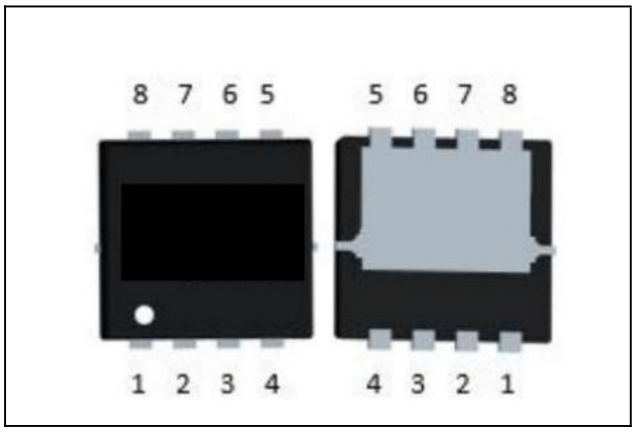
P-Channel 30V MOSFET

PDFN3.3*3.3

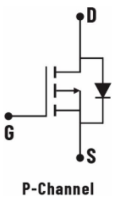


E030P7P8ML1

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
-30V	7.8 @ V_{GS} = -10V	-44

Features

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



Pb-free
RoHS
COMPLIANT
HALOGEN
FREE

Applications

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

Package And Ordering Information

Ordering code	Package	Marking
E030P7P8ML1	PDFN3.3X3.3	E030P7P8ML1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
PDFN3.3X3.3	5000	1	5000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	-30	V
ID, pulse	-176	A
RDS(ON), max @ VGS=-10V	7.8	mΩ
Qg	61	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	T_C=25°C	I_D	-44	A
	T_C=100°C		-28	
Pulsed drain current		$I_{D,pulse}$	-176	
Avalanche energy, single pulse		E_{AS}	289	mJ
Power dissipation	T_C=25°C	P_D	24	W
	T_A=25°C			
Operating junction and storage temperature range		T_J, T_{stg}	-55 To 150	℃

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	5.5	°C/W
Thermal resistance, junction-to-ambient	Steady state	$R_{\theta JA}$		

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	-1.5	-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	7.8	mΩ	V_{GS} = -10 V, I_D = -20 A
Drain-source on-resistance	$R_{DS(on)}$		9.7	13	mΩ	V_{GS} = -4.5 V, I_D = -15 A
Forward transconductance	gfs		34		S	V_{DS} = -5 V, I_D = -20 A

Gate Charge						
Total gate charge	Qg		61		nC	V_{DS} = -15 V, I_D = -20 A, V_{GS} = -10 V
Gate-source charge	Qgs		7.5			
Gate-drain charge	Qgd		15.5			
Dynamic						
Turn-on delay time	$t_{d(on)}$		21		ns	V_{DS} = -15 V, V_{GS} = -10 V, R_L=0.75Ω, R_{GEN}=3Ω
Rise time	t_r		18			
Turn-off delay time	$t_{d(off)}$		26			
Fall time	t_f		8			
Input capacitance	C_{iss}		3240		pF	V_{DS} = -15 V, V_{GS} = 0 V, f = 1.0MHz
Output capacitance	C_{oss}		380			
Reverse transfer capacitance	C_{rss}		231			
Body Diode						
Diode forward voltage	V_{SD}			-1.2	V	V_{GS} = 0 V, I_S = -20 A
Reverse recovery time	t_{rr}		15		ns	I_F = -10 A, di/dt = -100 A/μs
Reverse recovery charge	Q_{rr}		20		nC	

