General Description

The WSL220N08 is the highest performance trench N-ch MOSFET with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSL220N08 meet the RoHS and Green Product requirement , 100% EAS guaranteed with full function reliability approved.

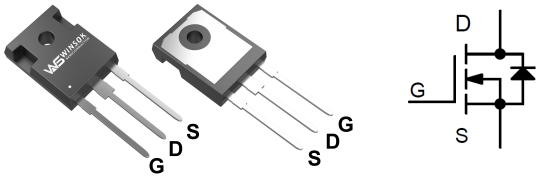
Product Summery

BVDSS	RDSON	ID
85V	4.9mΩ	210A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter
- Networking DC-DC Power System

TO-247 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		85	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	210	A
Mounted on Large Heat Sink				
I_{DM}	Pulsed Drain Current *	T_C=25°C	850**	A
I_D	Continuous Drain Current	T_C=25°C	210	A
		T_C=100°C	150	
P_D	Maximum Power Dissipation	T_C=25°C	300	W
		T_C=100°C	178	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.5	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		63.5	
Avalanche Ratings				
E_{AS}	Avalanche Energy, Single Pulsed	L=0.5mH	1800***	mJ

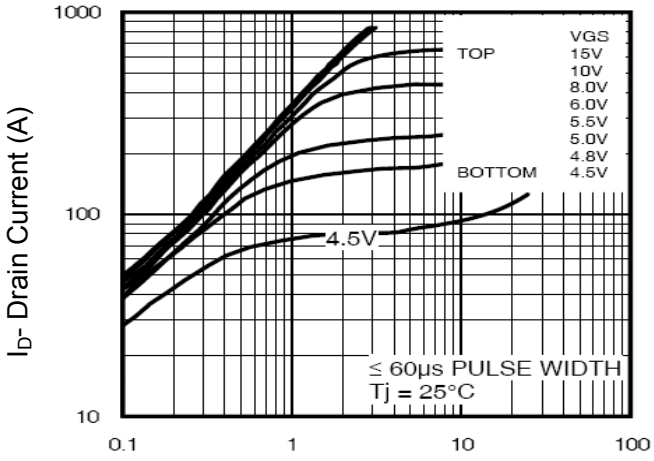
Note : * Repetitive rating ; pulse width limiited by junction temperatur
** Drain current is limited by junction temperature
*** VD=64V

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	85	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	2.0	3.2	4.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±200	nA
$R_{DS(ON)}$*	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=100A	-	4.0	4.9	mΩ
Diode Characteristics						
V_{SD}*	Diode Forward Voltage	I_{SD}=100A, V_{GS}=0V	-	0.8	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=100A, dI_{SD}/dt=100A/μs	-	110	-	ns
Q_{rr}	Reverse Recovery Charge		-	300	-	nC
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	3.3	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, Frequency=1.0MHz	-	7600	-	pF
C_{oss}	Output Capacitance		-	720	-	
C_{rss}	Reverse Transfer Capacitance		-	346	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=40V, R_G=6 Ω, I_{DS} =100A, V_{GS}=10V,	-	23	-	ns
T_r	Turn-on Rise Time		-	124	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	84	-	
T_f	Turn-off Fall Time		-	78	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=64V, V_{GS}=10V, I_{DS}=100A	-	140	-	nC
Q_{gs}	Gate-Source Charge		-	40	-	
Q_{gd}	Gate-Drain Charge		-	57	-	

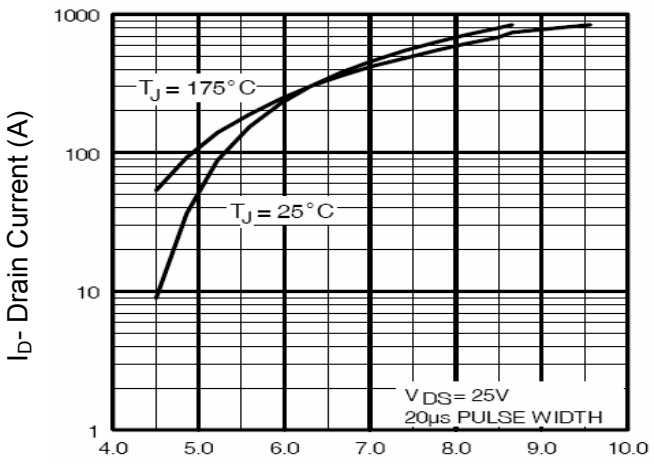
Note * : Pulse test ; pulse width ≤300μs, duty cycle≤2%.

