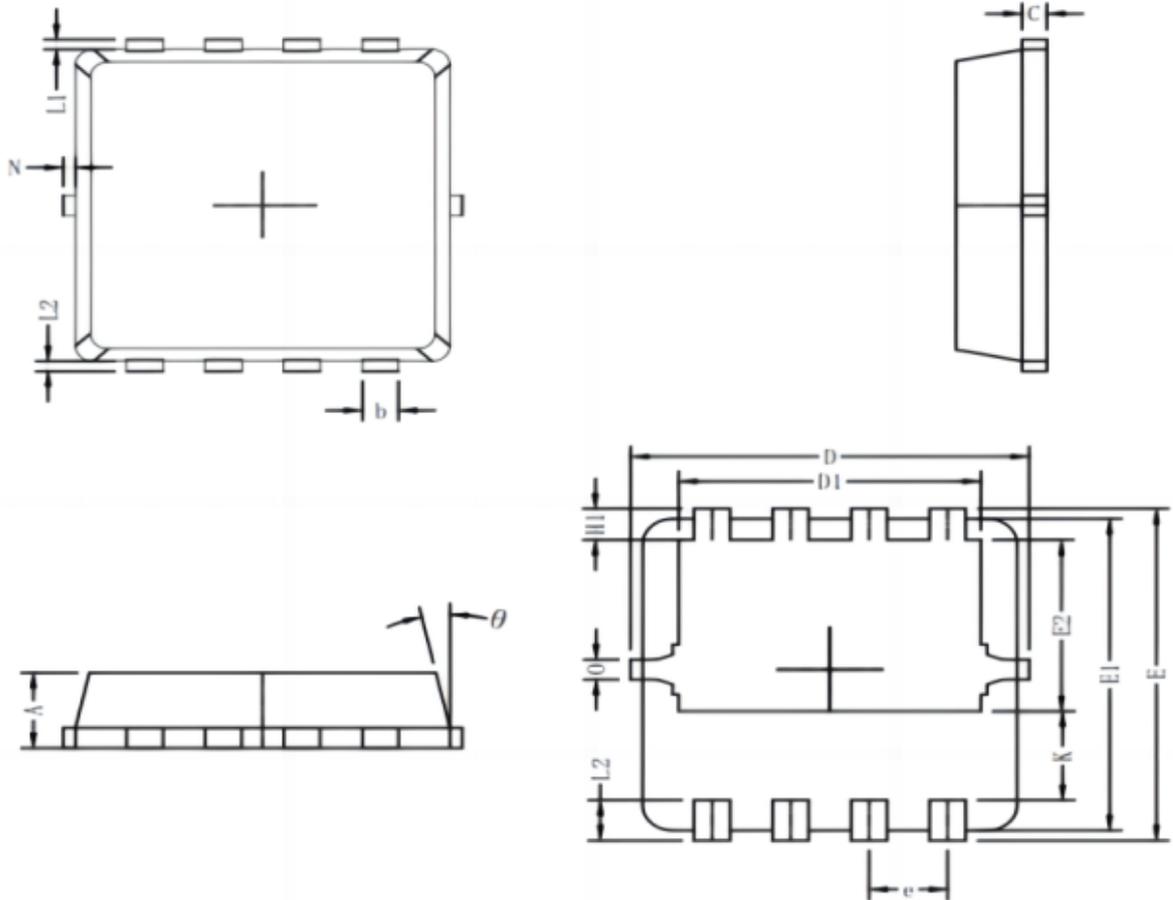


Figure 10. Maximum Safe Operating Area



Package Outline Dimensions



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
O	0.2 REF.		

Legal Disclaimer

The information given in this document shall be for illustrative purposes only and shall in no event be regarded as a guarantee of conditions or characteristics. Existar Technologies reserves the right to change any information herein. With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Existar Technologies or its affiliates hereby make no representation or warranty of any kind, expressed or implied, as to any information provided hereunder, including without limitation as to the accuracy, completeness or non-infringement of intellectual property rights of any third party, and they assume no liability for the consequences of use of such information. In addition, any information given in this document is subject to customer's compliance with its obligations stated herein and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Existar Technologies in customer's applications. The information contained herein is exclusively intended for technically trained staff. No license is granted by implication under any patent right, copyright, mask work right, or other intellectual property right. It is customer's sole responsibility to evaluate the suitability of the product for the intended application and the completeness of the product information given herein with respect to such application. In no event shall Existar Technologies or its affiliates be liable to any party for any direct, indirect, special, punitive, incidental or consequential damages of any nature whatsoever, including but not limited to loss of profits and loss of goodwill, whether or not such damages are based on tort or negligence, warranty, breach of contract or any other legal theory.