

N-Channel 30V MOSFET

E030N8P0KL1

	V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
N1	30V	8.0 @ $V_{GS} = 10V$	45
N2	30V	8.0 @ $V_{GS} = 10V$	45

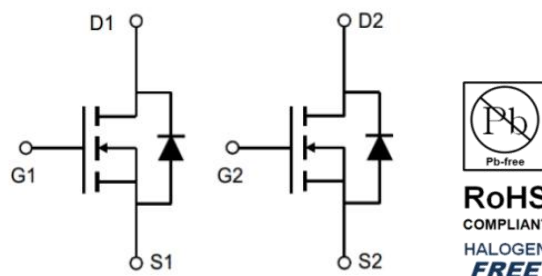
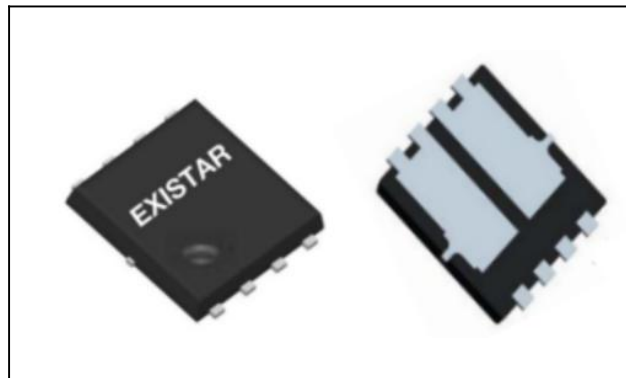
Features

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

Applications

- DC/DC conversion
- Power switch
- Moto driver

PDFN5*6D



Package And Ordering Information

Ordering code	Package	Marking
E030N8P0KL1	PDFN5*6D	E030N8P0KL1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
PDFN5*6D	5000	1	5000

Key Performance Parameters

Parameter	Value	Unit
V _{DS} , min @ T _j (max)	30	V
I _D , pulse	146	A
R _{DS(ON)} , max @ V _{GS} =10V	8.0	mΩ
Q _g	21.6	nC

Absolute Maximum Ratings at T_j=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	T _A =25°C	I _D	45	A
	T _A =100°C		32	
Pulsed drain current		I _{D,pulse}	146	
Avalanche energy, single pulse		E _{AS}	38	mJ
Power dissipation	T _A =25°C	P _D	42	W
	T _A =100°C		3.2	
Operating junction and storage temperature range		T _J , T _{stg}	-55 To 175	°C

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	R _{θJC}	2.6	°C/W
Thermal resistance, junction-to-ambient	Steady state	R _{θJA}	60	

Electrical Characteristics at T_j=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		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)}		6.8	8	mΩ	V _{GS} = 10 V, I _D = 20 A
Drain-source on-resistance	R _{DS(on)}		9.8	12	mΩ	V _{GS} = 4.5 V, I _D = 15 A
Forward transconductance	g _{fs}		18		S	V _{DS} = 5 V, I _D = 20 A

Gate resistance	Rg		1.8		Ω	f=1MHz
Gate Charge						
Total gate charge	Qg		21.6		nC	VDS = 15 V, ID = 20 A, VGS = 10 V
Gate-source charge	Qgs		2.7			
Gate-drain charge	Qgd		4.7			
Dynamic						
Turn-on delay time	td(on)		12		ns	VDS = 15 V, VGS = 10 V, RL = 0.75 Ω, RGEN = 3 Ω
Rise time	tr		2.4			
Turn-off delay time	td(off)		30.4			
Fall time	tf		4			
Input capacitance	Ciss		1082		pF	VDS=15 V, VGS = 0 V, f = 1.0MHz
Output capacitance	Coss		147			
Reverse transfer capacitance	Crss		121			
Body Diode						
Diode forward voltage	VSD			1.2	V	VGS = 0 V, IS = 20 A
Reverse recovery time	trr		19.4		ns	IF =20 A, di/dt = 500 A/μs
Reverse recovery charge	Qrr		11.6		nC	

