

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	120mΩ@-10V	-30A
	125mΩ@-4.5V	

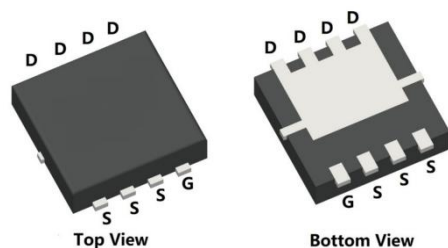
Feature

- Advanced trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

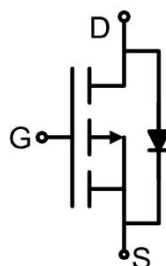
- Brushless motor
- Load switch
- Uninterruptible power supply

Package

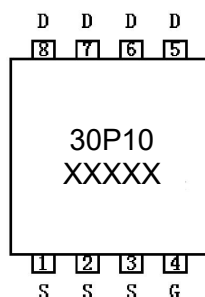


PDFN3.3*3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} = -10V)	I _D	-30	A
Continuous Drain Current ¹⁾ (V _{GS} = -10V, T _C = 100°C)	I _D (100°C)	-18	A
Pulsed Drain Current ²⁾	I _{DM}	-90	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	157.2	mJ
Power Dissipation ⁴⁾	P _D	54	W
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	2.3	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J = 25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V			-50	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.2	-1.7	-2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =-10V, I _D =-10A		85	120	mΩ
		V _{GS} =-4.5V, I _D =-8A		95	125	
Dynamic characteristics ⁶⁾						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f =1MHz		3029		pF
Output Capacitance	C _{oss}			129		
Reverse Transfer Capacitance	C _{rss}			76		
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V I _D =-20A		44.5		nC
Gate-Source Charge	Q _{gs}			9.13		
Gate-Drain Charge	Q _{gd}			5.93		
Turn-on delay time	t _{d(on)}	V _{DS} =-50V, V _{GS} =-10V I _D =-10A, R _G =3.3Ω		12		nS
Turn-on rise time	t _r			27.4		
Turn-off delay time	t _{d(off)}			79		
Turn-off fall time	t _f			53.6		
Source-Drain Diode characteristics						
Diode Forward Current ^{1,5)}	I _S	V _D =V _G =0V, Force Current			-30	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =-1A			-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-8A, di/dt =100A/μs		38.7		nS
Reverse Recovery Charge	Q _{rr}			22.4		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
- 3) The EAS data shows Max. rating. The test condition is V_{DD} = -72V, V_{GS} = -10V, L = 0.1mH, I_{AS} = -19A.

- 4) The power dissipation is limited by 150°C junction temperature.
- 5) The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.
- 6) Guaranteed by design, not subject to production testing.

