Features

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

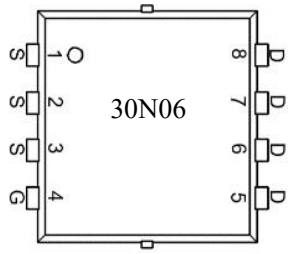
Bvdss	Rdson	ID
60V	24mΩ	30A

Application

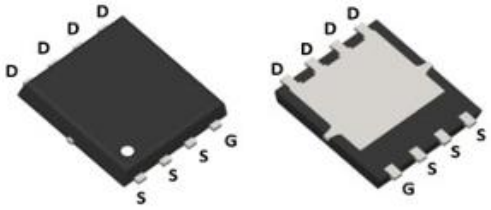
RoHS

- PWM applications
- Power management functions
- Synchronous-rectification applications

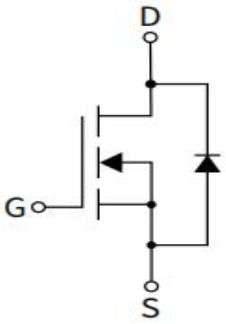
Package



Marking and pin assignment



PDFN5*6-8L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
30N06	30N06F	PDFN5*6-8L	5000

Absolute Maximum Ratings (T_C=25℃unless otherwise specified)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{Gs}	±20	V
Continuous Drain Current,V_{GS}@10V[1]	(T_C =25℃)	I_D	30	A
	(T_C =100℃)	I_D	15	A
Pulsed Drain Current[2]		I_{DM}	60	A
Single Pulse Avalanche Energy[3]		E_{As}	50	mJ
Avalanche Current		I_{AS}	30	A
Power Dissipation[4]	(T_C =25℃)	P_D	20	W
Storage Temperature		T_{STG}	-55~+150	℃
Junction Temperature		T_J	-55~+150	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	62	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	--	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL30N06F	PDFN5*6-8L	4	5,6,7,8	1,2,3	Tape Reel

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25℃, I_D=1mA	-	0.063	-	V/℃
Drain-Source On-State Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V, I_D=15A	-	24	30	mΩ
		V_{GS}=4.5V, I_D=10A	-	25	38	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS},I_D=250μA	1.2	-	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		-	5.24	-	mV/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V,T_J=25℃	-	-	1	μA
		V_{DS}=48V, V_{GS}=0V,T_J=55℃	-	-	5	
Gate- Source Forward Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Forward Transconductance	gfs	V_{DS}=5V, I_D=15A	-	17	-	S
Gate Resistance	R_g	V_{DS}=0V , V_{GS}=0V , f=1MHz	-	3.2	-	Ω
Total Gate Charge(4.5V)	Q_g	V_{DS}=48V,V_{GS}=4.5V, I_D=12A	-	12.6	-	nC
Gate-Source Charge	Q_{gs}		-	3.2	-	
Gate-Drain Charge	Q_{gd}		-	6.3	-	
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=30V, I_D=10A, V_{GS}=10V, R_G=3.3Ω	-	8	-	ns
Turn-on Rise Time	t_r		-	14.2	-	
Turn-Off Delay Time	$T_{d(off)}$		-	24.4	-	
Turn-Off Fall Time	T_f		-	4.6	-	
Input Capacitance	C_{lss}	V_{DS}=15V,V_{GS}=0V, f=1MHz	-	1378	-	pF
Output Capacitance	C_{oss}		-	86	-	
Reverse Transfer Capacitance	C_{rss}		-	64	-	
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V,I_S=1A,T_J=25℃	-	-	1.2	V
Maximum Continuous Drain to Source Diode Forward Current[1,5]	I_S	V_G=V_D=0V,Force Current	-	-	30	A
Maximum Pulsed Drain to Source Diode Forward Current[2,5]	I_{SM}		-	-	60	A

Notes:

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ 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}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=22.6A

4.The power dissipation is limited by 150℃ 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.

