

N-Channel 20V MOSFET

E020N5P0ML1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
20V	5.0 @ $V_{GS} = 4.5V$	50

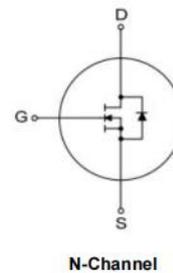
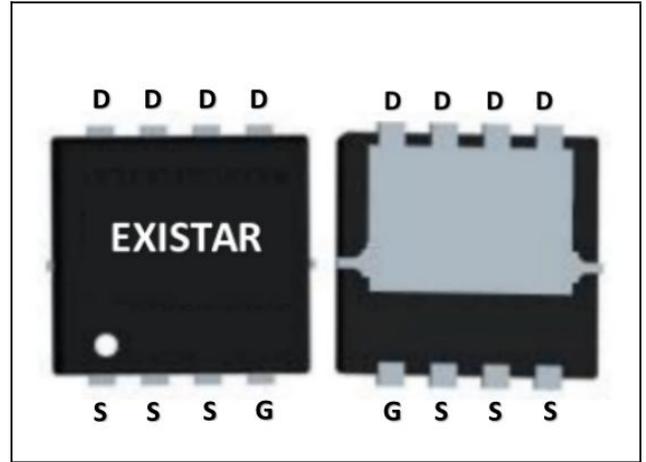
Features

- 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



RoHS
COMPLIANT
HALOGEN
FREE

Package And Ordering Information

Ordering code	Package	Marking
E020N5P0ML1	PDFN3.3*3.3	E020N5P0ML1

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)	20	V
ID, pulse	205	A
RDS(ON), max @ VGS=4.5V	5.0	mΩ
Qg	18	nC

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V _{DS}	20	V
Gate-source voltage	V _{GS}	±12	
Continuous drain current	I _D	T _C =25°C	50
		T _C =100°C	31
Pulsed drain current	I _{D,pulse}	205	A
Avalanche energy, single pulse	E _{AS}	75	mJ
Power dissipation	P _D	T _C =25°C	65
		T _A =25°C	-
Operating junction and storage temperature range	T _J , T _{stg}	-55~150	°C

Thermal Characteristics

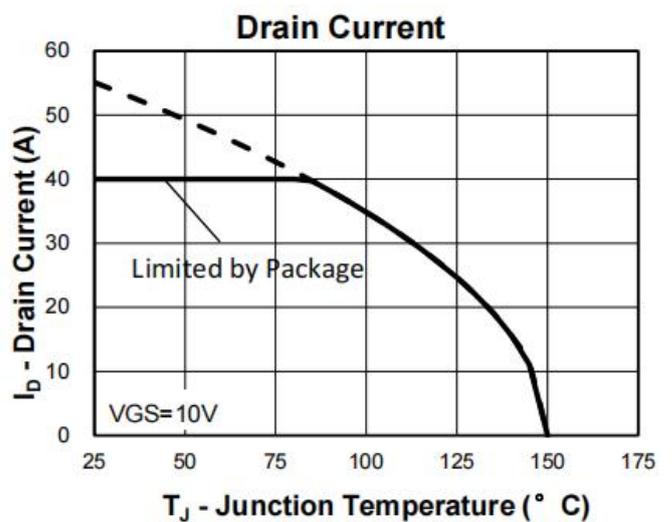
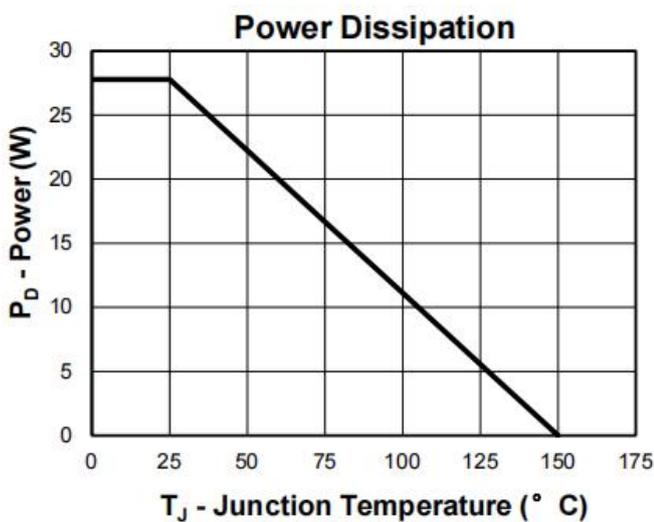
Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	R _{θJC}	2	°C/W
Thermal resistance, junction-to-ambient	R _{θJA}	36	