Typical Operating Characteristics



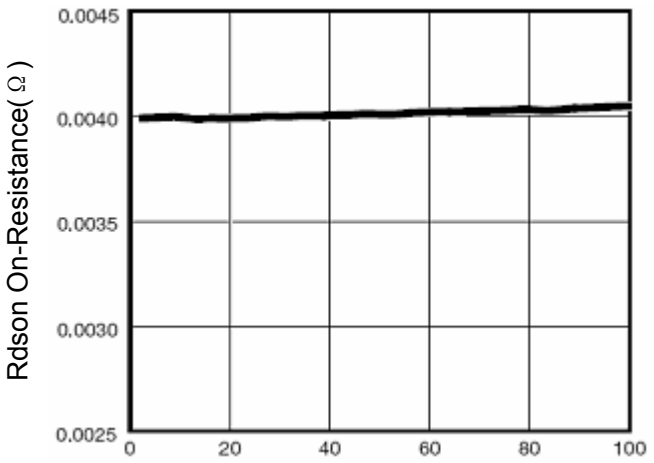
Vds Drain-Source Voltage (V)

Figure 1 Output Characteristics



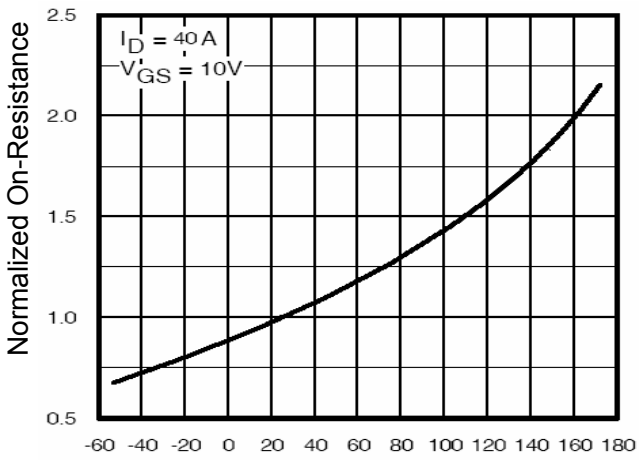
Vgs Gate-Source Voltage (V)

Figure 2 Transfer Characteristics



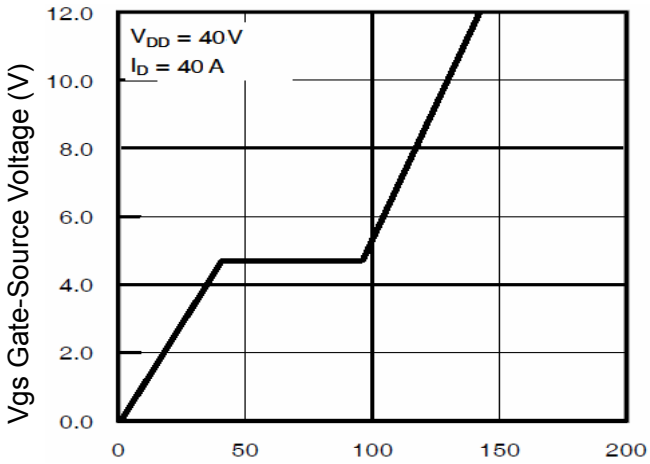
I_D- Drain Current (A)

Figure 3 Rdson- Drain Current



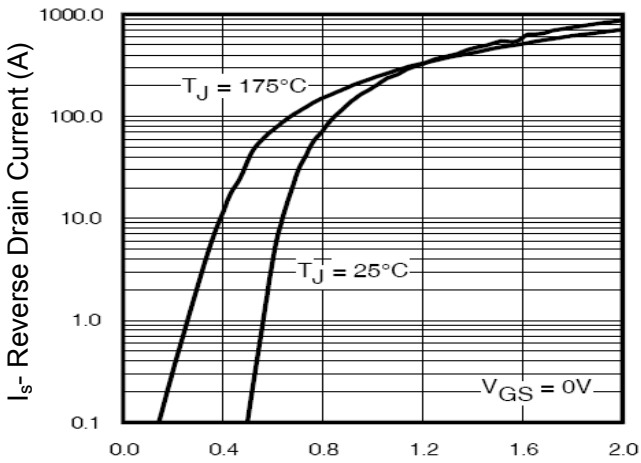
T_J-Junction Temperature(℃)

Figure 4 Rdson-JunctionTemperature



Qg Gate Charge (nC)

Figure 5 Gate Charge



Vsd Source-Drain Voltage (V)