Electrical Characteristics Diagrams

Figure 1. Output Characteristics

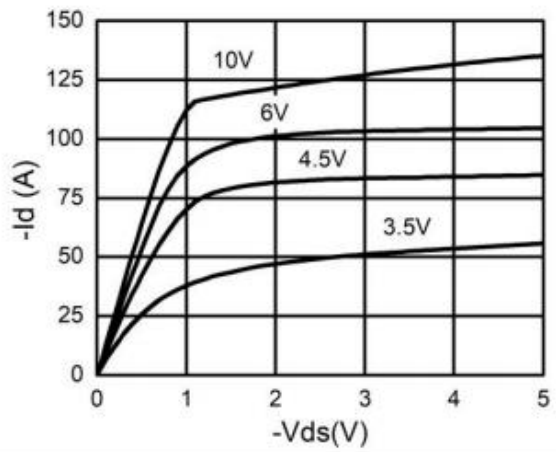


Figure 2. Transfer Characteristics

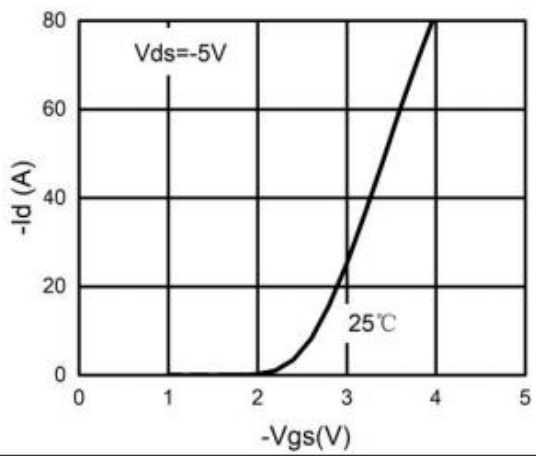


Figure 3. Power Dissipation

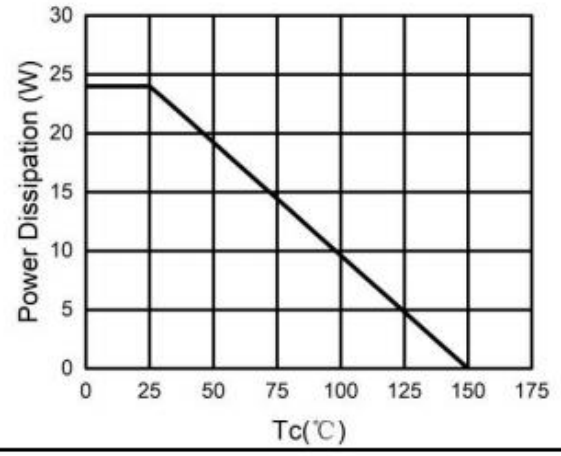


Figure 4. Drain Current

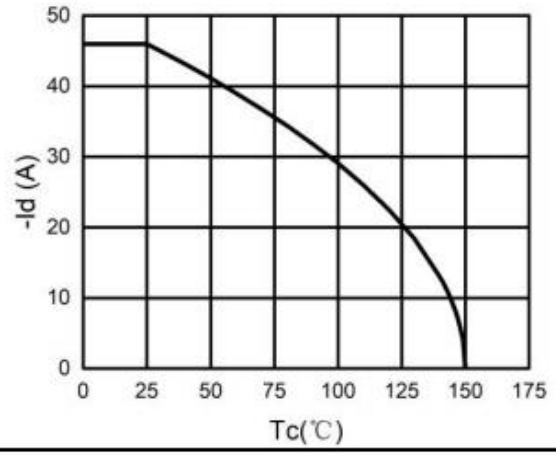


Figure 5. BV_{DSS} vs Junction Temperature

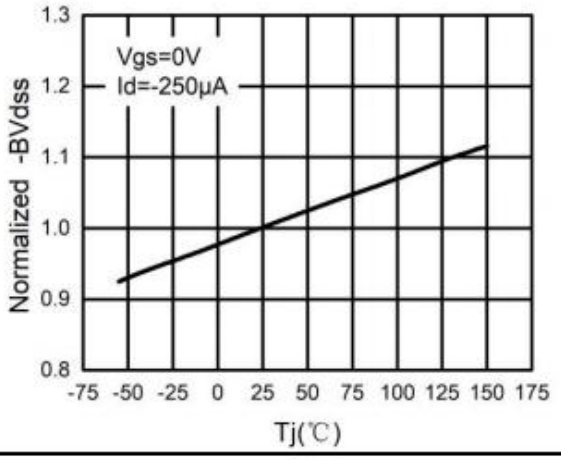


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