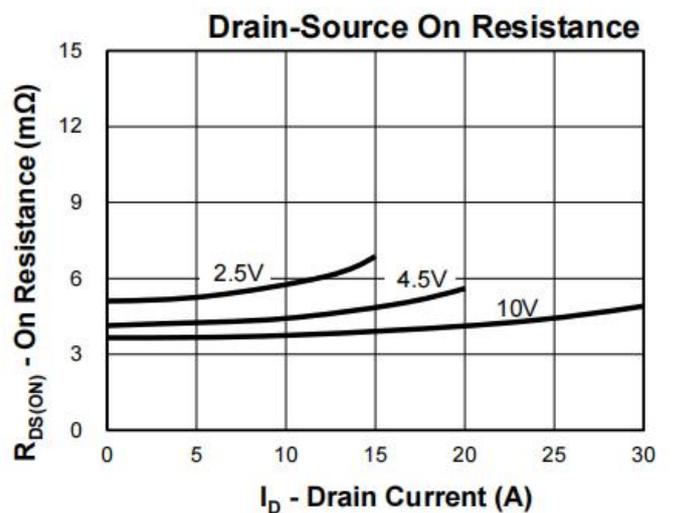
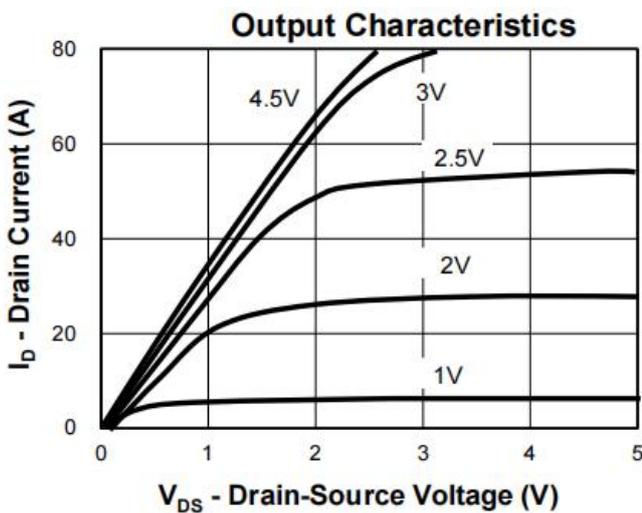
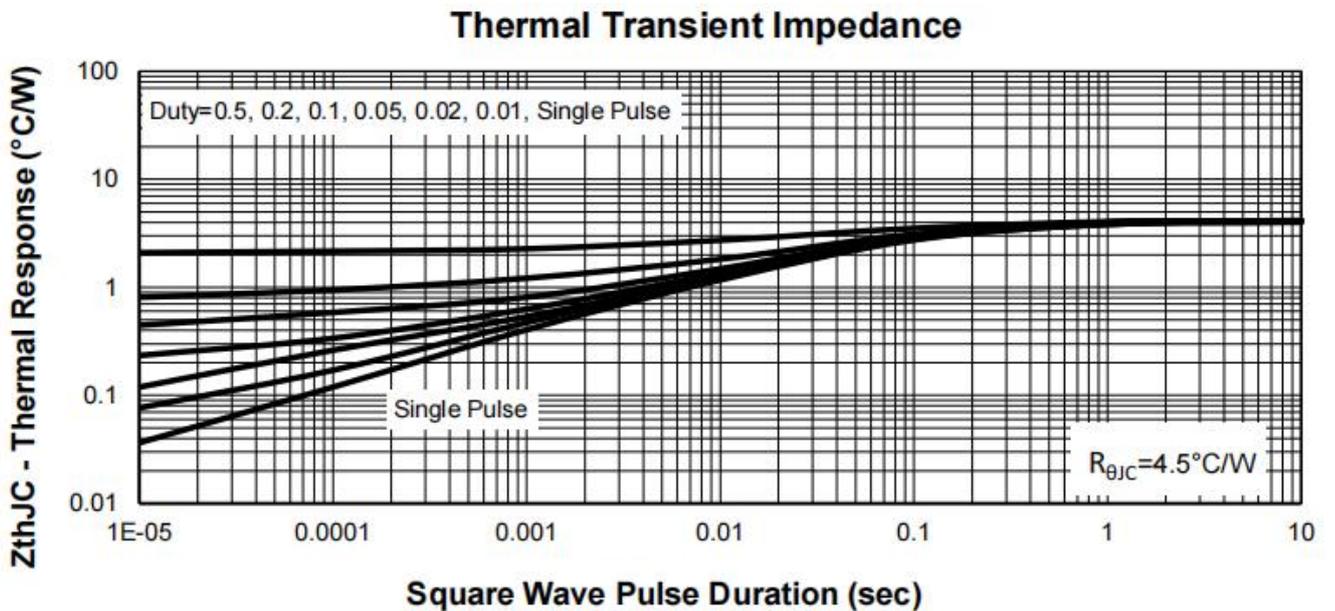