Electrical Characteristics Diagrams

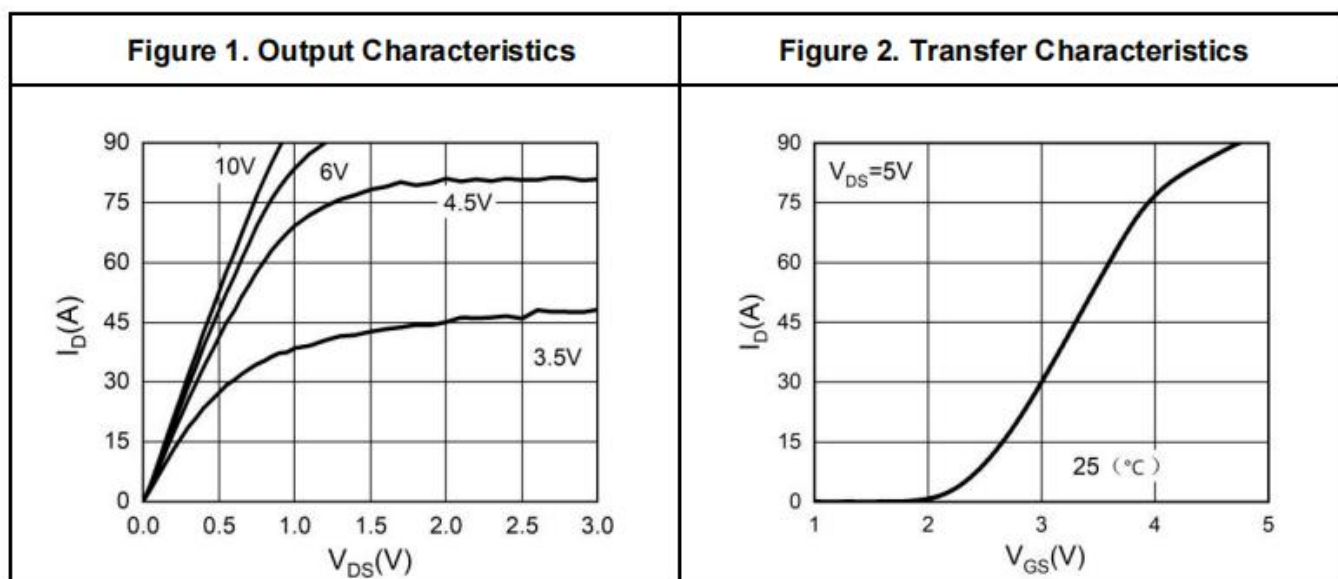


Figure 3. Power Dissipation

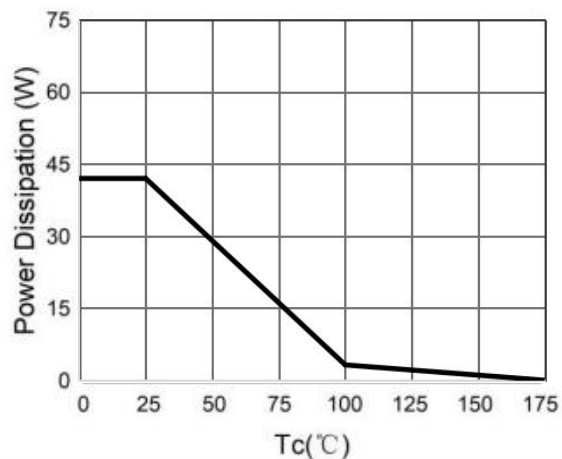


Figure 4. Drain Current

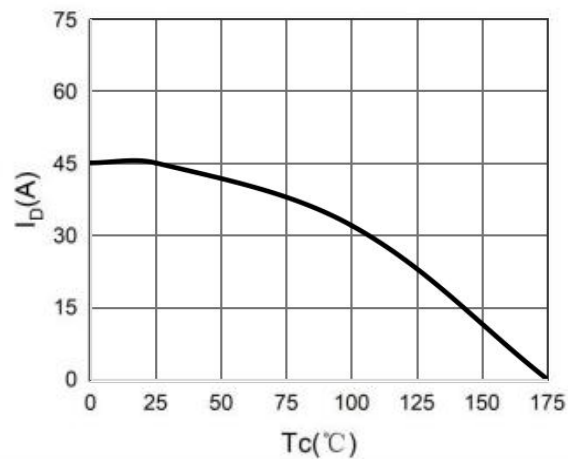


Figure 5. BV_{DSS} vs Junction Temperature

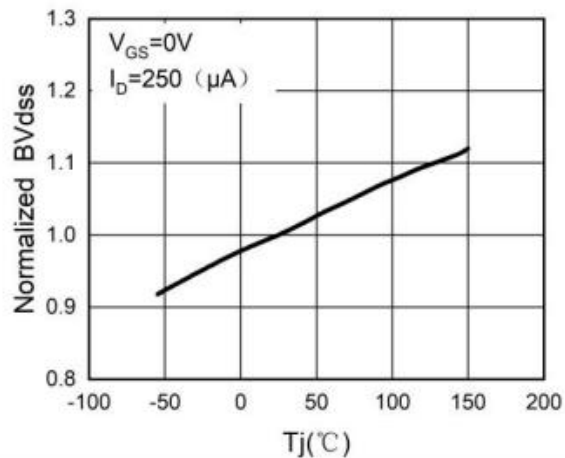


Figure 6. R_{DS(ON)} vs Junction Temperature

