

Features

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

Product Summary

RoHS

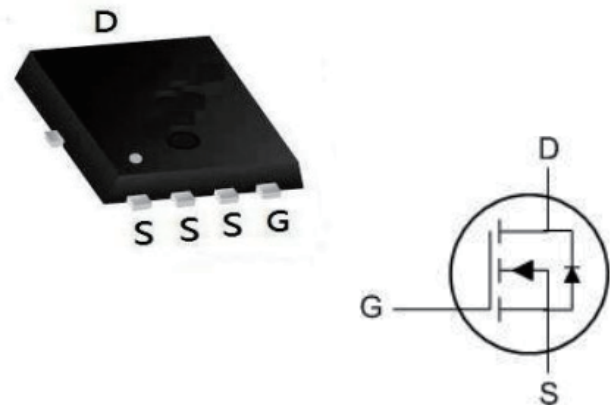
BVDSS	RDSON	ID
60V	8mΩ	65A

Applications

The S65N06F is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The S65N06F meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

PDFN5\*6 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Max.	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	60	V	
V <sub>GSS</sub>	Gate-Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	65	A
		T <sub>C</sub> = 100°C	49	A
I <sub>DM</sub>	Pulsed Drain Current <small>note1</small>	240	A	
E <sub>AS</sub>	Single Pulsed Avalanche Energy <small>note2</small>	56	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	89	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	2.5	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +175	°C	

**Electrical Characteristics (T<sub>J</sub> =25 °C unless otherwise specified)**

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V,	-	-	1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.6	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note3</small>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	8	11	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	14	20	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz	-	930	-	pF
C <sub>oss</sub>	Output Capacitance		-	370	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	20	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	-	19	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	4.8	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	4.5	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =30V, I <sub>D</sub> =20A, R <sub>G</sub> =1.6Ω, V <sub>GS</sub> =10V	-	4.9	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	31	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	23	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	8.7	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	65	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	240	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	-	-	1.4	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	T <sub>J</sub> =25°C,	-	34	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =20A, dI/dt=100A/μs	-	14	-	nC

Note :

- 1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2.EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=30V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=12A
- 3.Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤0.5%

Typical Electrical and Thermal Characteristics (Curves)