Figure 6 Source- Drain Diode Forward

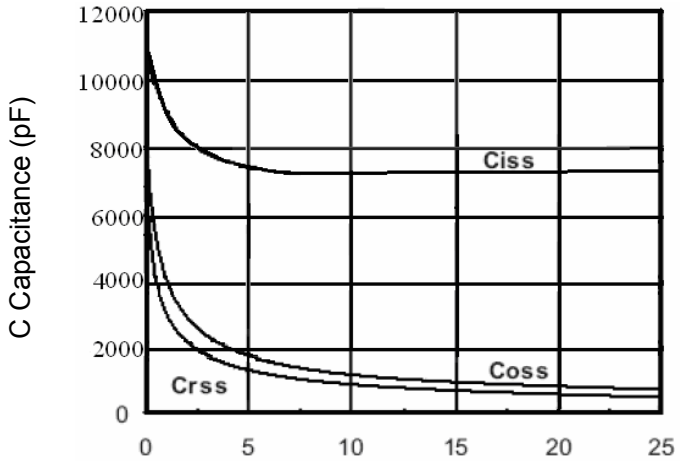


Figure 7 Capacitance vs Vds

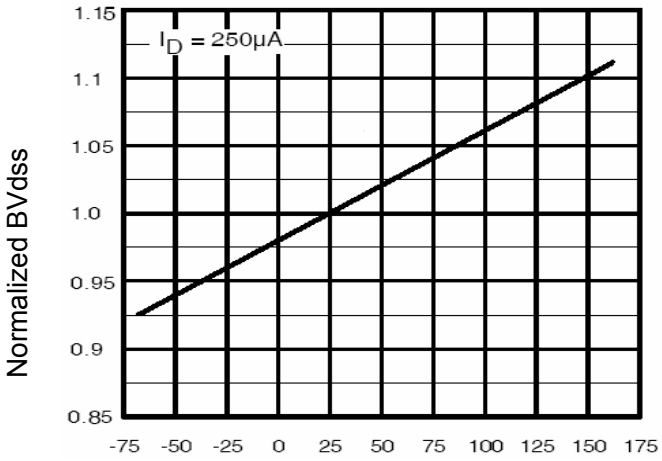


Figure 9 BV_{DSS} vs Junction Temperature

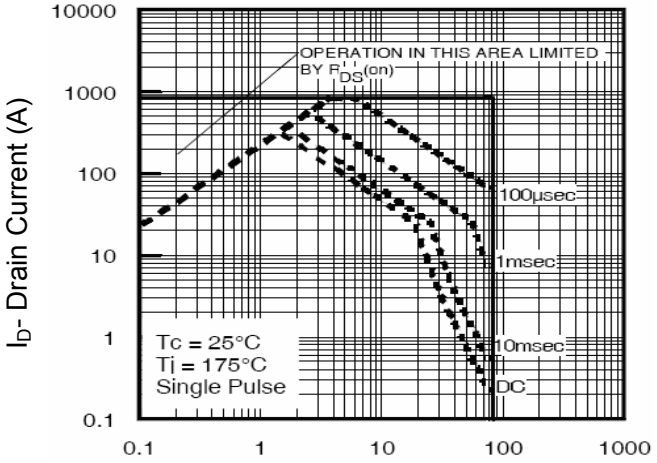


Figure 8 Safe Operation Area

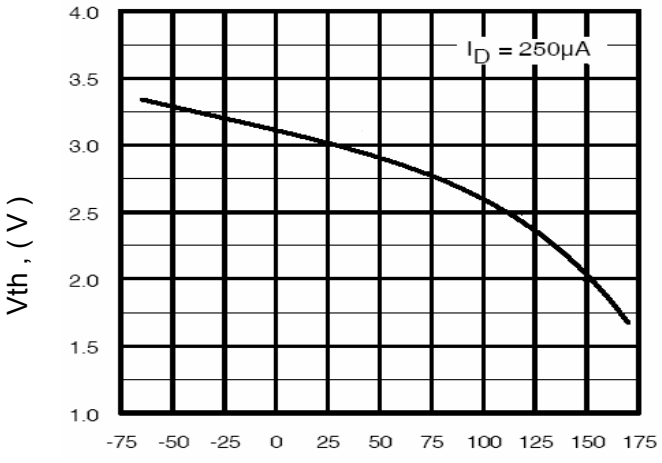


Figure 10 $V_{GS(th)}$ vs Junction Temperature

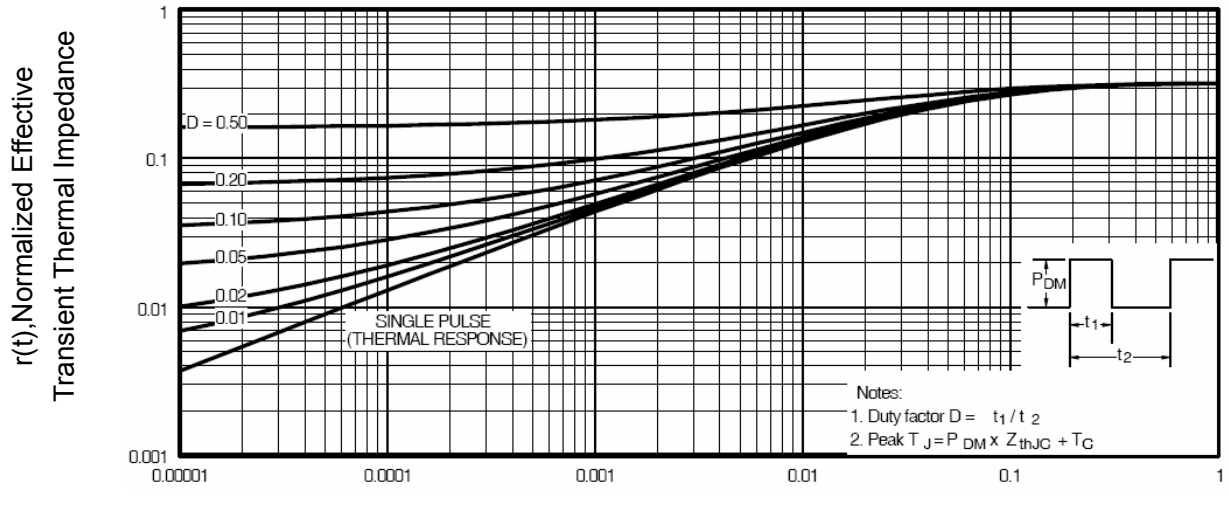
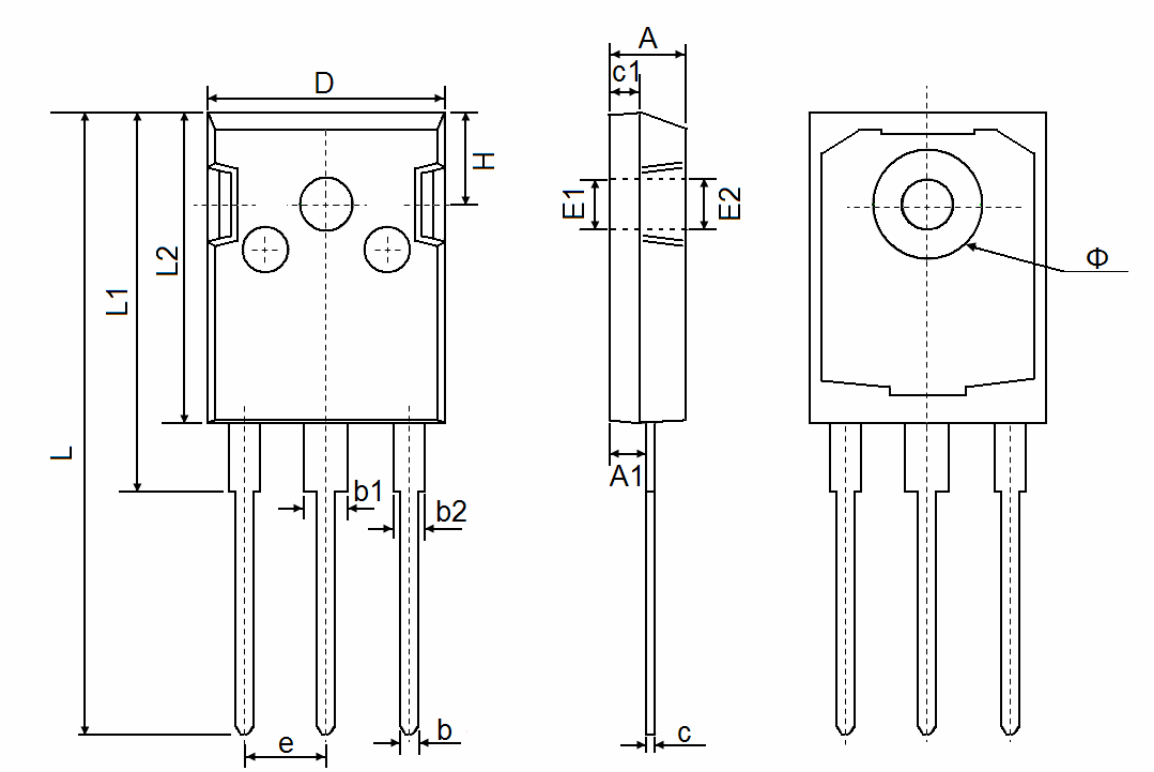


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150		
A1	2.200	2.600		
b	1.000	1.400		
b1	2.800	3.200		
b2	1.800	2.200		
c	0.500	0.700		
c1	1.900	2.100		
D	15.4 0	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.9 0	41.300	1.610	1.626
L1	24. 0	25.100	0.976	0.988
L2	20. 0	20.600	0.799	0.811
Φ	7.100	7.300		
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	

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