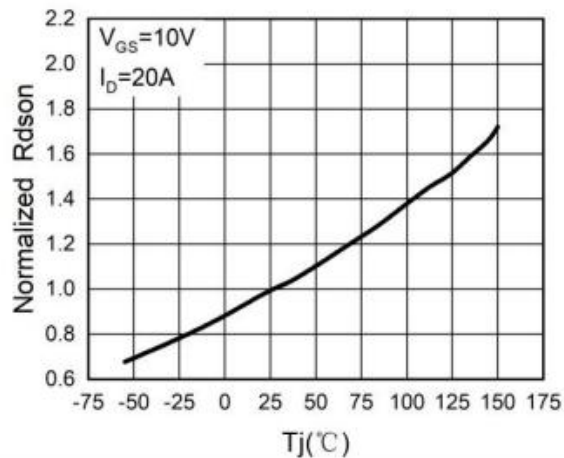


Figure 7. Gate Charge Waveforms

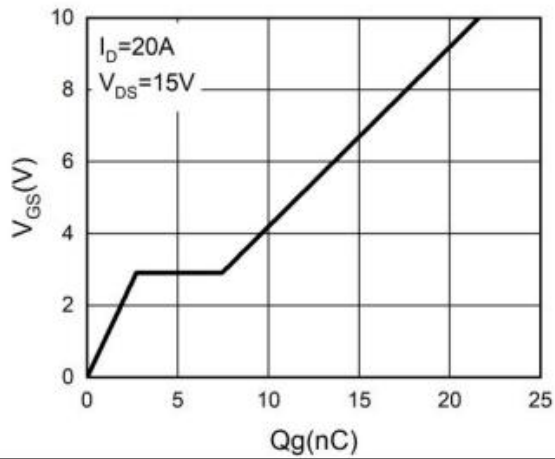


Figure 8. Capacitance

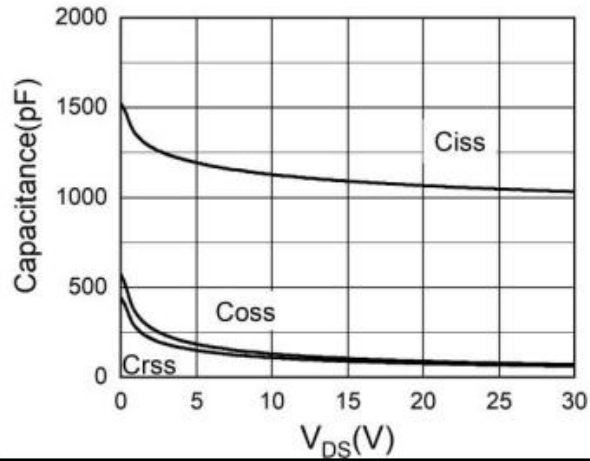


Figure 9. Body-Diode Characteristics

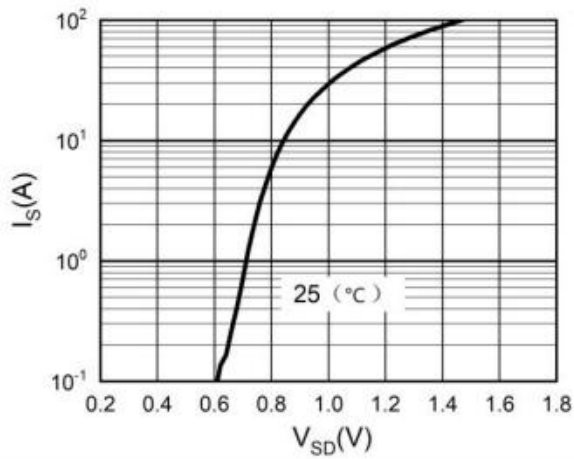
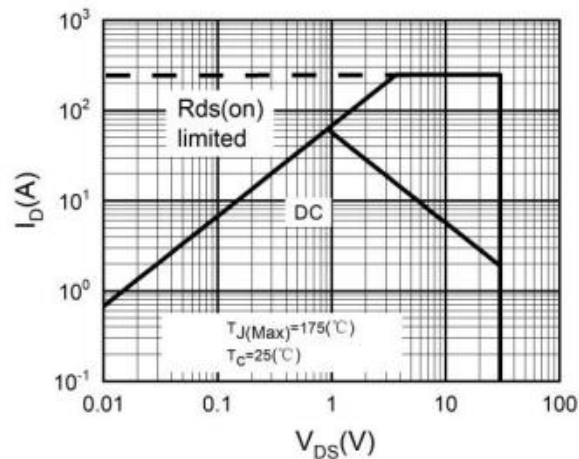
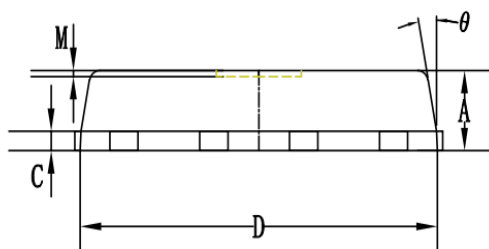
