Lonten N-channel 100V, 82A, 4.5mΩ Power MOSFET

Description

These N-Channel enhancement mode power field effect transistors are using split gate trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and with stand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

- 100V,82A, $R_{DS(on),max}$ =4.5mΩ@V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green device available

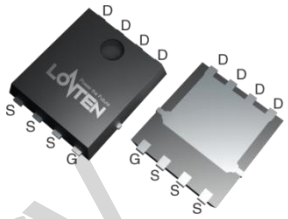
Applications

- MOTOR Driver
- BMS
- High frequency switching and synchronous rectification

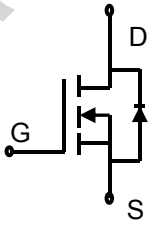
Product Summary

V_{DSS}	100V
$R_{DS(on),max}$@ V_{GS}=10V	4.5mΩ
I_D	82A

Pin Configuration



DFN5×6



N-Channel MOSFET

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	100	V
Continuous drain current (T_C = 25°C)	I_D	82	A
(T_C = 100°C)		61	A
Pulsed drain current[1)]	I_{DM}	246	A
Gate-Source voltage	V_{GSS}	±20	V
Avalanche energy[2)]	E_{AS}	7.2	mJ
Power Dissipation	P_D	78	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.6	°C/W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	62	°C/W

Package Marking and Ordering Information

Device	Device Package	Marking	Units/Reel
LSGN10R045WB	DFN 5×6	10R045WB	5000

Electrical Characteristics

T_J = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0 V, I_D=250uA	100	---	---	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2	3	4	V
Drain-source leakage current	I_{DSS}	V_{DS}=100 V, V_{GS}=0V	---	---	1	μA
Gate leakage current, Forward	I_{GSSF}	V_{GS}=20 V, V_{DS}=0 V	---	---	100	nA
Gate leakage current, Reverse	I_{GSSR}	V_{GS}=-20 V, V_{DS}=0 V	---	---	-100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10 V, I_D=13.5 A	---	3.8	4.5	mΩ
Forward transconductance	g_{fs}	V_{DS} =10V , I_D=20A	---	50	---	S
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS} = 50 V, V_{GS} = 0 V, F = 1MHz	---	4725	---	pF
Output capacitance	C_{oss}		---	609	---	
Reverse transfer capacitance	C_{rss}		---	14	---	
Turn-on delay time	$t_{d(on)}$	V_{DD} = 50V,V_{GS}=10V, I_D = 20A R_G=3Ω	---	35	---	ns
Rise time	t_r		---	18	---	
Turn-off delay time	$t_{d(off)}$		---	45	---	
Fall time	t_f		---	55	---	
Gate charge characteristics						
Gate to source charge	Q_{gs}	V_{DS}=50V, I_D=20A, V_{GS}= 10 V	---	28	---	nC
Gate to drain charge	Q_{gd}		---	15	---	
Gate charge total	Q_g		---	74	---	
Drain-Source diode characteristics and Maximum Ratings						
Continuous Source Current	I_S		---	---	60	A
Pulsed Source Current[3)]	I_{SM}		---	---	180	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=13.5A, T_J=25℃	---	---	1.3	V
Reverse recovery time	t_{rr}	I_F=13.5A,dI_F/dt=100 A/μs	---	70	---	ns
Reverse recovery charge	Q_{rr}		---	170	---	nC

Notes:

1: Repetitive Rating: Pulse width limited by maximum junction temperature.

2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=12A, Starting T_J=25℃.

3: Pulse Test：Pulse Width ≤300μs, Duty Cycle≤2%.