Figure 1: Typical Output Characteristics

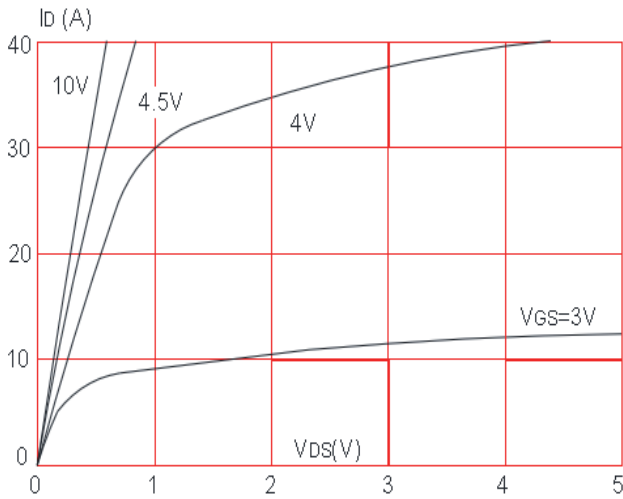


Figure 2: Transfer Characteristics

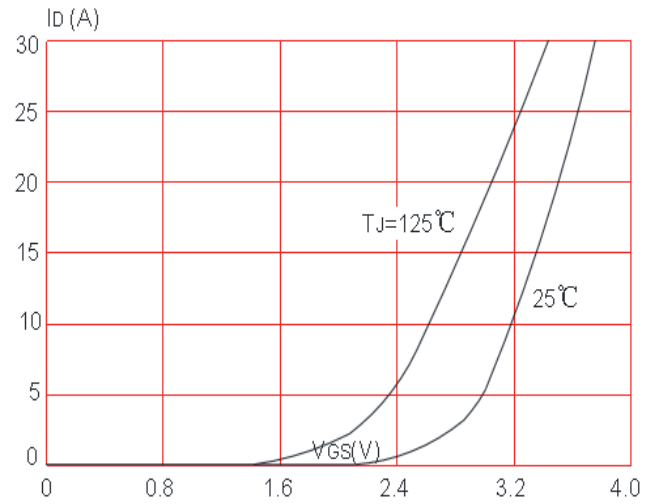


Figure 3: On-resistance vs. Drain Current

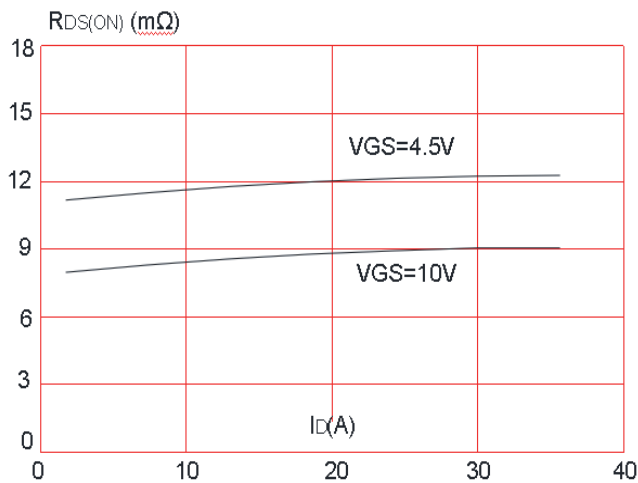


Figure 4: Body Diode Characteristics

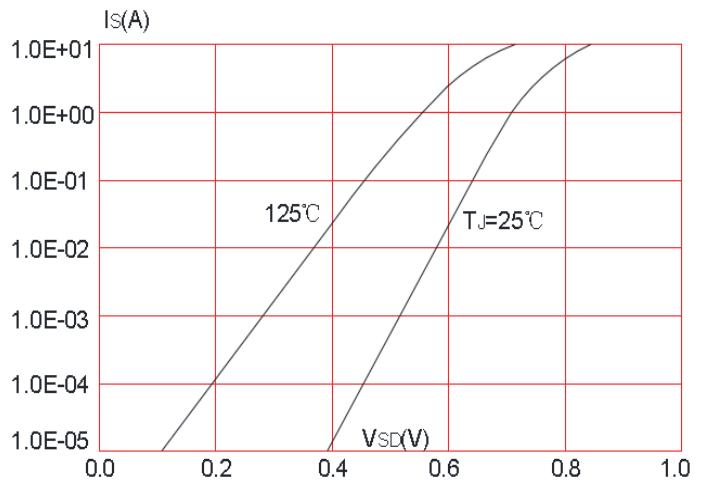


Figure 5: Gate Charge Characteristics

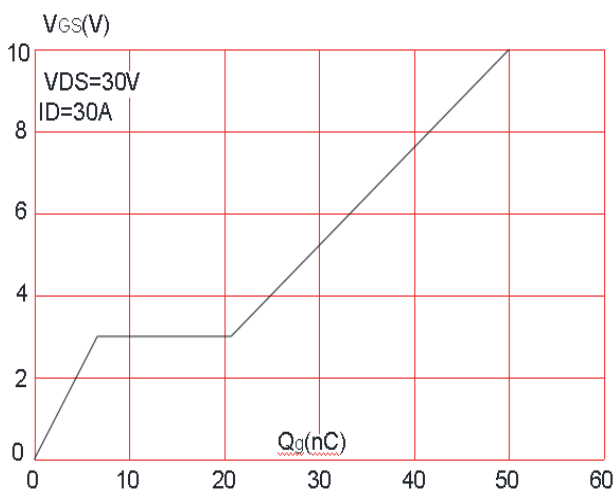
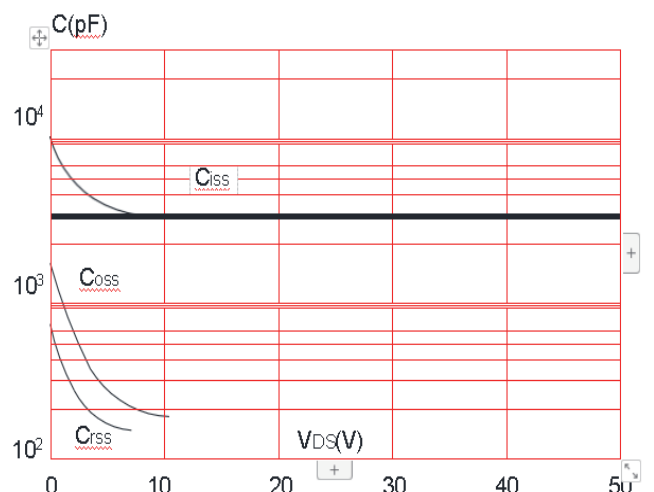


