Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $RDS_{(ON)}$

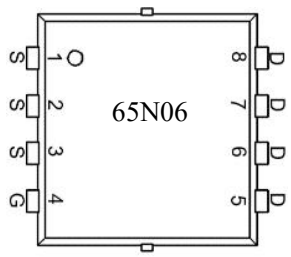
Bvdss	Rdson	ID
60V	8mΩ	65A

Application

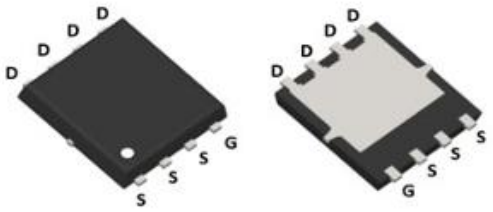
- DC-DC Converters
- Power management functions
- Synchronous-rectification applications

RoHS

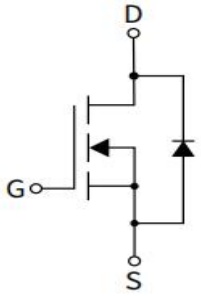
Package



Marking and pin assignment



PDFN5*6-8L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
65N06	S65N06F	PDFN5*6-8L	5000

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	(T_C =25℃)	I_D	65	A
Continuous Drain Current[1]	(T_C =100℃)	I_D	49	A
Pulsed Drain Current[1]		I_{DM}	240	A
Single Pulsed Avalanche Energy[2]		E_{AS}	56	mJ
Avalanche Current		I_{AS}	-	A
Power Dissipation@T_C =25℃		P_D	89	W
Junction Temperature		T_J	-55~+175	℃
Storage Temperature		T_{STG}	-55~+175	℃

Thermal Resistance Ratings

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	--	2.5	℃/W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	--	--	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HLS65N06F	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	V_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	μA
Gate to 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	1.6	2.5	V
Static Drain-Source on-Resistance[3]	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	8	11	mΩ
		V_{GS}=4.5V, I_D=10A	-	14	20	mΩ
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1.0MHz	-	930	-	pF
Output Capacitance	C_{oss}		-	370	-	
Reverse Transfer Capacitance	C_{rss}		-	20	-	
Total Gate Charge	Q_g	V_{DS}=30V,I_D=20A, V_{GS}=10V	-	19	-	nC
Gate-Source Charge	Q_{gs}		-	4.8	-	
Gate-Drain(“Miller”) Charge	Q_{gd}		-	4.5	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V,I_D=20A, R_G=1.6Ω,V_{GS}=10V	-	4.9	-	nS
Turn-on Rise Time	t_r		-	31	-	
Turn-Off Delay Time	$t_{d(off)}$		-	23	-	
Turn-Off Fall Time	t_f		-	8.7	-	
Maximum Continuous Drain to Source Diode Forward Current	I_S	--	-	-	65	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	--	-	-	240	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=30A	-	-	1.4	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=20A,di/dt = 100A/μs, T_J=25℃	-	34	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	14	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25℃, V_{DD}=30V,V_G=10V,R_G=25Ω,L=0.5mH,I_{AS}=12A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

