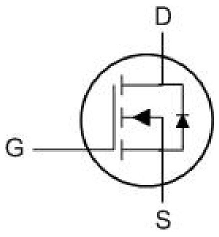
WLQ80N03BF

N-Ch 30V Fast Switching MOSFETs

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

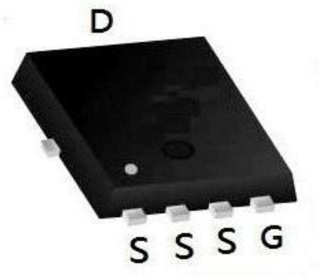


Description

The WLQ80N03BF 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 WLQ80N03BF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

PDFN5060-8L Pin Configuration



Product Summary

BVDSS	RDSON	ID
30V	3.2mΩ	80A

Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		10s	Steady State	
V_{DS}	Drain-Source Voltage	30		V
V_{GS}	Gate-Source Voltage	±20		V
I_D@T_C=25˚C	Continuous Drain Current, V_{GS} @ 10V[1]	80		A
I_D@T_C=75˚C	Continuous Drain Current, V_{GS} @ 10V[1]	45		A
I_{DM}	Pulsed Drain Current[2]	290		A
EAS	Single Pulse Avalanche Energy[3]	196		mJ
I_{AS}	Avalanche Current	36		A
P_D@T_C=25˚C	Total Power Dissipation[4]	46		W
T_{STG}	Storage Temperature Range	-55 to 175		˚C
T_J	Operating Junction Temperature Range	-55 to 175		˚C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	62	˚C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	1.72	˚C/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	---	---	V
△BV_{DSS}/△T_J	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	---	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=30A	---	3.2	4.5	mΩ
		V_{GS}=4.5V , I_D=15A	---	4.8	8.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.6	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	---	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=30V, V_{GS}=0V , T_J=100℃	---	---	100	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=30A	---	80	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2	---	Ω
Q_g	Total Gate Charge	V_{DS}=15V , V_{GS}=4.5V , I_D=30A	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	7.2	---	
$T_{d(on)}$	Turn-On Delay Time	VGS=10V, VDD=15V, RG=3Ω, ID=30A	---	9	---	ns
T_r	Rise Time		---	16	---	
$T_{d(off)}$	Turn-Off Delay Time		---	43	---	
T_f	Fall Time		---	12	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	2088	---	pF
C_{oss}	Output Capacitance		---	277	---	
C_{rss}	Reverse Transfer Capacitance		---	209	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	80	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V

Note :

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 TJ = 25ÁC,VDD=24V,VGS=10V,L=0.1mH,IAS=36A.

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 Electrical and Thermal Characteristics (Curves)