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage

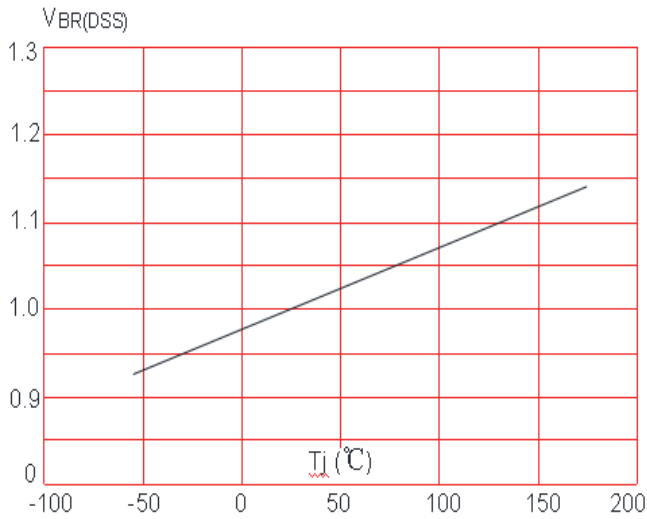


Figure 8: Normalized on Resistance vs. Junction Temperature

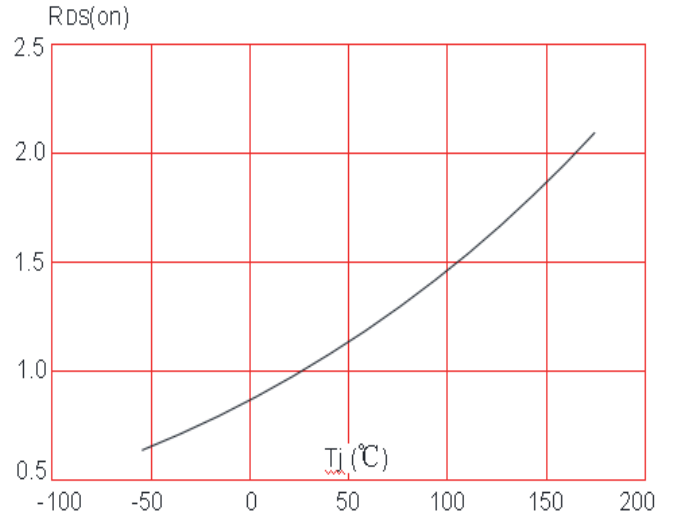


Figure 9: Maximum Safe Operating Area

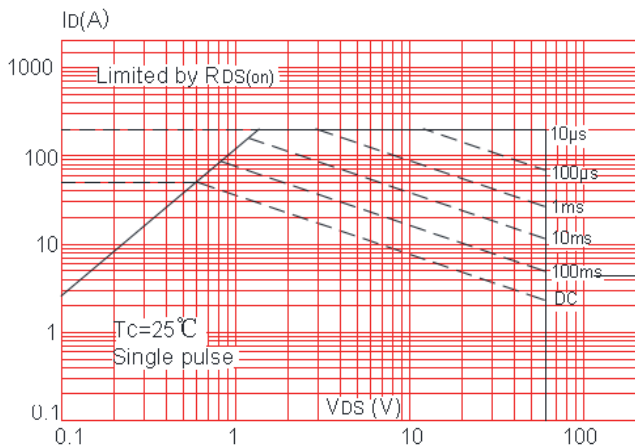


Figure 10: Maximum Continuous Drain Current vs. Junction Temperature