Typical Performance Characteristics

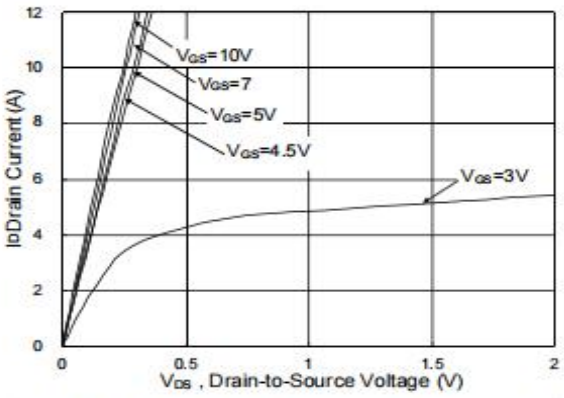


Fig.1 Typical Output Characteristics

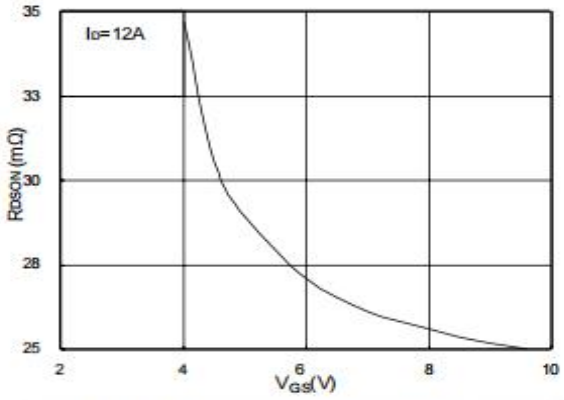


Fig.2 On-Resistance v.s Gate-Source

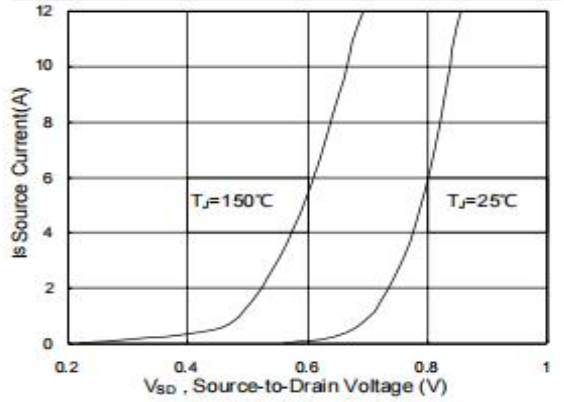


Fig.3 Forward Characteristics of Reverse

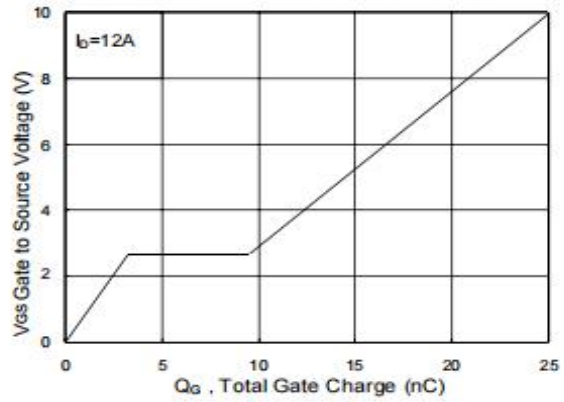


Fig.4 Gate-Charge Characteristics