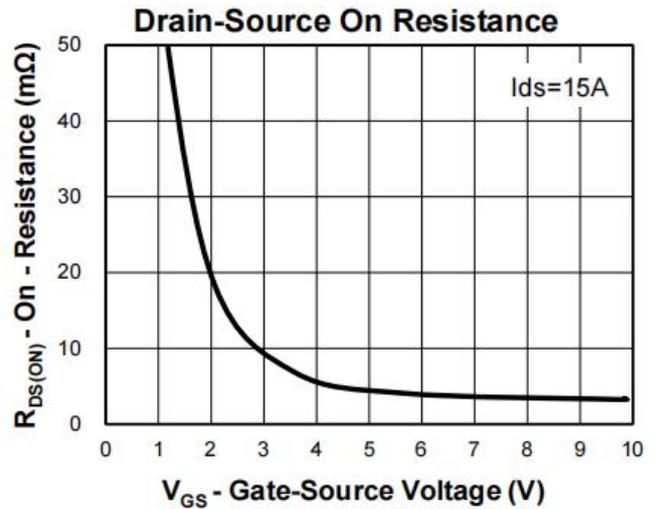
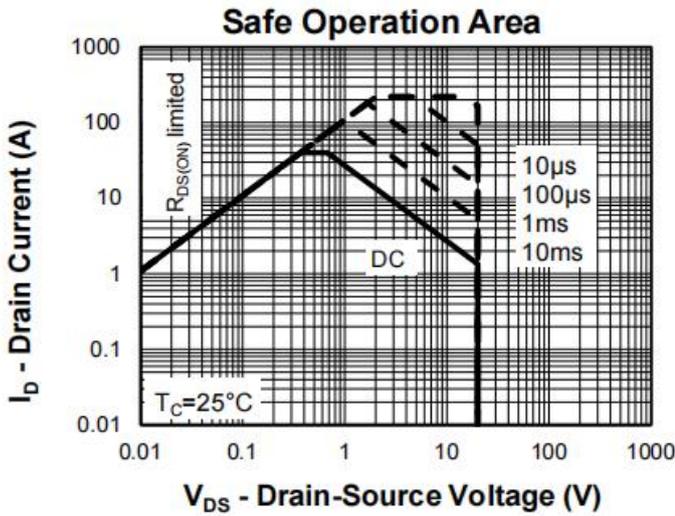
Electrical Characteristics at Tj=25°C unless otherwise specified