Electrical Characteristics Diagrams

Fig 1. Typ. Output Characteristics

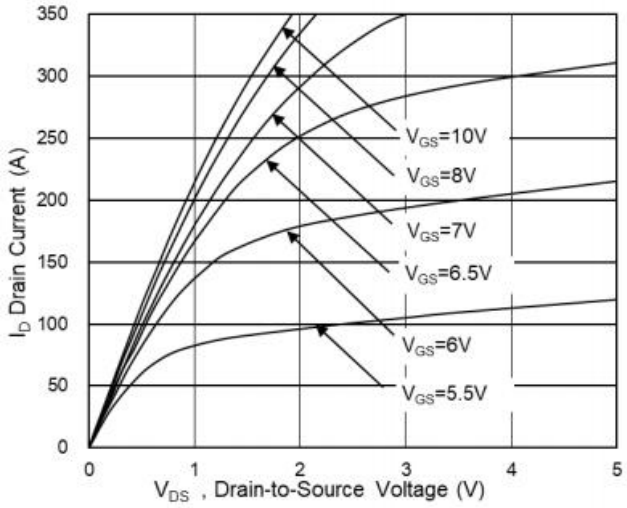


Fig 2. On-Resistance vs G-S Voltage

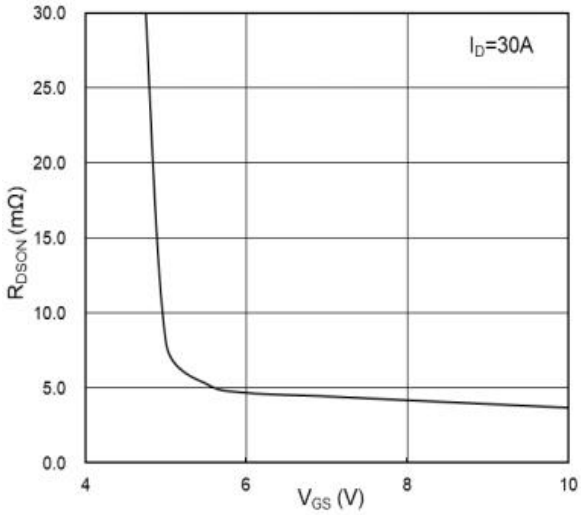


Fig 3. Capacitance Characteristics

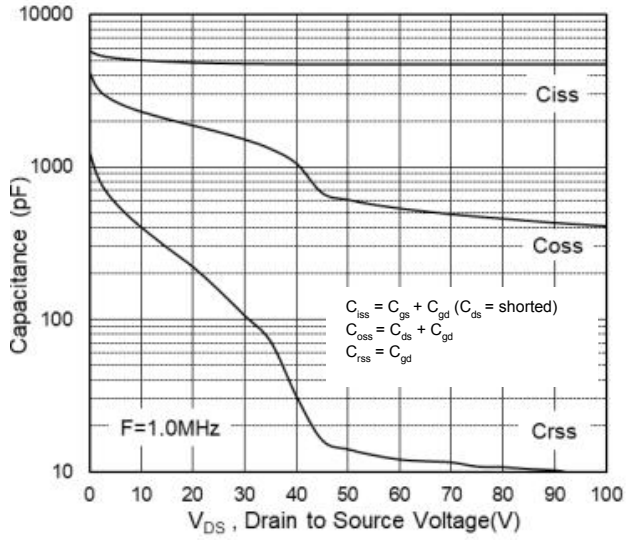