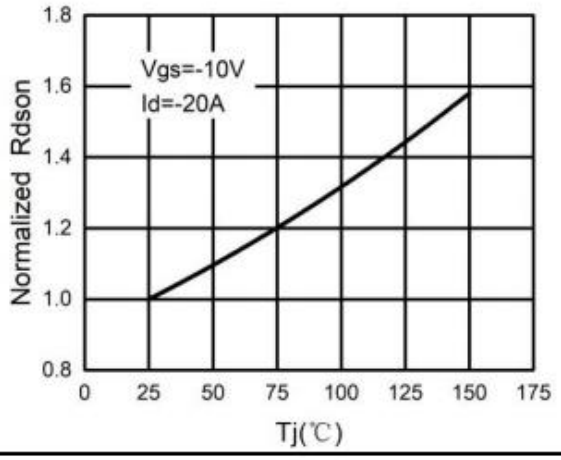


Figure 7. Gate Charge Waveforms

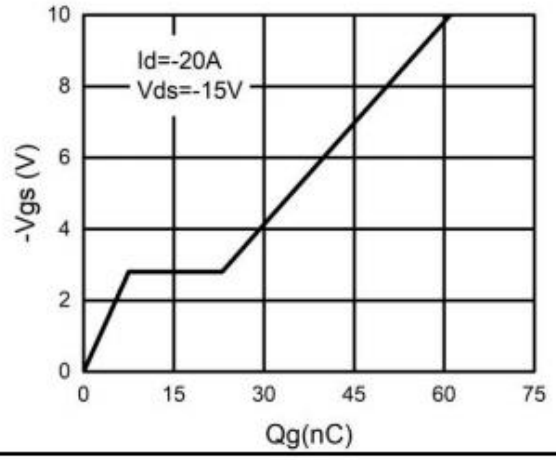


Figure 8. Capacitance

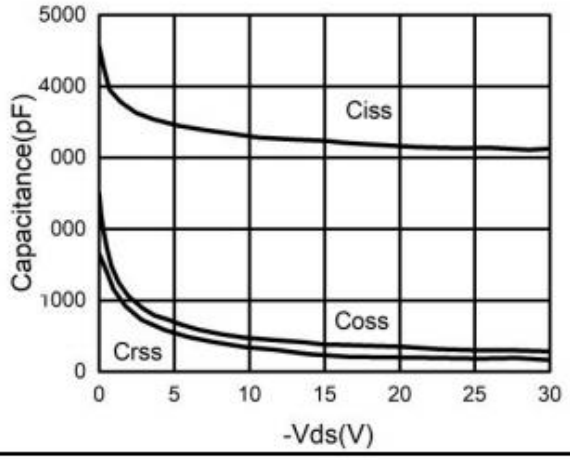


Figure 9. Body-Diode Characteristics

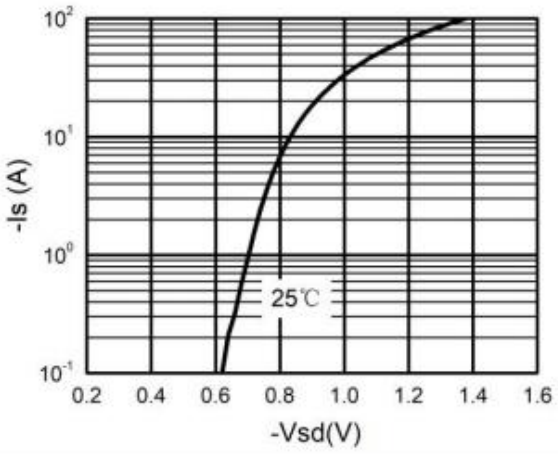
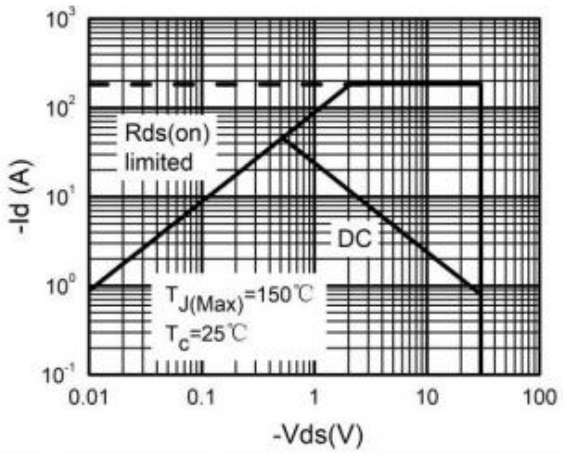
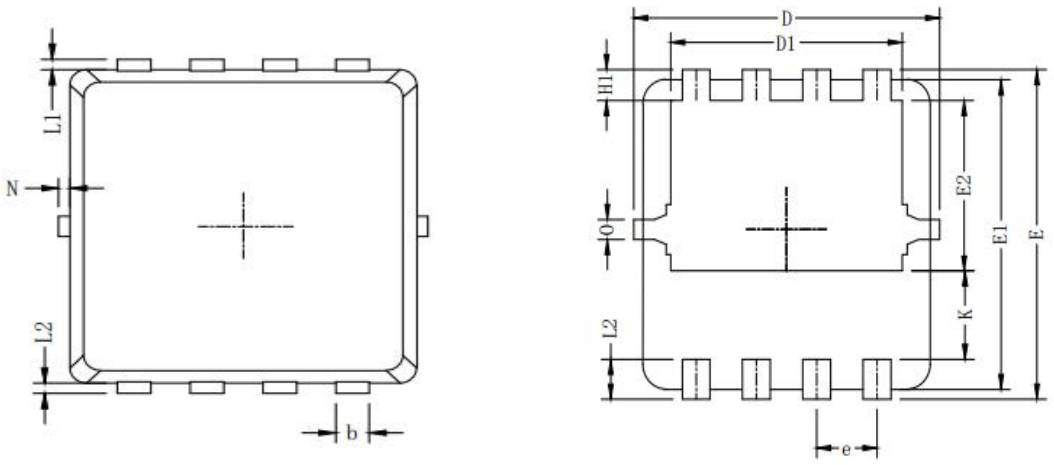


Figure 10. Maximum Safe Operating Area



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.		

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