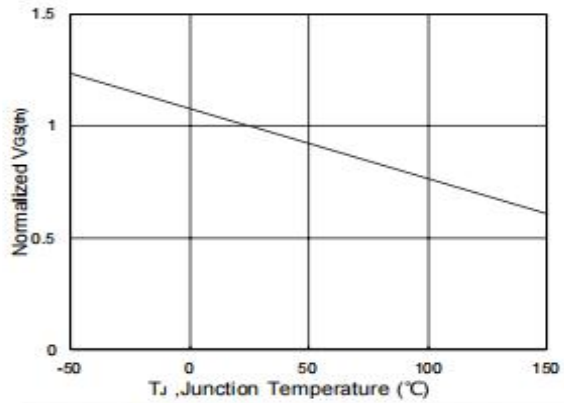


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

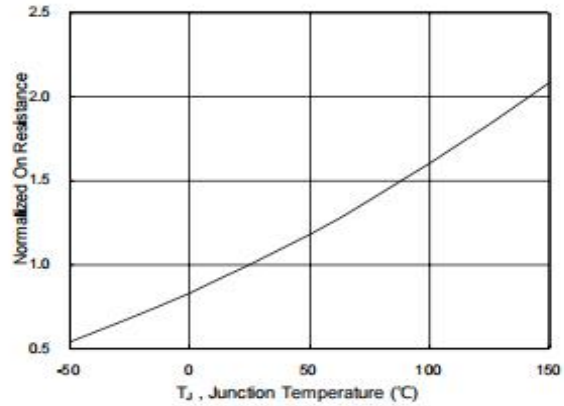


Fig.6 Normalized R_{DSON} v.s T_J

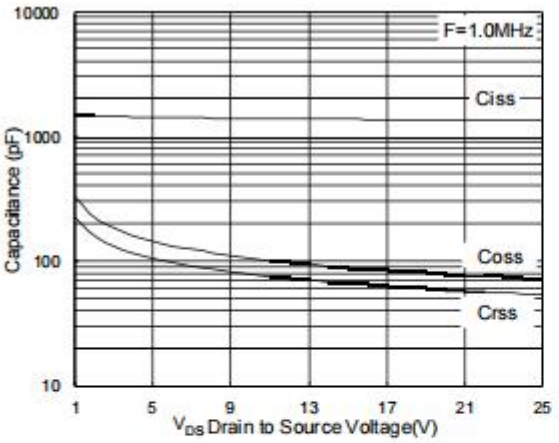


Fig.7 Capacitance

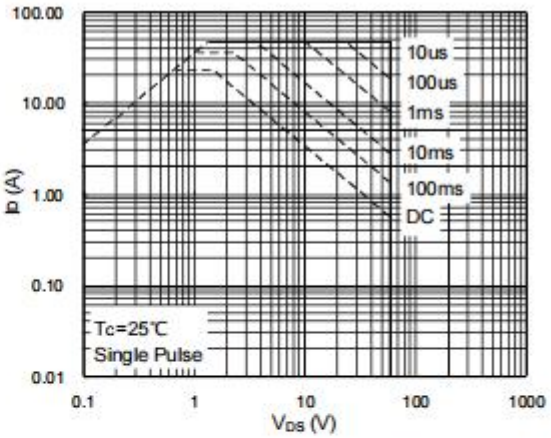


Fig.8 Safe Operating Area

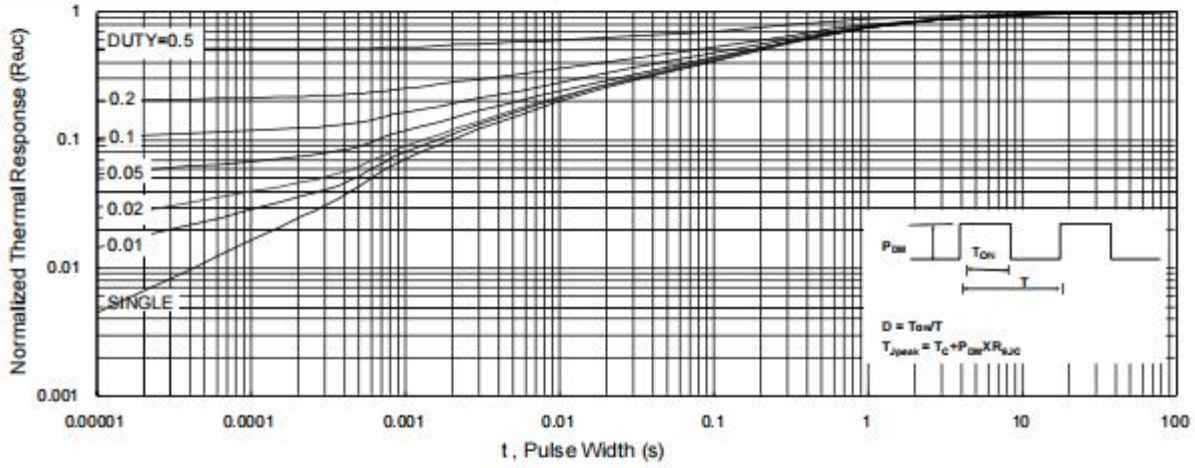