Figure 4. Gate Charge Waveform

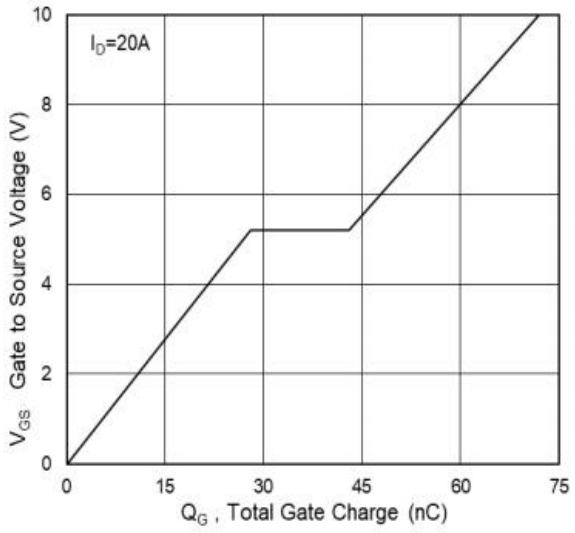


Fig 5. Body-Diode Characteristics

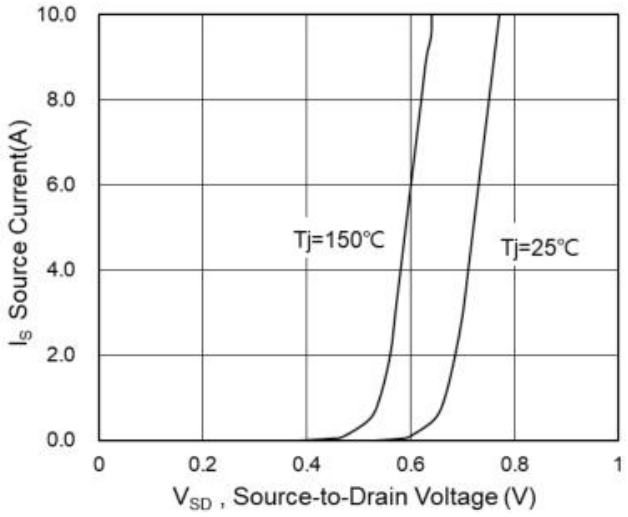


Fig 6. Rdson-Junction Temperature

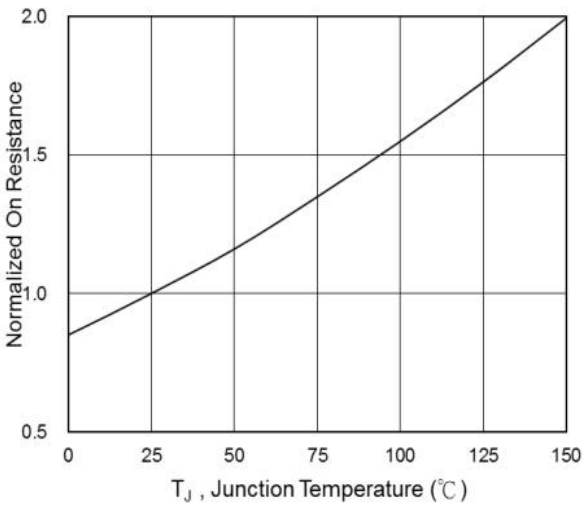


Fig 7. $V_{GS(th)}$-Junction Temperature