Typical Characteristics

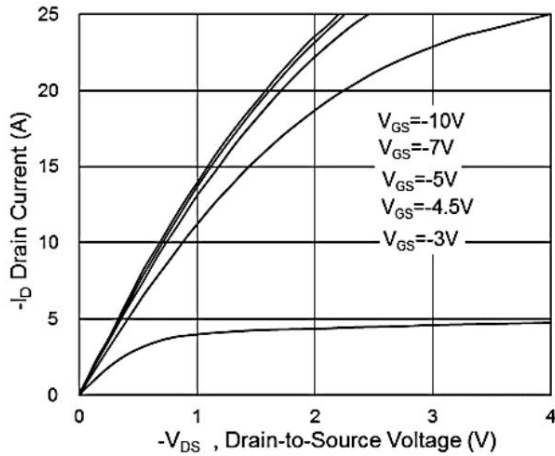


Fig.1 Typical Output Characteristics

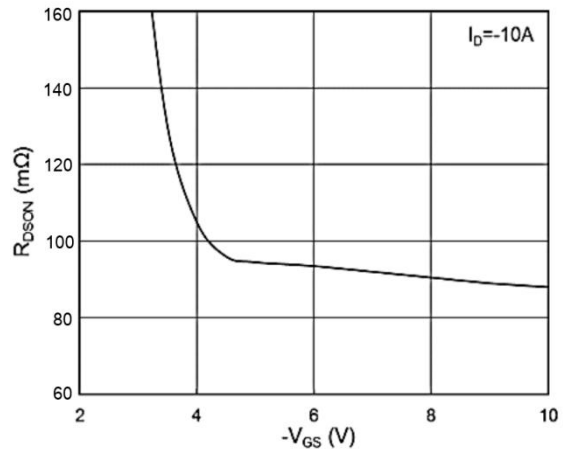


Fig.2 On-Resistance vs G-S Voltage

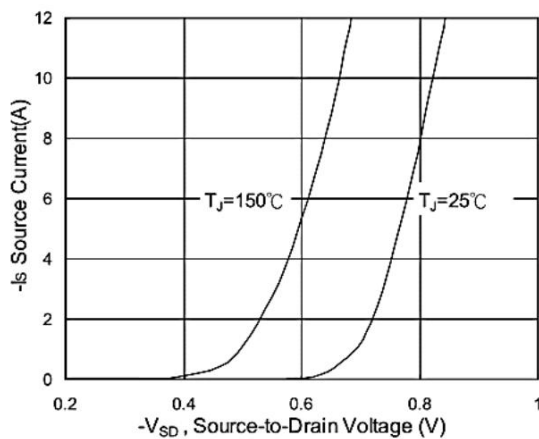


Fig.3 Typical S-D Diode Forward Voltage

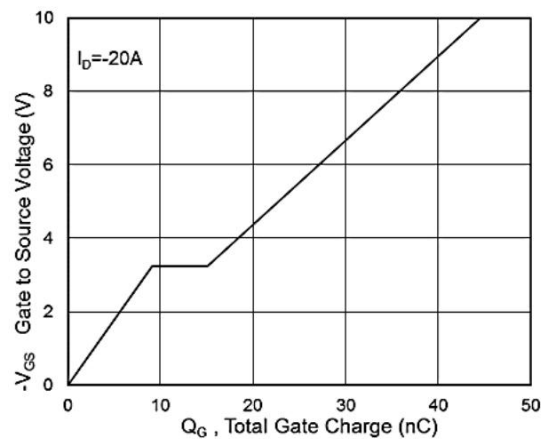


Fig.4 Gate-Charge Characteristics

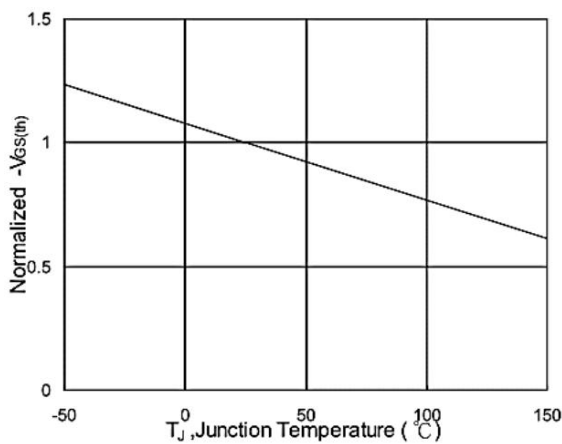


Fig.5 Normalized $V_{GS(th)}$ vs T_J

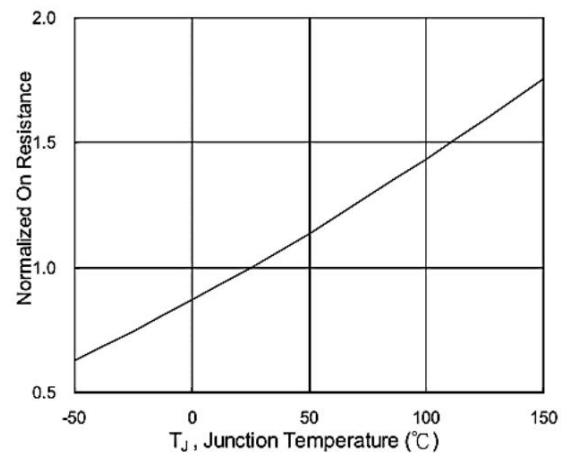


Fig.6 Normalized $R_{DS(on)}$ vs T_J

