

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	36mΩ@10V	30A
	45mΩ@4.5V	

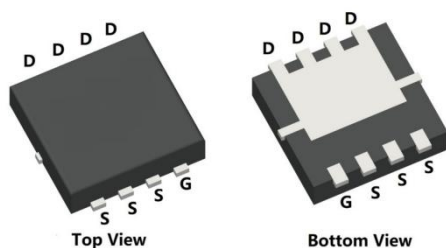
Feature

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

Application

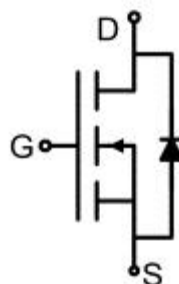
- Load switch
- LED lamp
- Uninterruptible power supply

Package

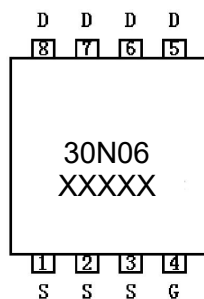


PDFN3.3*3.3-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾ ($V_{GS}=10\text{V}, T_C=25^{\circ}\text{C}$)	I_D	30	A
Continuous Drain Current ¹⁾ ($V_{GS}=10\text{V}, T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	16	A
Pulsed Drain Current	I_{DM}	74	A
Single pulse avalanche energy ²⁾	E_{AS}	22	mJ
Power Dissipation ³⁾ ($T_C=25^{\circ}\text{C}$)	P_D	31.3	W
Thermal Resistance Junction-to-Case ¹⁾	$R_{\theta JC}$	4.8	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +175$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +175$	$^{\circ}\text{C}$