Fig.9 Normalized Maximum Transient Thermal Impedance

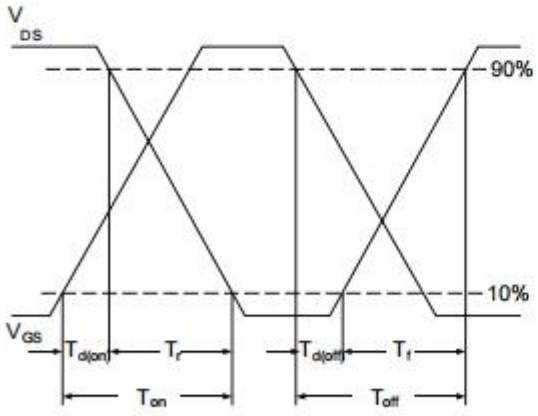


Fig.10 Switching Time Waveform

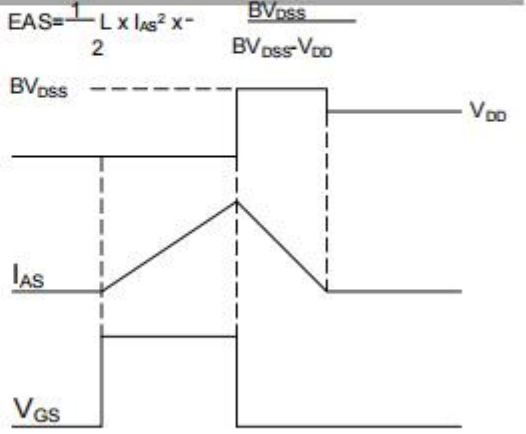
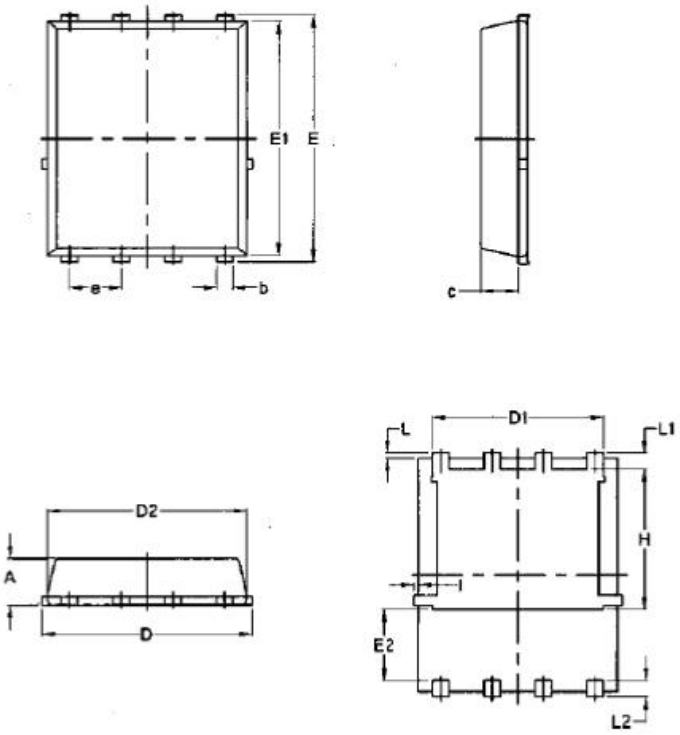


Fig.11 Unclamped Inductive Waveform

Package Dimensions PDFN5x6-8L



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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