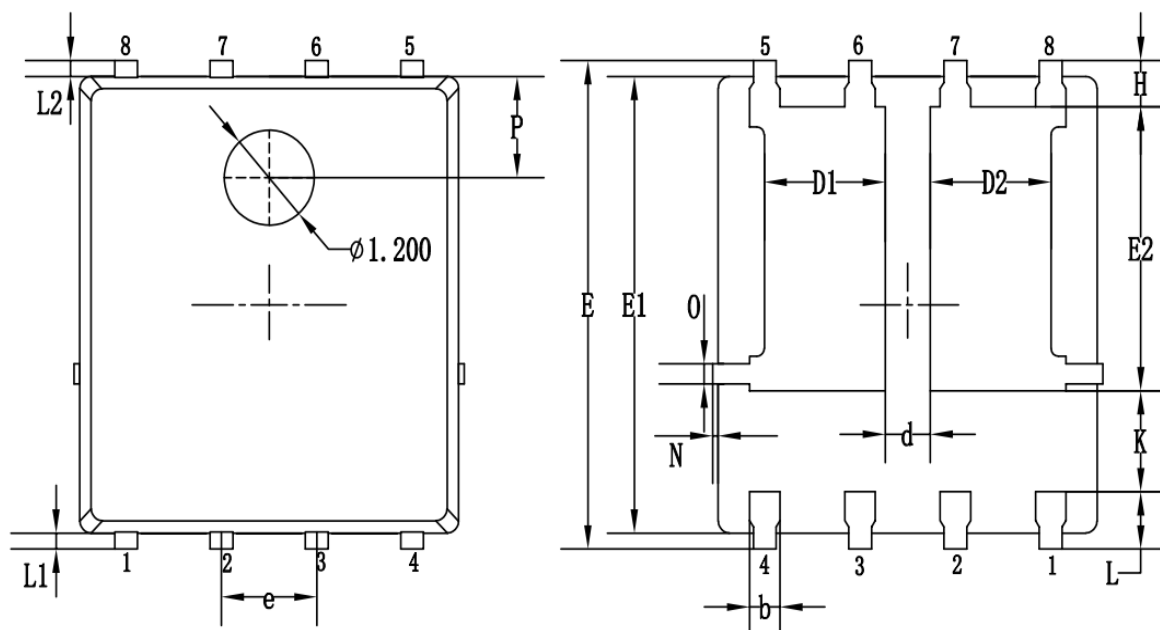


Figure 10. Maximum Safe Operating Area



Package Outline Dimensions



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1/D2	1.51	1.61	1.71
d	0.50	0.60	0.70
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O	0.25 REF.		
P	1.28 REF.		

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