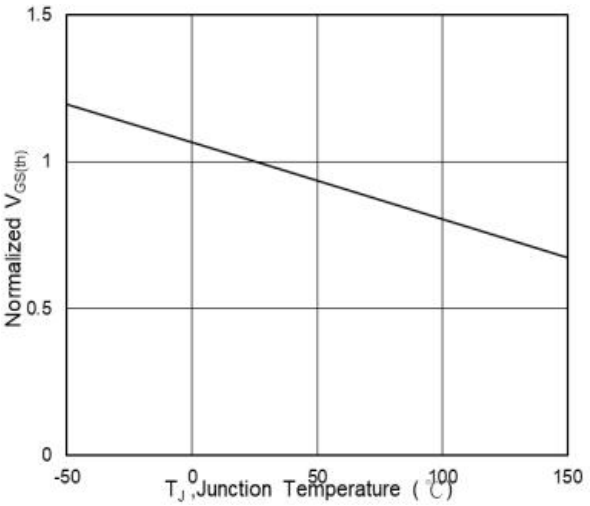


Fig 8: Safe Operating Area

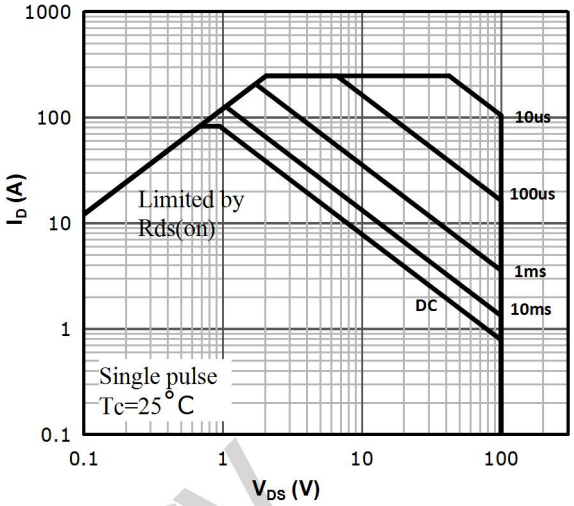
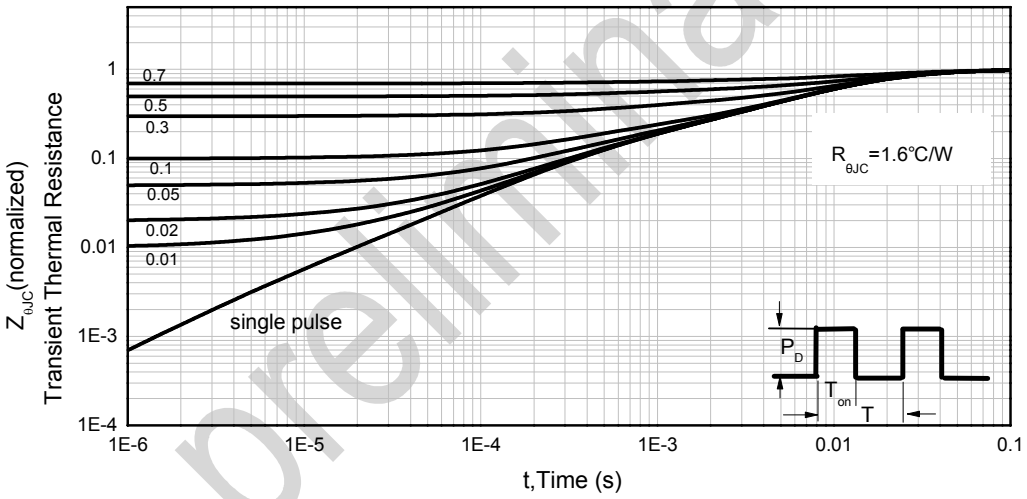
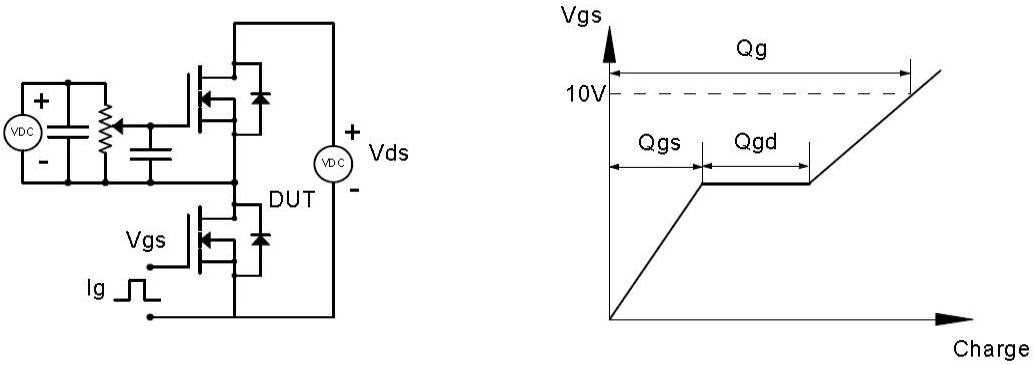


Fig 9. Normalized Maximum Transient Thermal Impedance (RthJC)