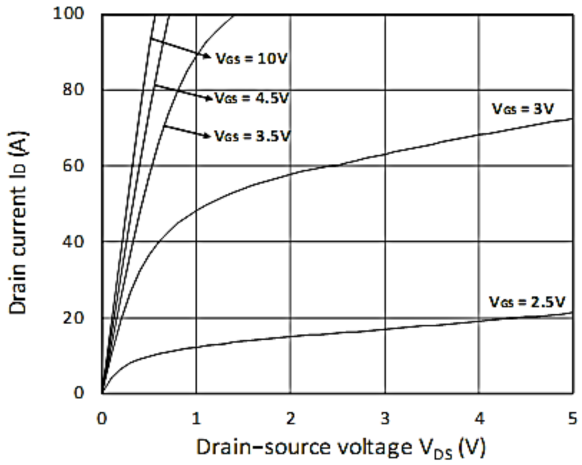


Figure 1. Output Characteristics

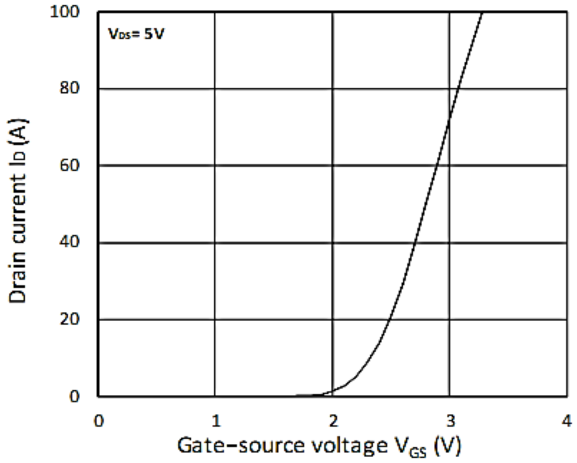


Figure 2. Transfer Characteristics

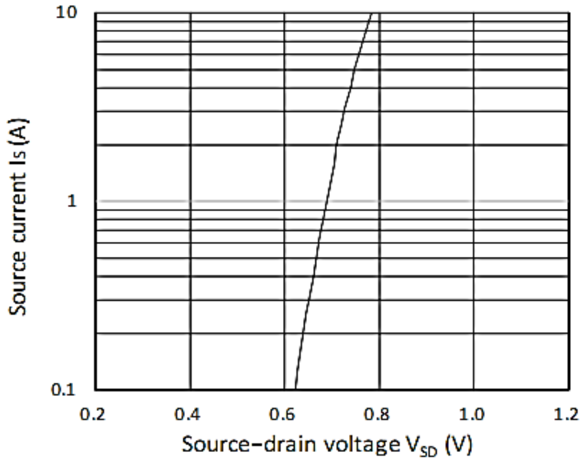


Figure 3. Forward Characteristics of Reverse

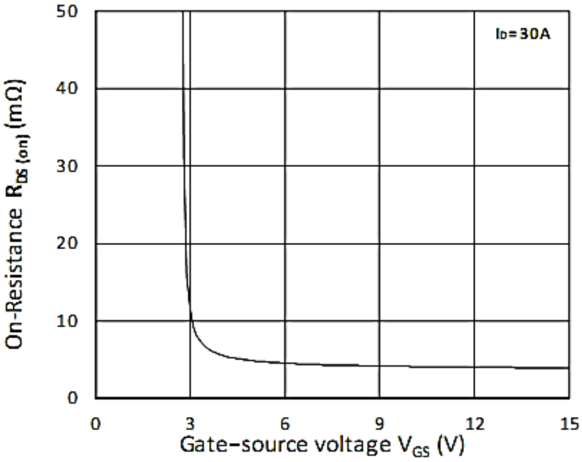


Figure 4. RDS(ON) vs. VGS

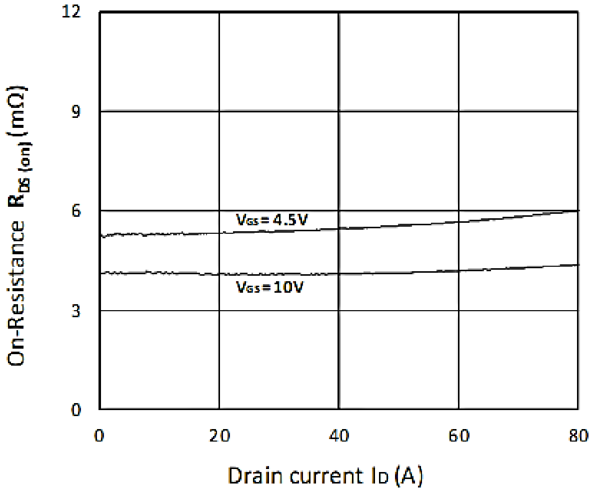


Figure 5. R DS(ON) vs. ID

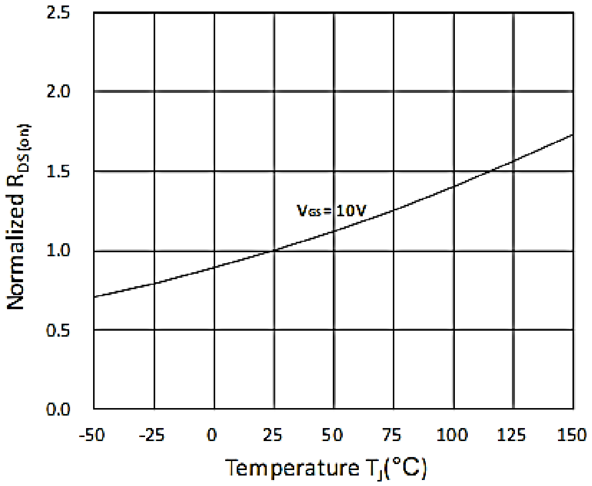