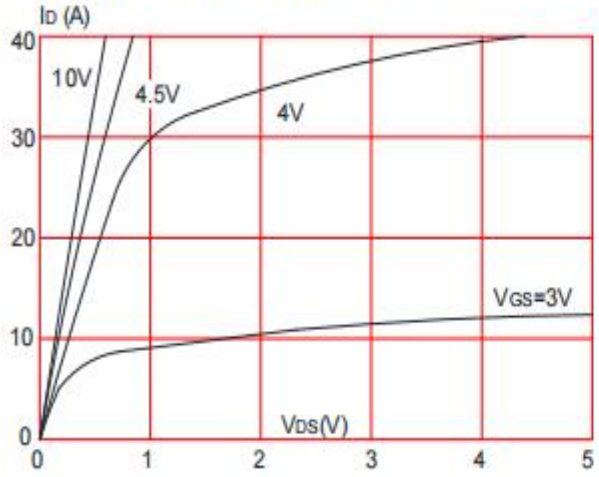


Figure 2: Typical Transfer Characteristics

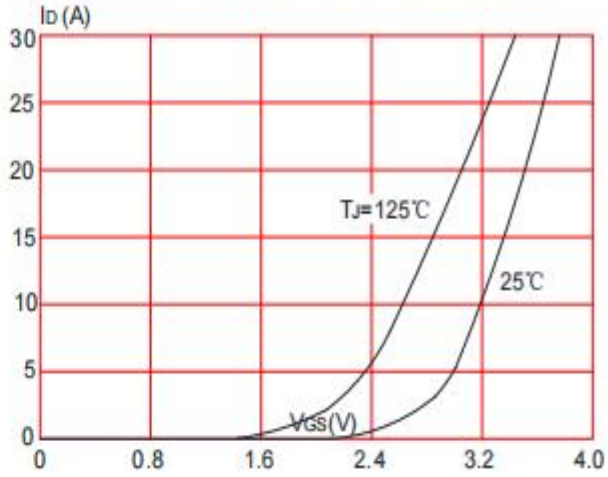


Figure 3: On-resistance vs. Drain Current

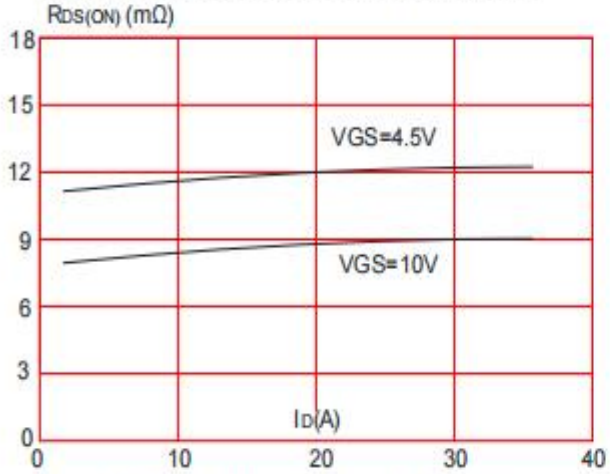


Figure 4: Body Diode Characteristics

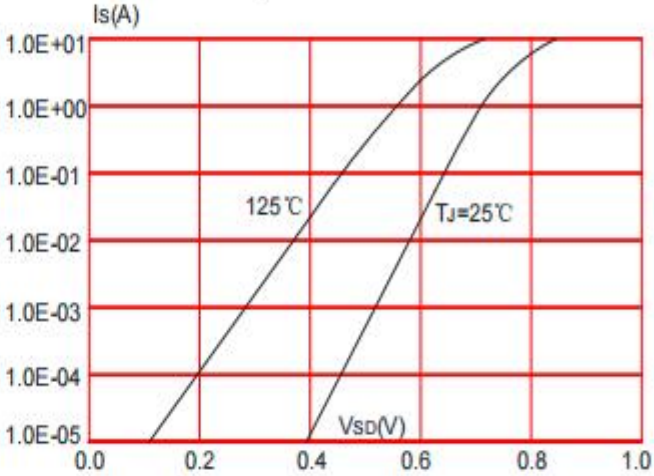


Figure 5: Gate Charge Characteristics

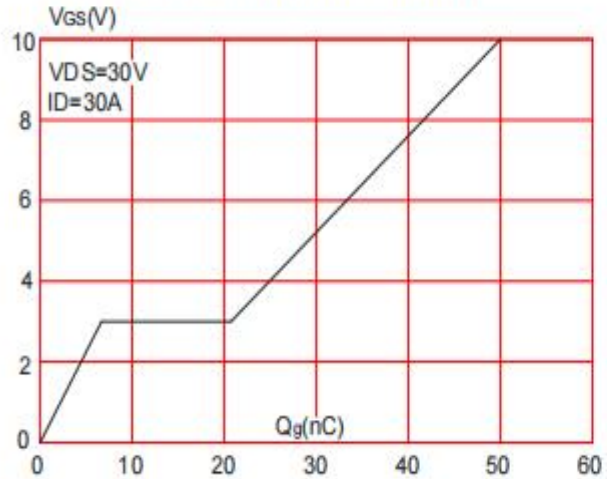


