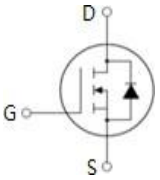
WLP85N08

85V N-Channel MOSFET

FEATURES

- Proprietary New Trench Technology
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode



Applications

- High efficiency DC/DC Converters
- Synchronous Rectification
- UPS Inverter

Product Summary

V_{DSS}	85	V
$R_{DS(ON)}$-Typ@VGS=10V	9.5	mΩ
I_D	90	A

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value		Unit
		TO-220F	TO-220	
Drain-Source Voltage (V_{GS} = 0V)	V_{DSS}	500		V
Continuous Drain Current	I_D	90		A
Pulsed Drain Current (note1)	I_{DM}	340		A
Gate-Source Voltage	V_{GSS}	±30		V
Single Pulse Avalanche Energy (note2)	E_{AS}	570		mJ
Single Pulse Avalanche Current (note1)	I_{AS}	36.6		A
Repetitive Avalanche Energy (note1)	E_{AR}	342		mJ
Power Dissipation (T_C = 25ºC)	P_D	55	43	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150		ºC

Thermal Resistance

Parameter	Symbol	Value		Unit
		TO-220F	TO-220	
Thermal Resistance, Junction-to-Case	R_{thJC}	5	4.2	K/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	60	

Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	80	--	--	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	--	--	1	μA
		V_{DS}=64V, V_{GS}=0V, T_J =125℃	--	--	100	
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=VGS, I_D=250uA	2.0	--	4.0	V
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=40A	--	9.5	12	mΩ
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	2728	--	pF
Output Capacitance	C_{rss}		--	782	--	
Reverse Transfer Capacitance	C_{oss}		--	339	--	
Total Gate Charge	Q_g	V_{DD}=40V, I_D=40A, V_{GS}=0 to 10V	--	164	--	nC
Gate-to-Source Charge	Q_{gs}		--	15	--	
Gate-to-Drain (Miller) Charge	Q_{gd}		--	71	--	
Turn-on Delay Time	$t_{d(ON)}$	V_{DD}=40V, I_D=10A, V_{GS}= 10V R_G=25Ω	--	50	--	nS
Rise Time	t_{rise}		--	106	--	
Turn-Off Delay Time	$t_{d(OFF)}$		--	408	--	
Fall Time	t_{fall}		--	183	--	
Drain-Source Body Diode Characteristics						
Continuous Source Current (note2)	I_{SD}	Integral PN-diode in MOSFET	--	--	85	A
Pulsed Source Current (note2)	I_{SM}		--	--	340	
Diode Forward Voltage	V_{SD}	I_S=75A, V_{GS}=0V	--	--	1.2	V
Reverse recovery time	t_{rr}	V_{GS}=0V ,I_F=10A, d_{iF}/dt=100A/μs	--	100	--	ns
Reverse recovery charge	Q_{rr}		--	410	--	nC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L=1mH, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Typical Output Characteristics