Figure 6. Normalized R DS(on) vs. Temperature

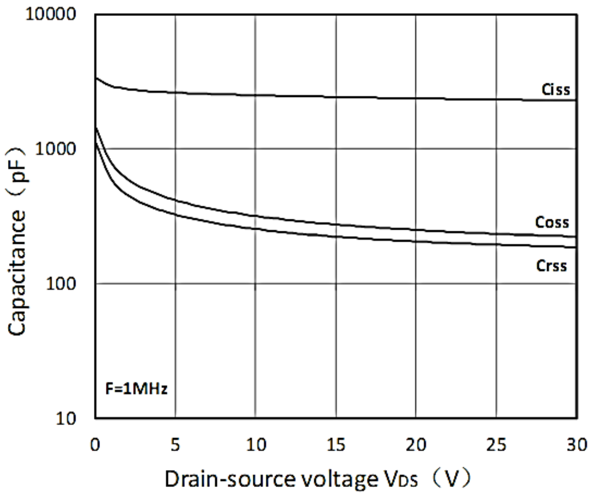


Figure 7. Capacitance Characteristics

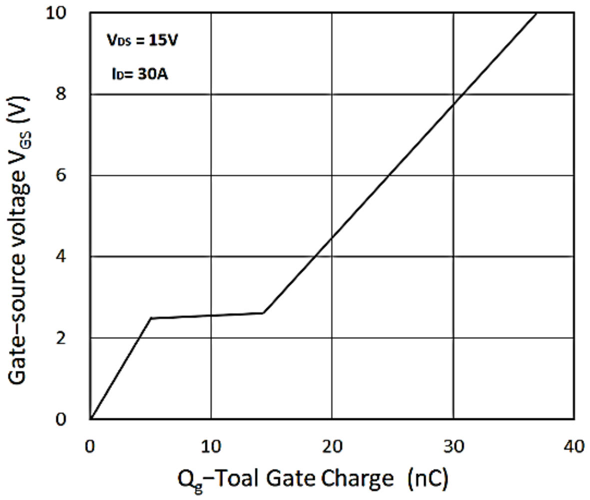


Figure 8. Gate Charge Characteristics

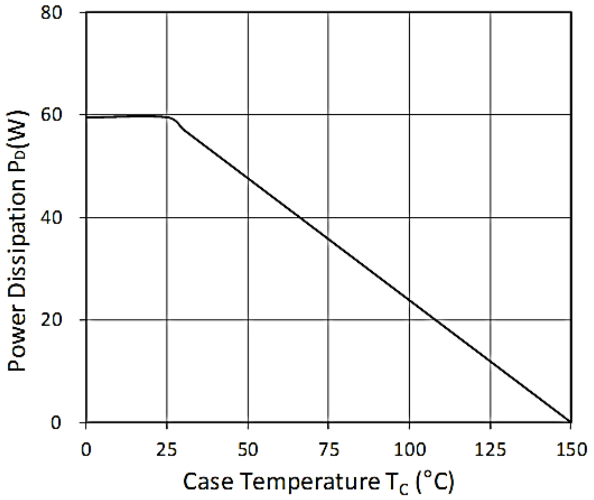


Figure 9. Power Dissipation

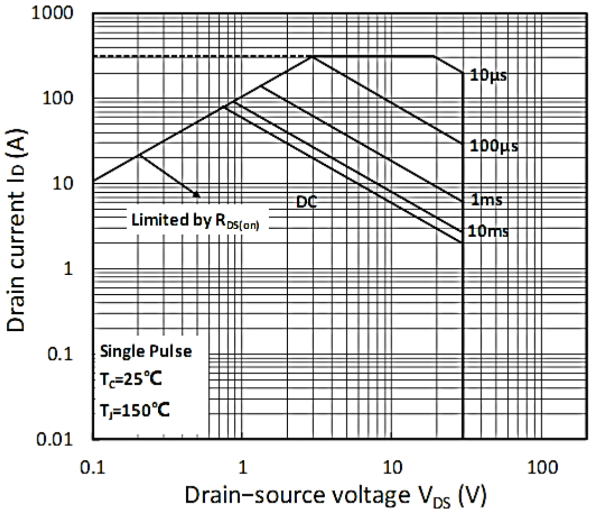
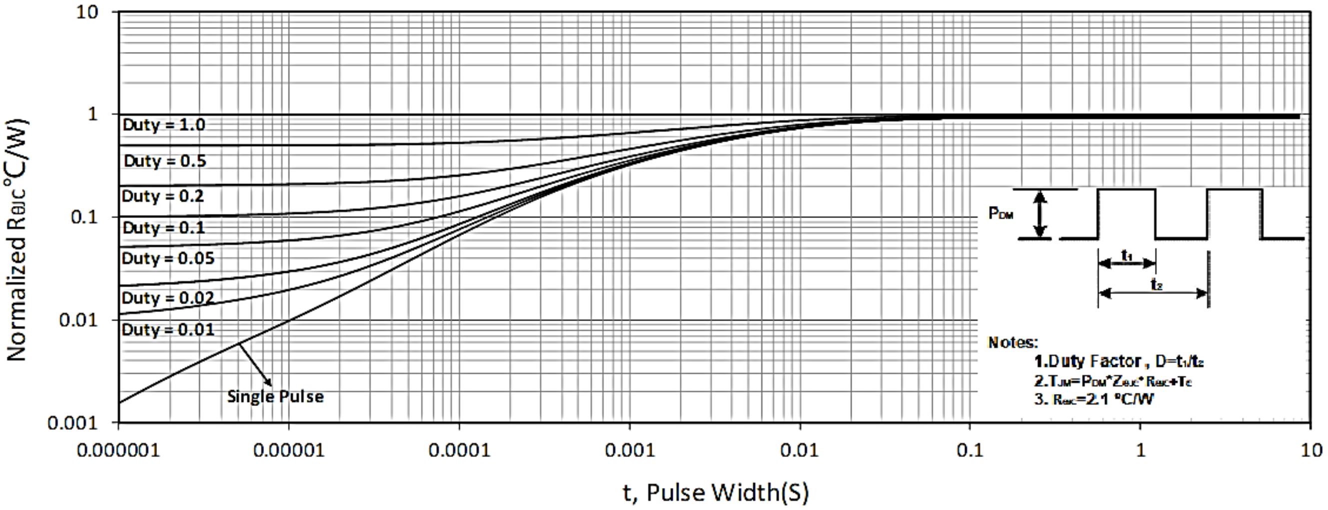


Figure10. Safe Operating Area



Notes:

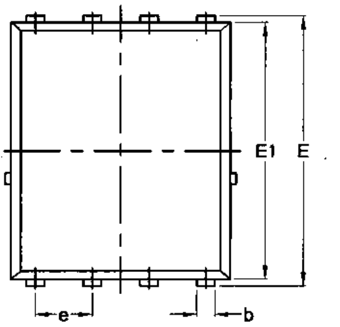
1.Duty Factor , $D=t_1/t_2$

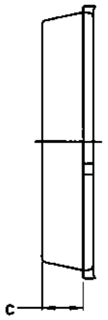
2.$T_{JM}=P_{DM}*Z_{θJC}*R_{θJC}+T_C$

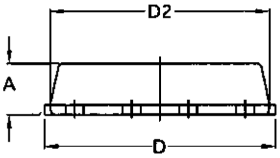
3. $R_{θJC}$=2.1 °C/W

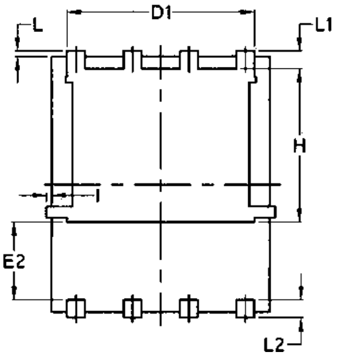
Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-PDFN5060-8L-JQ Single









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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