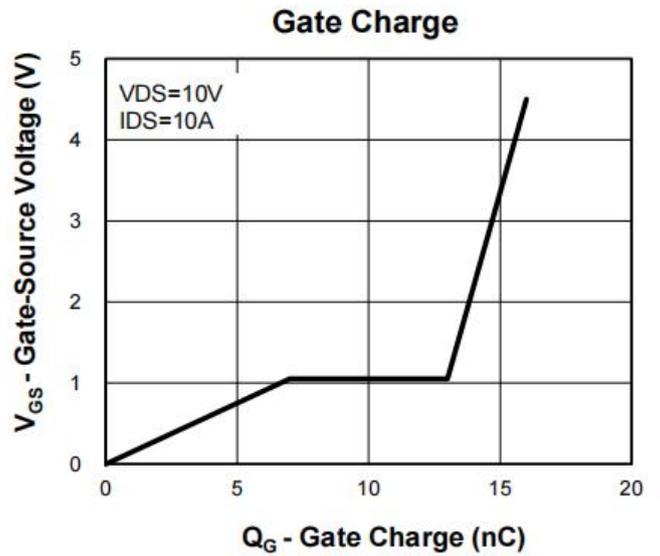
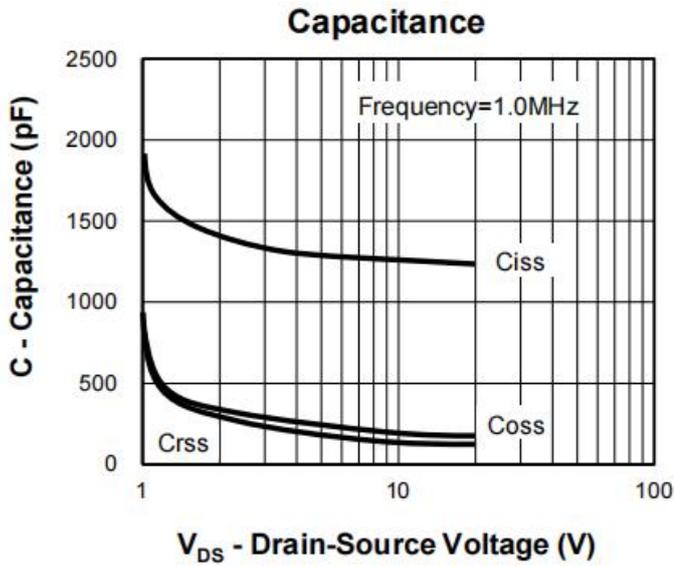
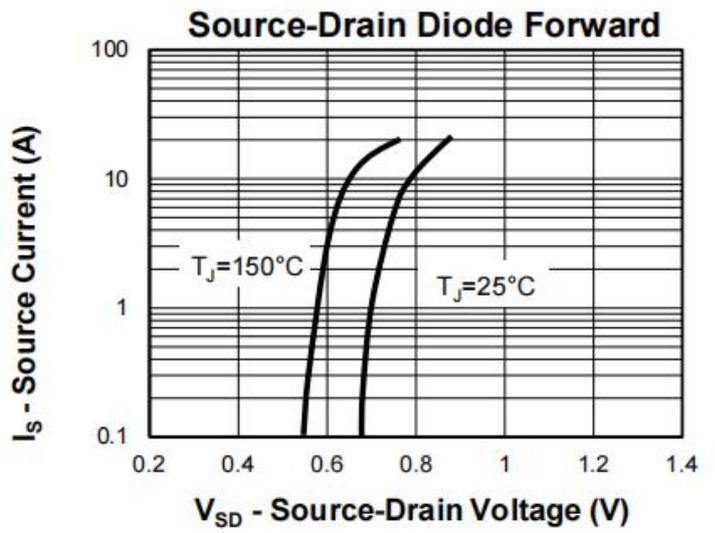
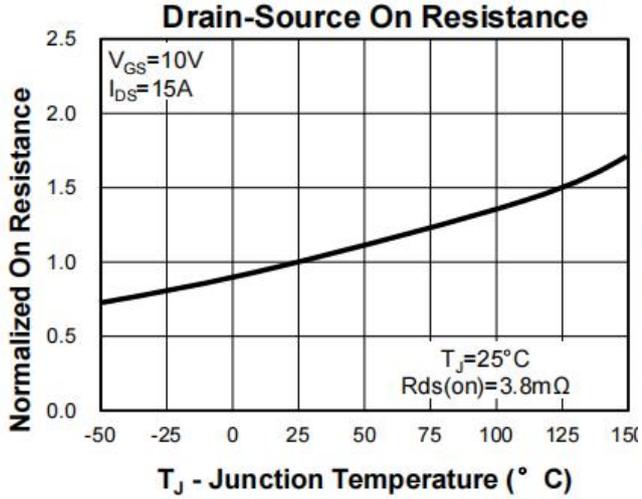
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	V _{(BR)DSS}	20			V	V _{GS} = 0, I _D = 250 μA
Gate-source threshold voltage	V _{GS(th)}	0.5	0.7	1.1	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±12 V
Zero gate voltage drain current	I _{DSS}			1.0	μA	V _{DS} = 20 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		4.0	5.0	mΩ	V _{GS} = 4.5 V, I _D = 20 A
Drain-source on-resistance	R _{DS(on)}		5.0	6.0	mΩ	V _{GS} = 2.5 V, I _D = 15 A
Forward transconductance	g _{fs}		-		S	V _{DS} = 5 V, I _D = 30 A