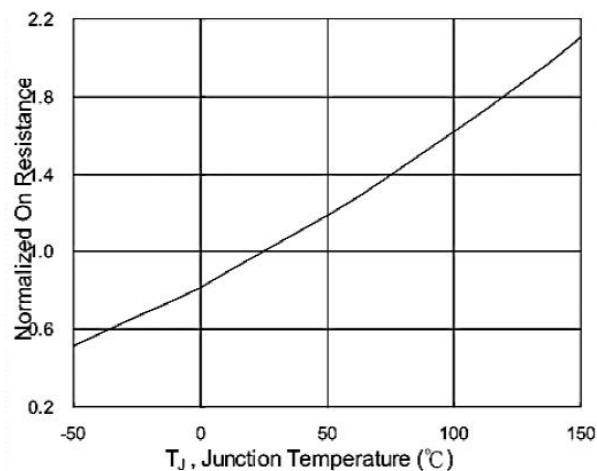
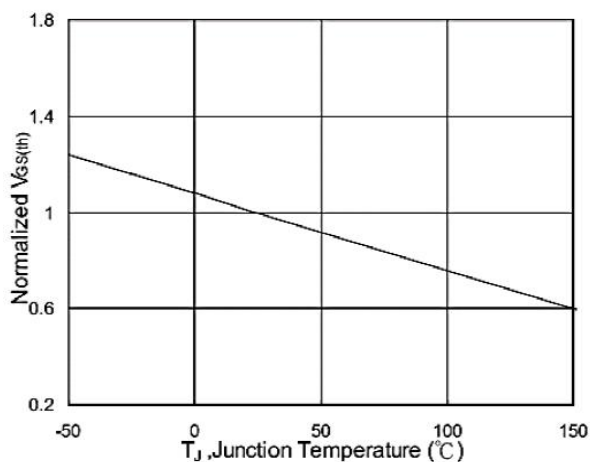
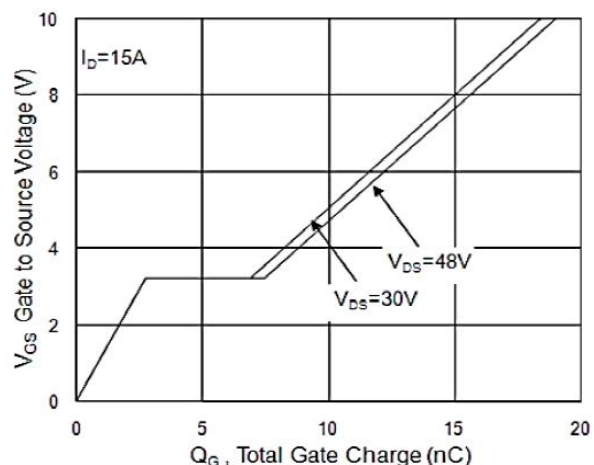
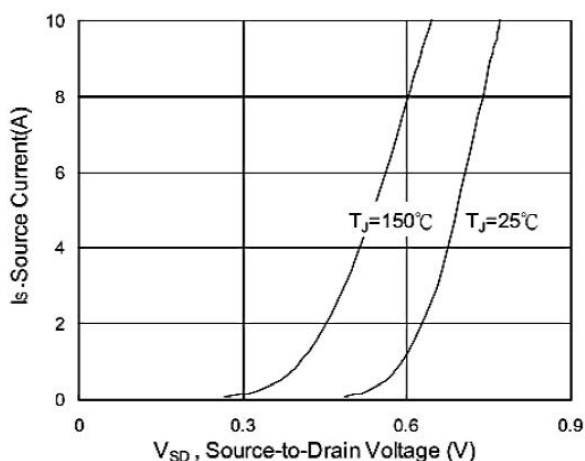
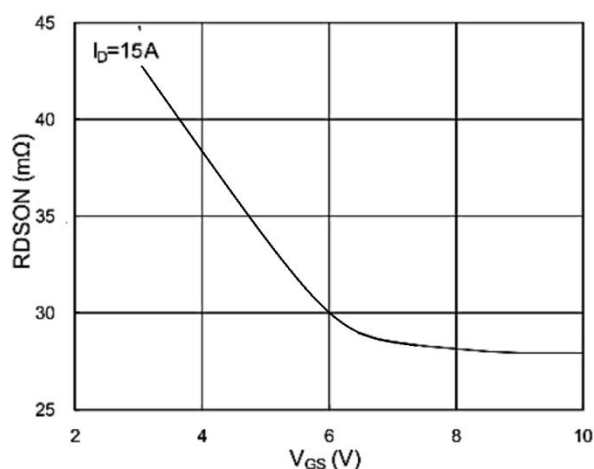
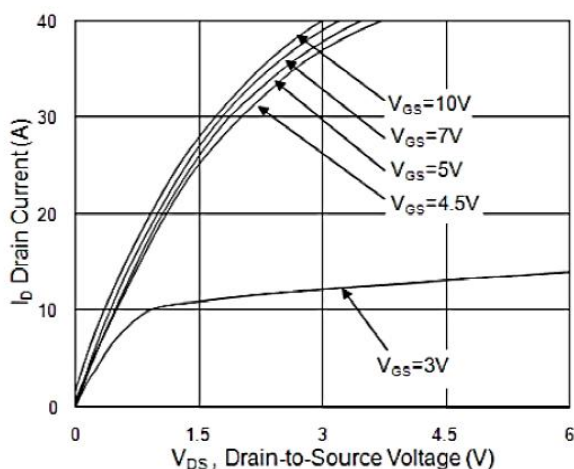
Electrical characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	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	1.6	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A		28	36	mΩ
		V _{GS} =4.5V, I _D =7A		38	45	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		1027		pF
Output Capacitance	C _{oss}			65		
Reverse Transfer Capacitance	C _{rss}			46		
Total Gate Charge	Q _g	V _{DS} =48V, V _{GS} =10V, I _D =15A		19		nC
Gate-Source Charge	Q _{gs}			2.5		
Gate-Drain Charge	Q _{gd}			5		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =15A R _G =3.3Ω		2.8		nS
Turn-on rise time	t _r			16.6		
Turn-off delay time	t _{d(off)}			21.2		
Turn-off fall time	t _f			5.6		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	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 =15A, di/dt =100A/μs		12.2		nS
Reverse Recovery Charge	Q _{rr}			7.3		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The test condition is $T_J=25^{\circ}\text{C}$, $V_{DD}=48\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.1\text{mH}$, $I_{AS}=13\text{A}$.
- 3) The power dissipation is limited by 175°C junction temperature.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics



Typical Characteristics

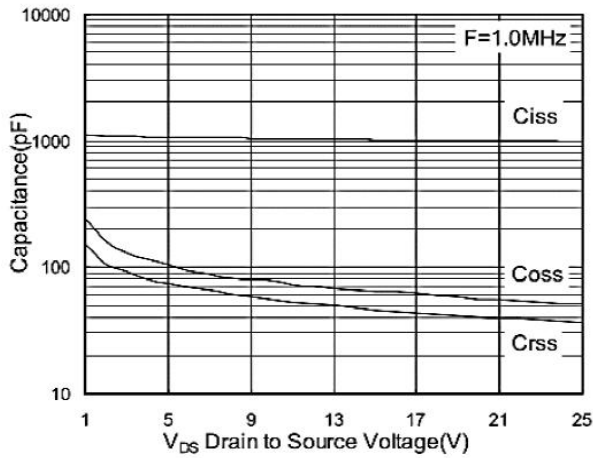


Fig.7 Capacitance

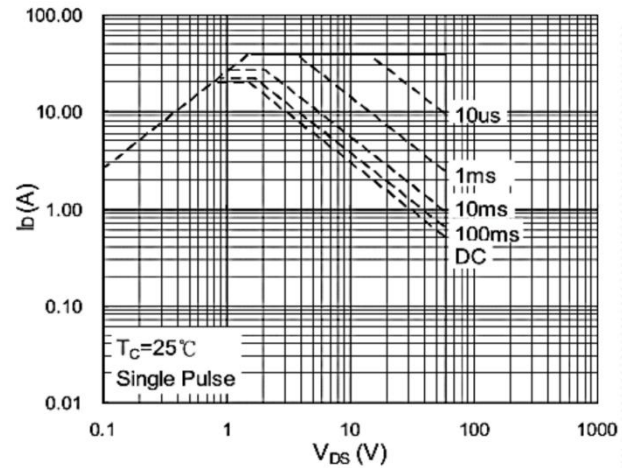


Fig.8 Safe Operating Area

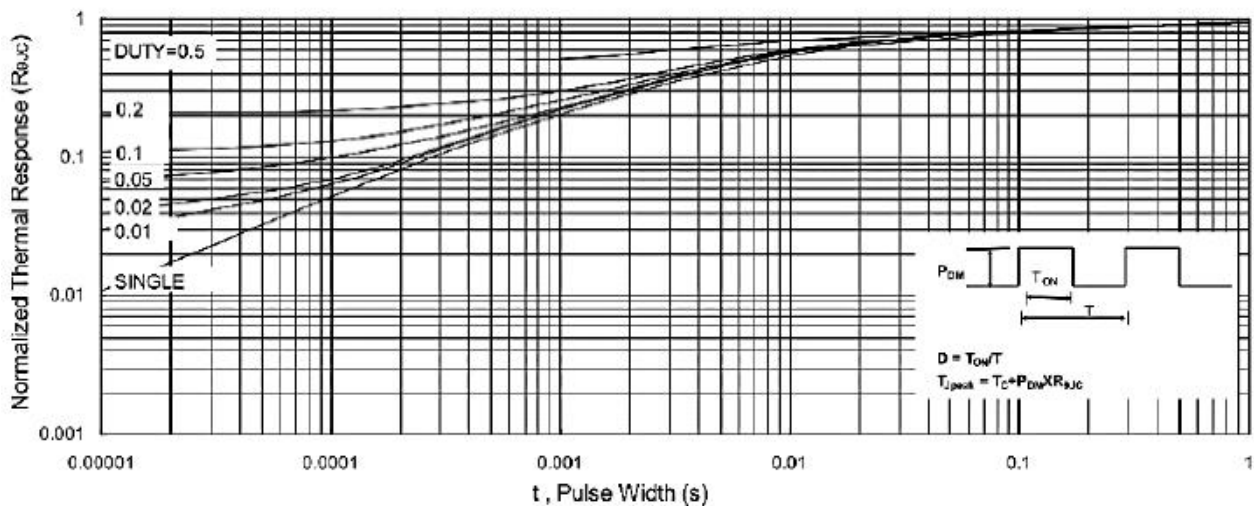


Fig.9 Normalized Maximum Transient Thermal Impedance