Figure 6: Capacitance Characteristics

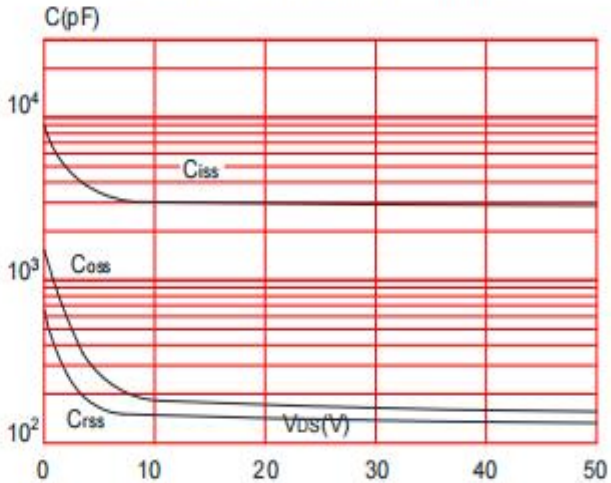


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

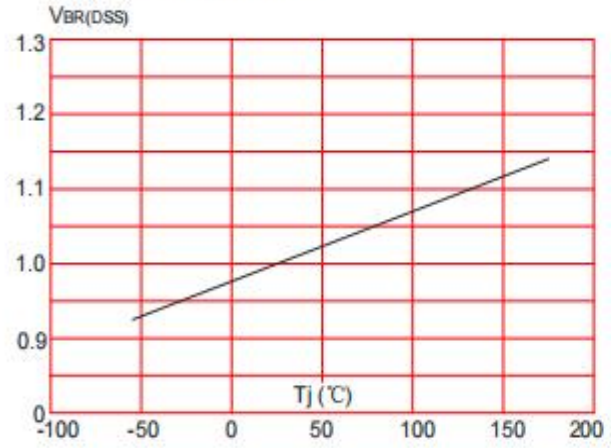


Figure 8: Normalized on Resistance vs. Junction Temperature

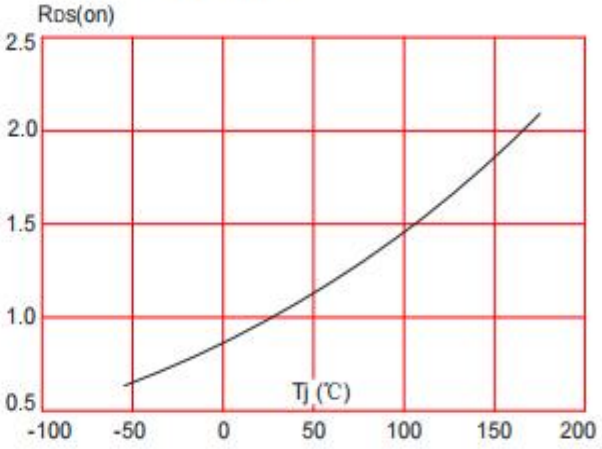


Figure 9: Maximum Safe Operating Area

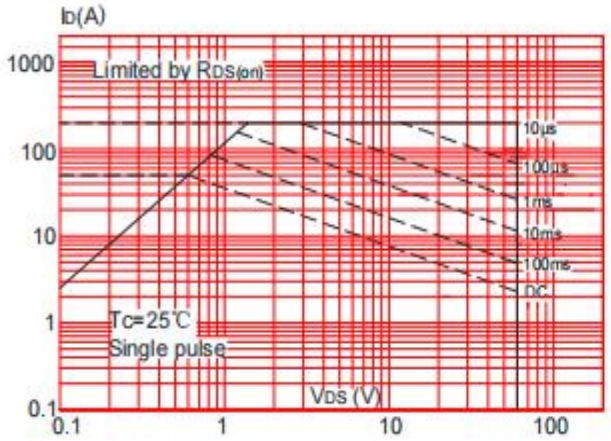