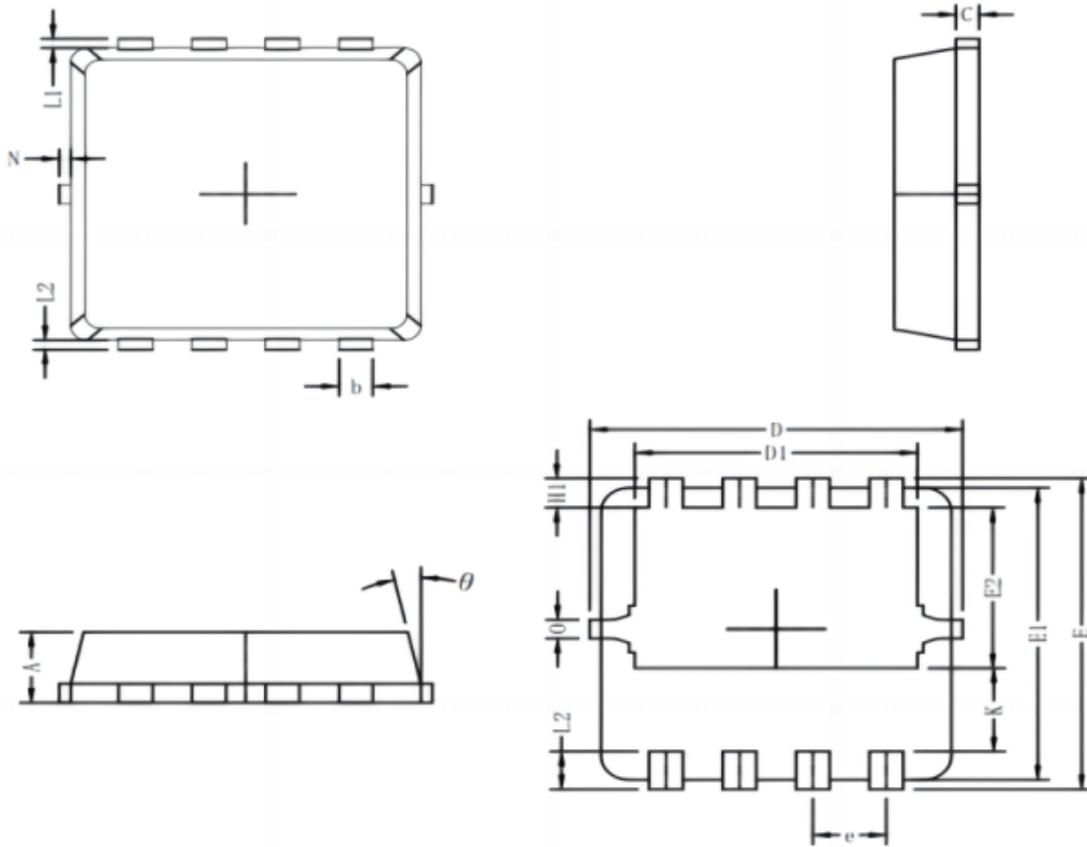
Gate resistance	R _g		1.7		Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		18		nC	V _{DS} = 50 V, I _D = 50 A, V _{GS} = 10 V
Gate-source charge	Q _{gs}		8			
Gate-drain charge	Q _{gd}		7			
Dynamic						
Turn-on delay time	t _{d(on)}		12		ns	V _{DS} = 10 V, I _D = 20 A, V _{GS} = 4.5 V, R _{GEN} = 2 Ω
Rise time	t _r		30			
Turn-off delay time	t _{d(off)}		75			
Fall time	t _f		95			
Input capacitance	C _{iss}		3480		pF	V _{DS} = 10 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}		309			
Reverse transfer capacitance	C _{rss}		285			
Body Diode						
Diode forward voltage	V _{SD}			1.2	V	V _{GS} = 0 V, I _F = 20 A
Reverse recovery time	t _{rr}		12		ns	I _S = 20 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		4.2		nC	

Electrical Characteristics Diagrams







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
0	0.2 REF.		

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