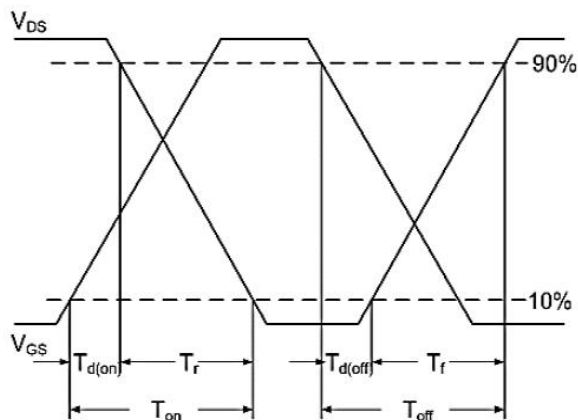


Fig.10 Switching Time Waveform

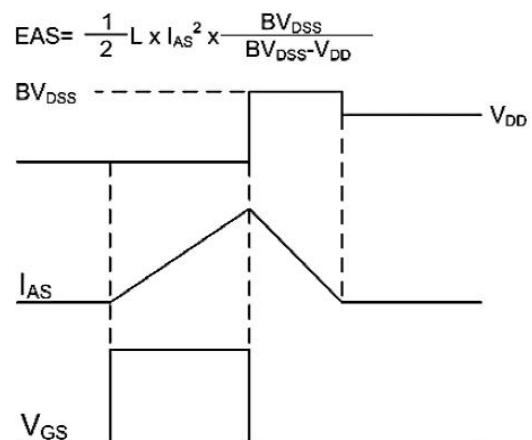
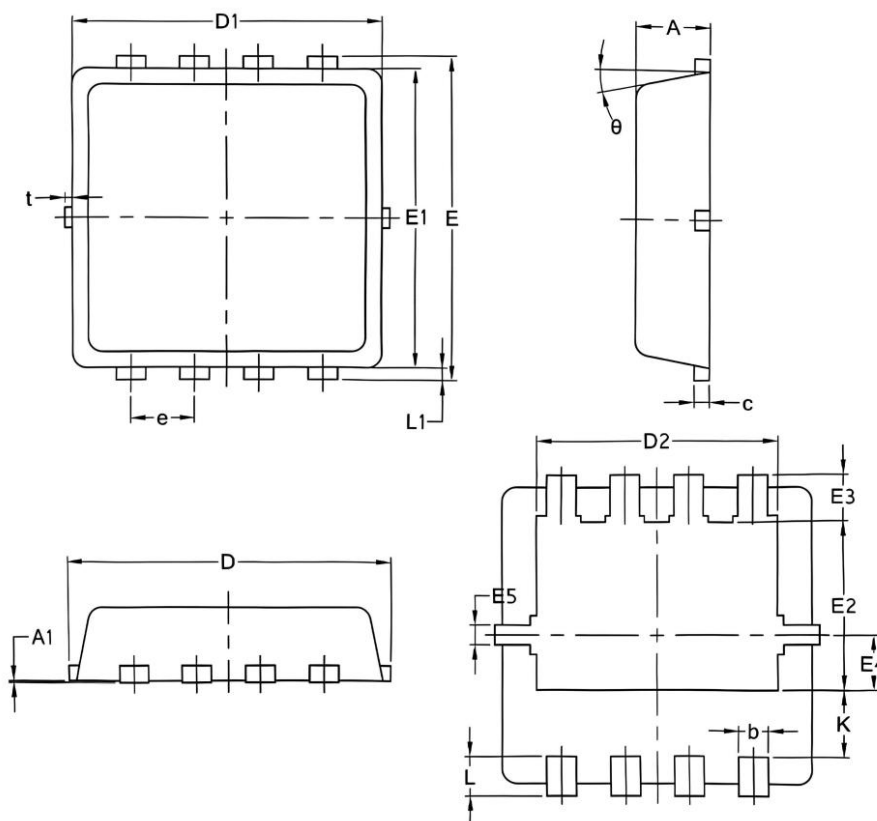


Fig.11 Unclamped Inductive Switching Waveform

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°