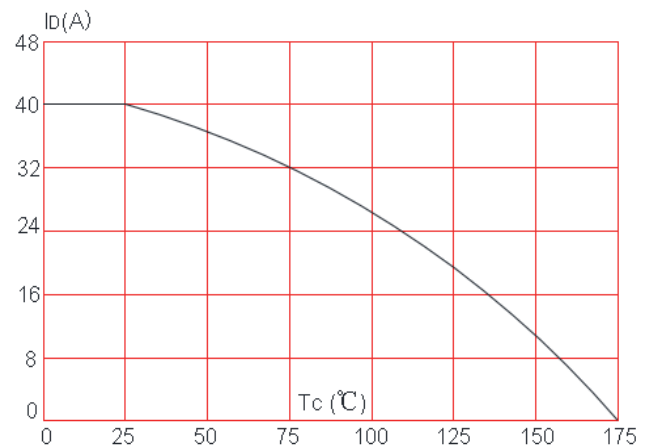
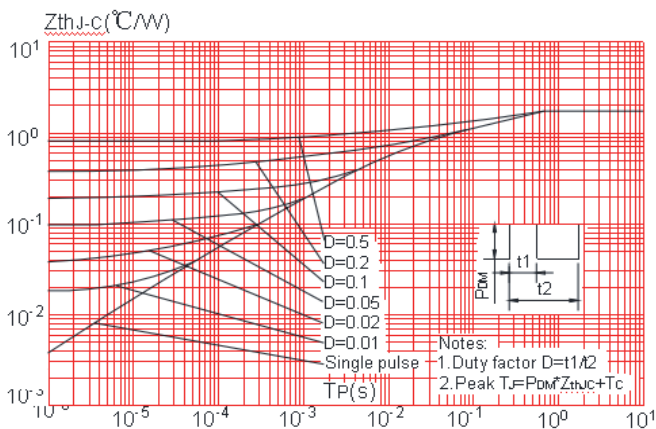
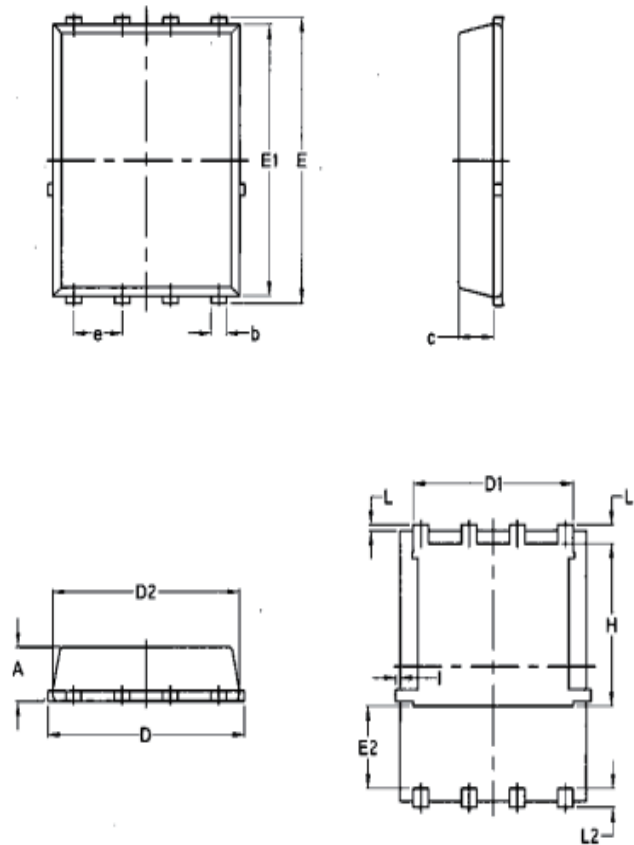


Figure 11: Maximum Effective



**Package Mechanical Data-DFN5\*6-8L-JQ Single**


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
l	/	0.18	/	0.0070

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