Typical Characteristics

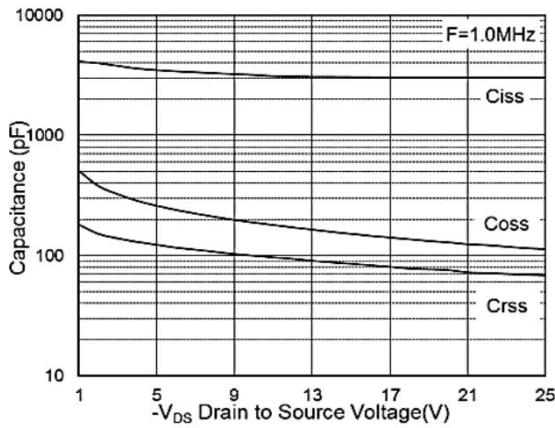


Fig.7 Capacitance

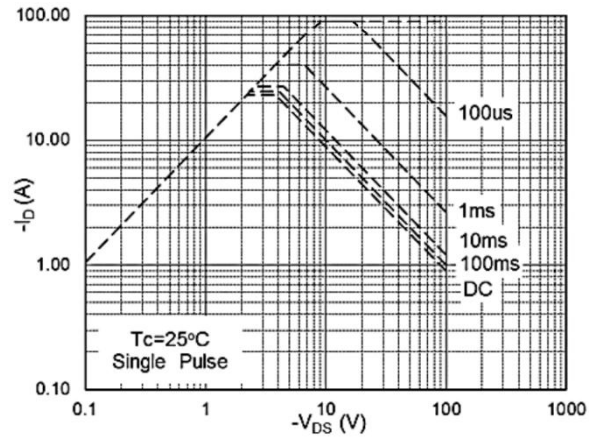


Fig.8 Safe Operating Area

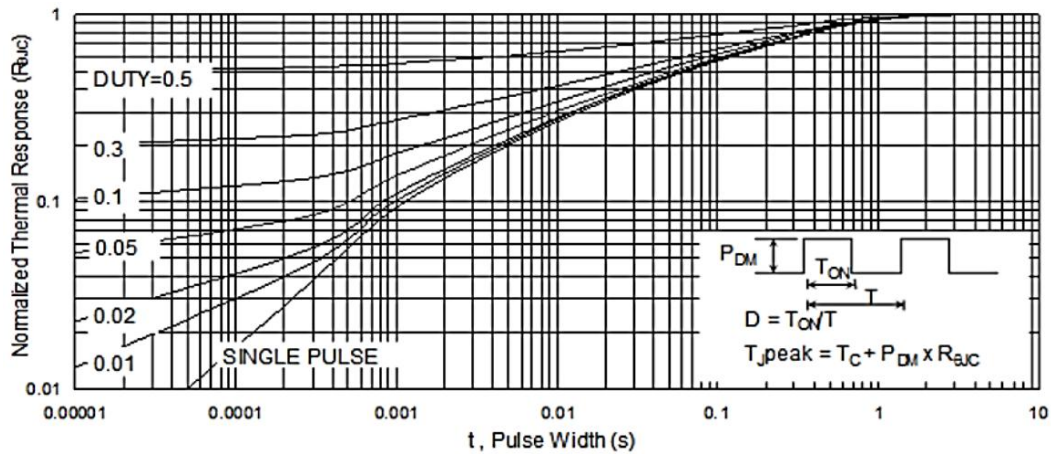


Fig.9 Normalized Maximum Transient Thermal Impedance

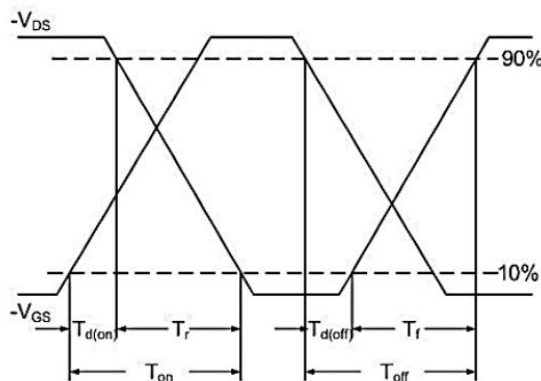


Fig.10 Switching Time Waveform

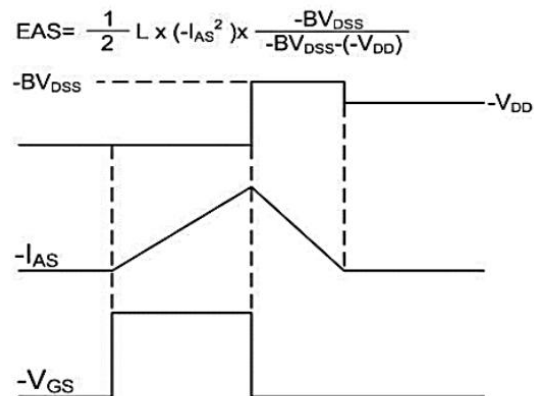
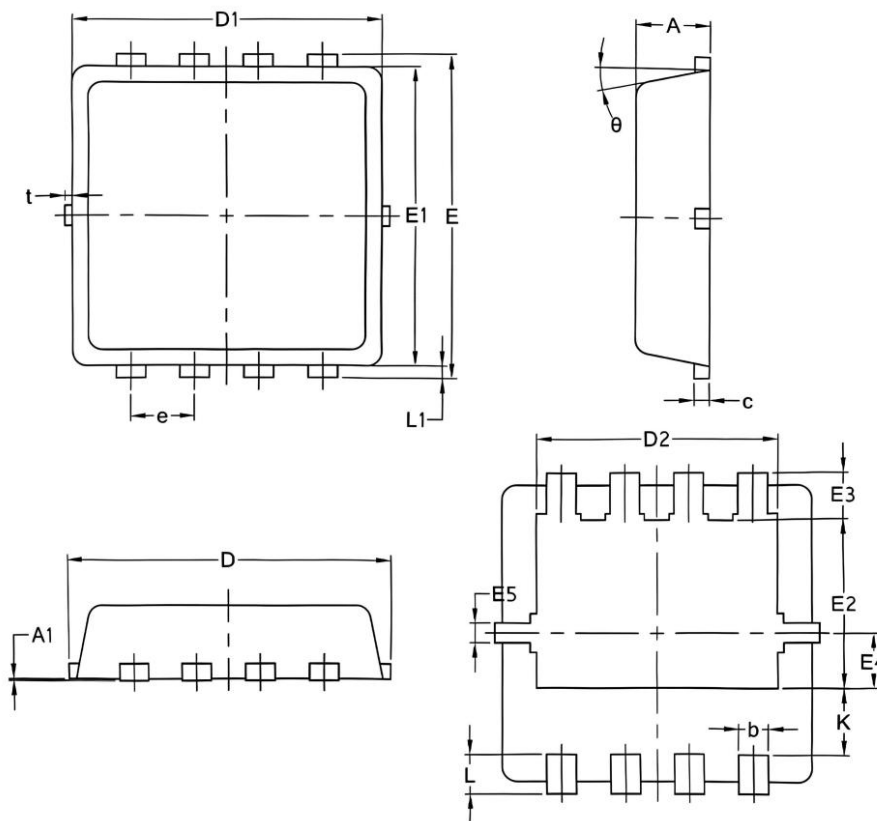


Fig.11 Unclamped Inductive Waveform

PDFN3.3*3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.850	0.028	0.033
A1	-	0.050	-	0.002
b	0.200	0.400	0.008	0.016
c	0.100	0.250	0.004	0.010
D	3.150	3.450	0.124	0.136
D1	3.000	3.250	0.118	0.128
D2	2.290	2.650	0.090	0.104
E	3.150	3.450	0.124	0.136
E1	2.900	3.200	0.114	0.126
E2	1.540	1.940	0.061	0.076
E3	0.280	0.650	0.011	0.026
E4	0.370	0.770	0.015	0.030
E5	0.100	0.300	0.004	0.012
e	0.600	0.700	0.024	0.028
K	0.590	0.890	0.023	0.035
L	0.300	0.500	0.012	0.020
L1	0.060	0.200	0.002	0.008
t	0.000	0.130	0.000	0.005
θ	10°	14°	10°	14°