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

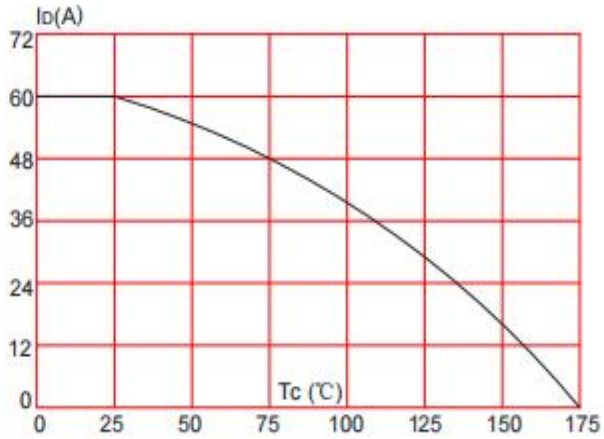
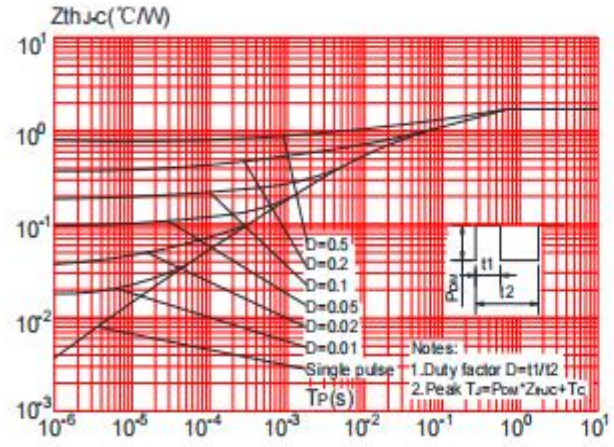
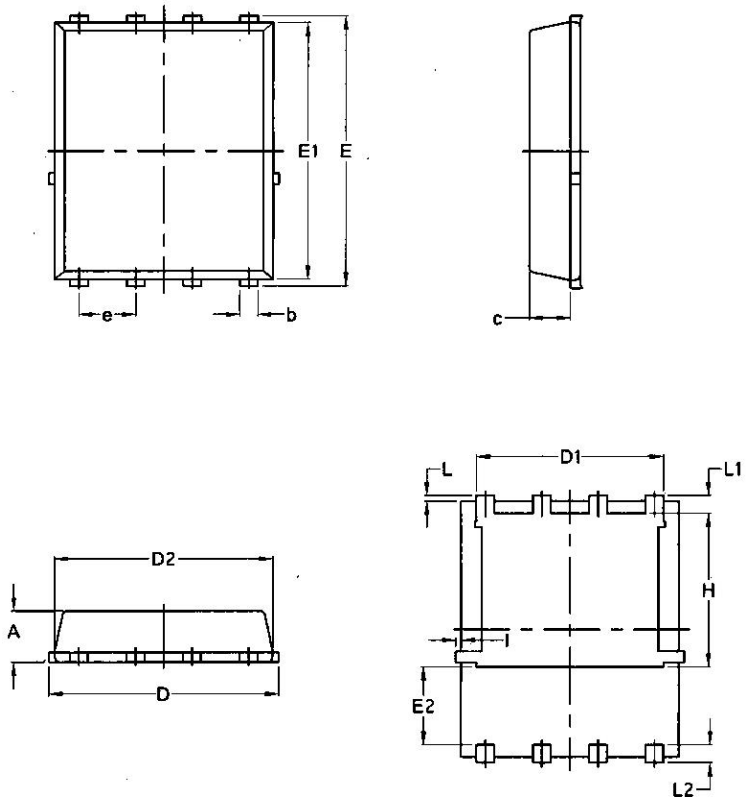


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Dimensions PDFN5x6-8L



Symbol	Common			
	mm		Inch	
	Min	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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