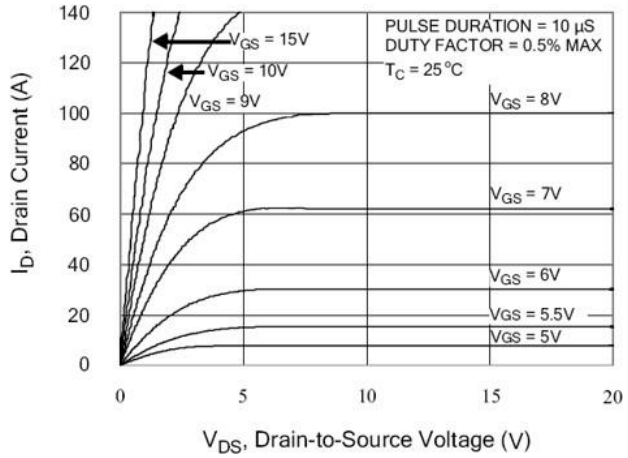


Figure 2. Maximum Power Dissipation vs Case Temperature

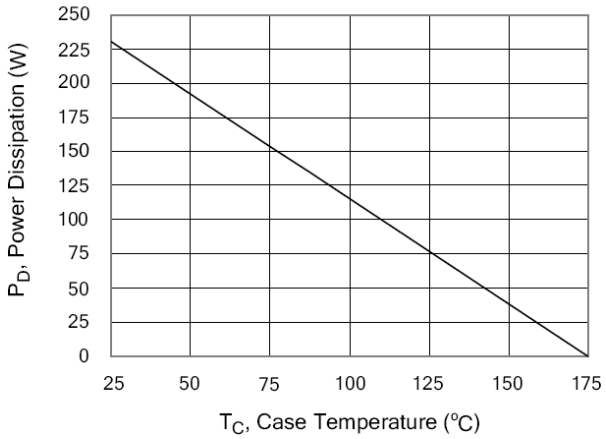


Figure 3. Maximum Continuous Drain Current vs Case Temperature

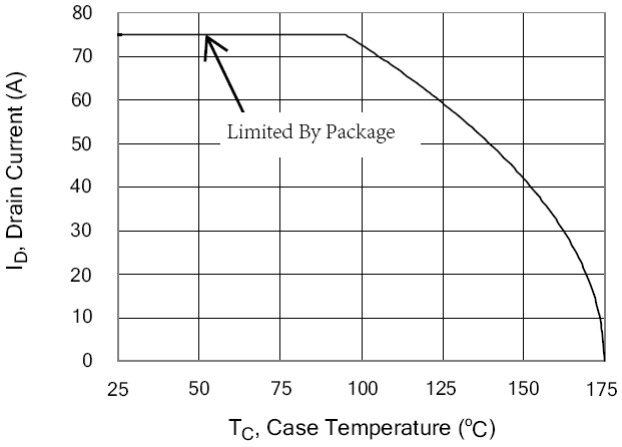


Figure 4. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

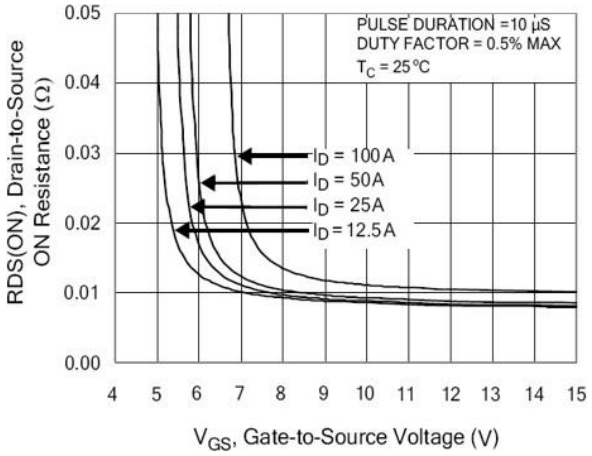


Figure 7. Typical Drain-to-Source ON Resistance vs Drain Current

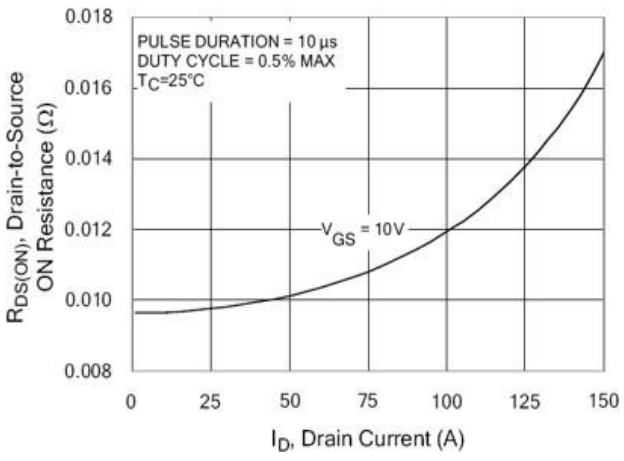
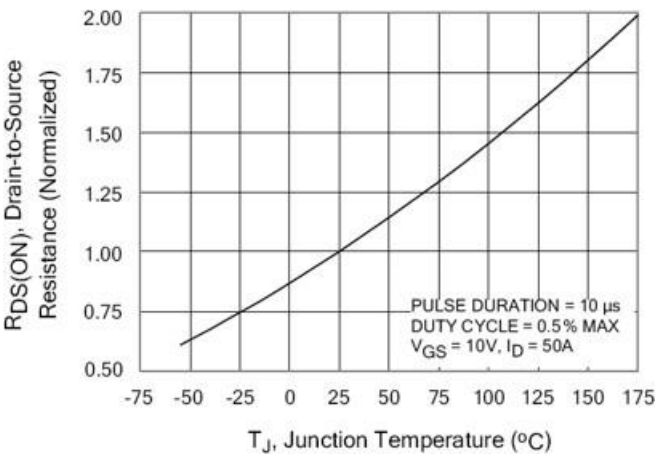


Figure 8. Typical Drain-to-Source ON Resistance vs Junction Temperature



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Capacitance

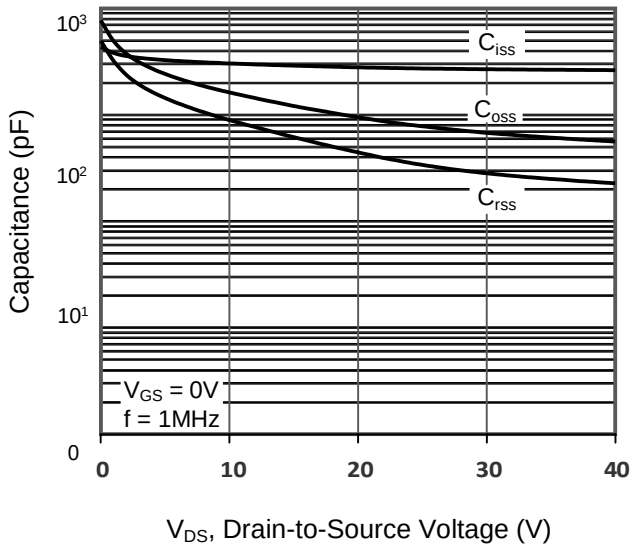


Figure 8. Gate Charge

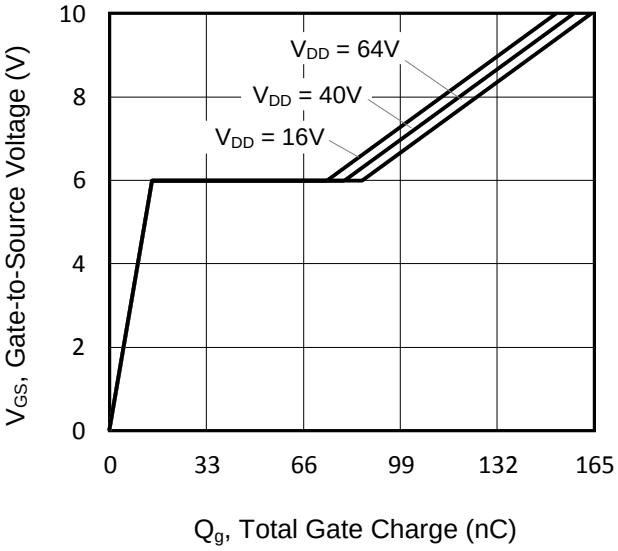


Figure 9. Transient Thermal Impedance TO-251,TO-252,TO-220

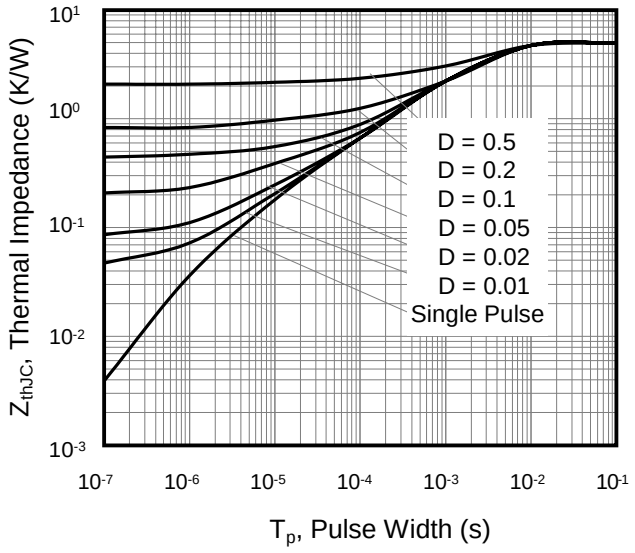


Figure 10. Transient Thermal Impedance TO-220F

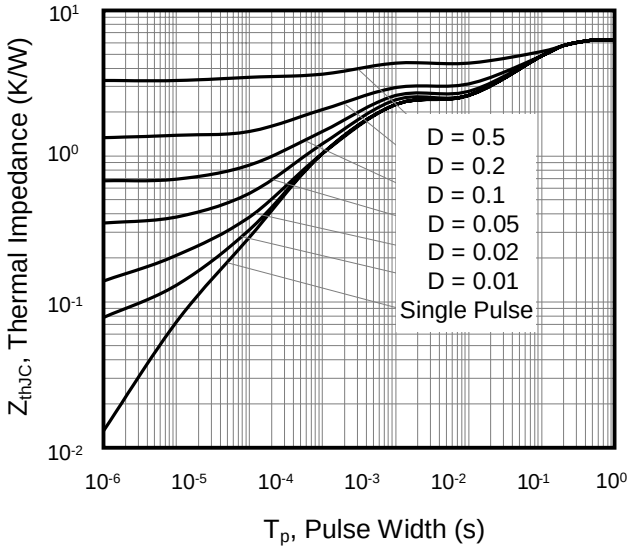


Figure A：Gate Charge Test Circuit and Waveform

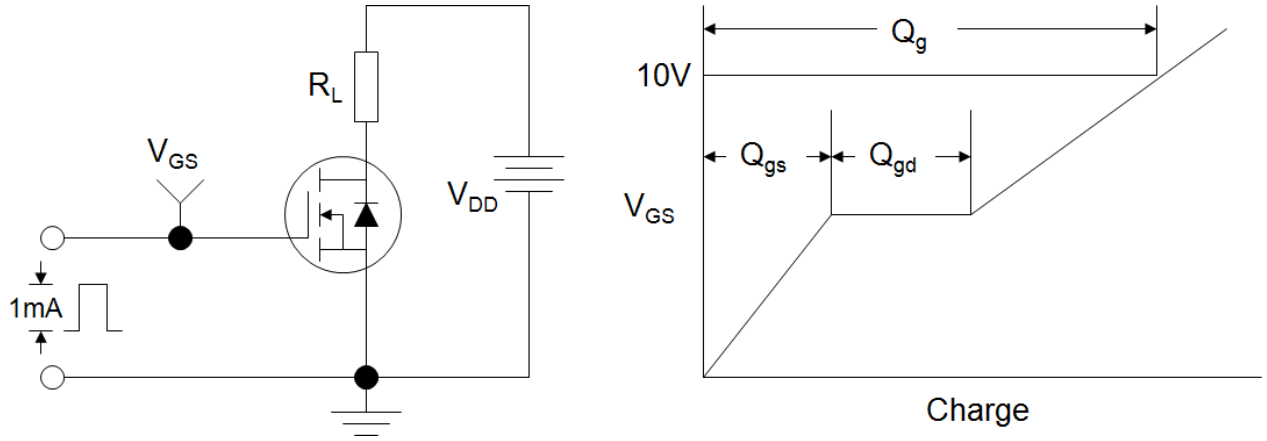


Figure B：Resistive Switching Test Circuit and Waveform

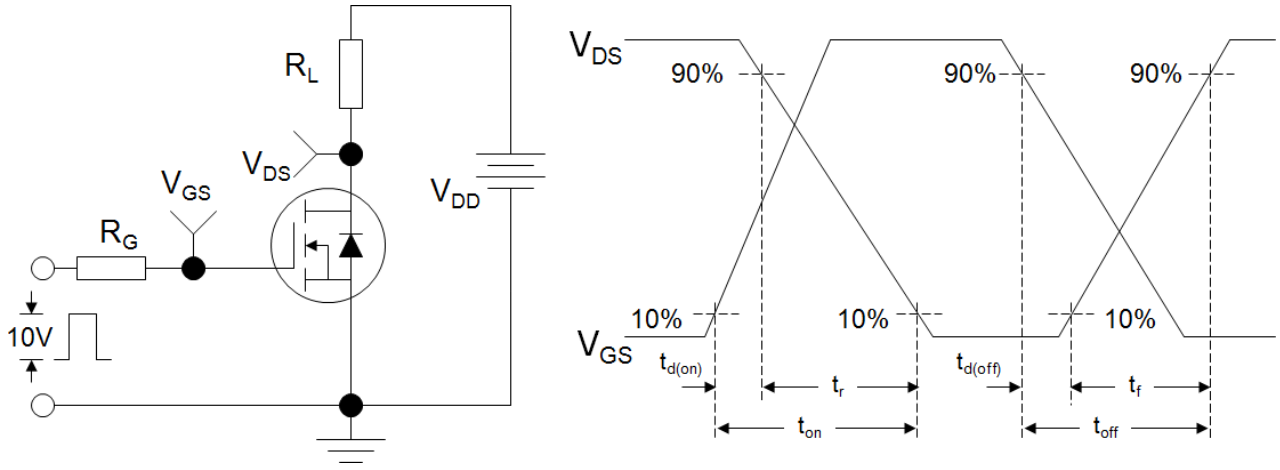
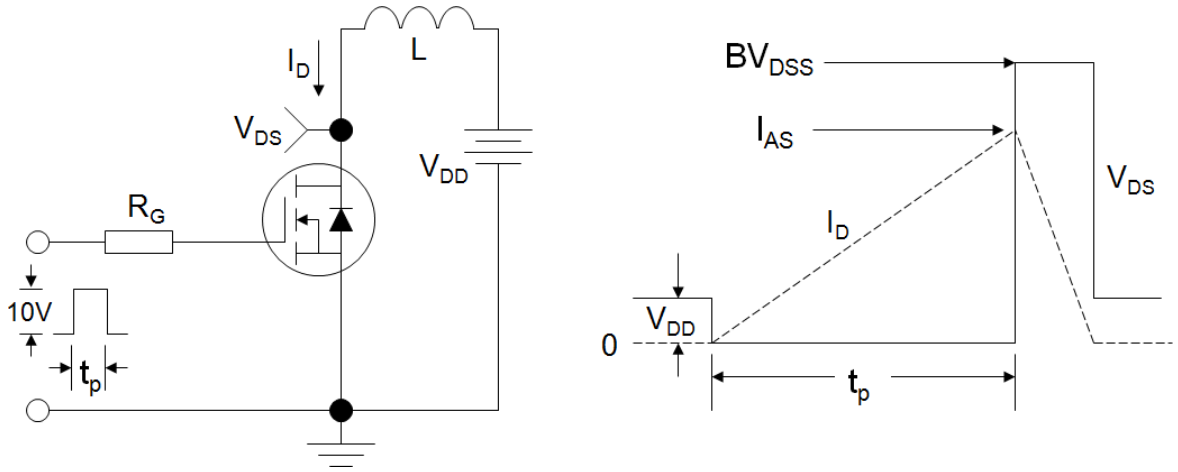


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



Disclaimer

Brunei has made reasonable commercial efforts to ensure that the information given in this datasheet is correct. However, it must clearly be understood that such information is for guidance only and does not constitute any representation or form part of any offer or contract.

For documents and material available from this datasheet,Bruneidoes not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, product, technology or process disclosed hereunder.

Bruneireserves the rights to at its own discretion to make any changes or improvements to this datasheet. Unless said datasheet is incorporated into the formal contract, any customer should not rely on the information as any specification or product parameters duly committed by Brunei Customers are hereby advised to verify that the information contained herein is current and complete before the entering of any contract or acknowledgement of any purchase order. Accordingly, all products specified hereunder shall be sold subject to Brunėi s terms and conditions supplied at the time of order acknowledgement. Except where agreed upon by contractual agreement, testing of all parameters of each product is not necessarily performed.

Brunei does not warrant or convey any license either expressed or implied under its patent rights, nor the rights of others. Reproduction of information contained herein shall be only permissible if such reproduction is without any modification or alteration. Reproduction of this information with any alteration is an unfair and deceptive business practice. Brunei is not responsible or liable for such altered documentation.

Resale of Brunėi s products with statements different from or beyond the parameters stated by Brunei for that product or service voids all express or implied warrantees for the associated Brunėi s product or service and is unfair and deceptive business practice. Brunei is not responsible or liable for any such statements.

Brunėi s products are not authorized for use as critical components in life support devices or systems without the express written approval of Brunei. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.