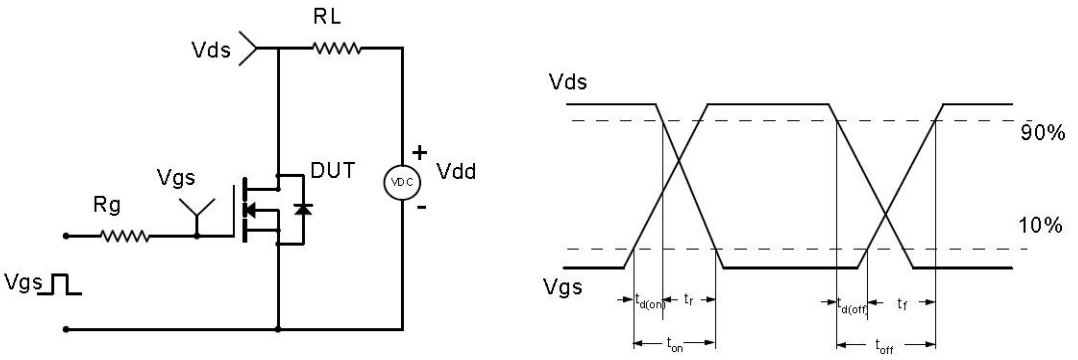


Test Circuit & Waveforms

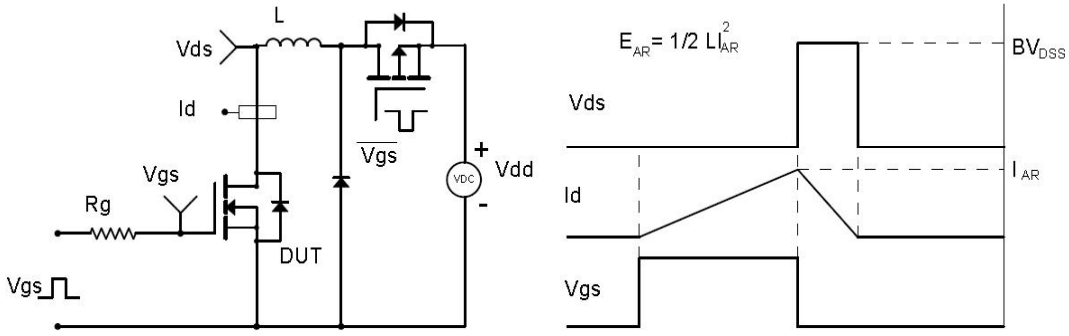
Gate Charge Test Circuit & Waveform



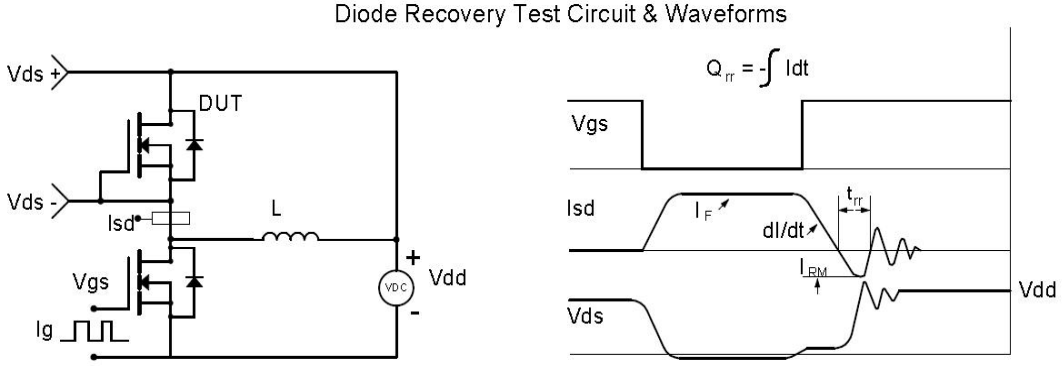
Resistive Switching Test Circuit & Waveforms



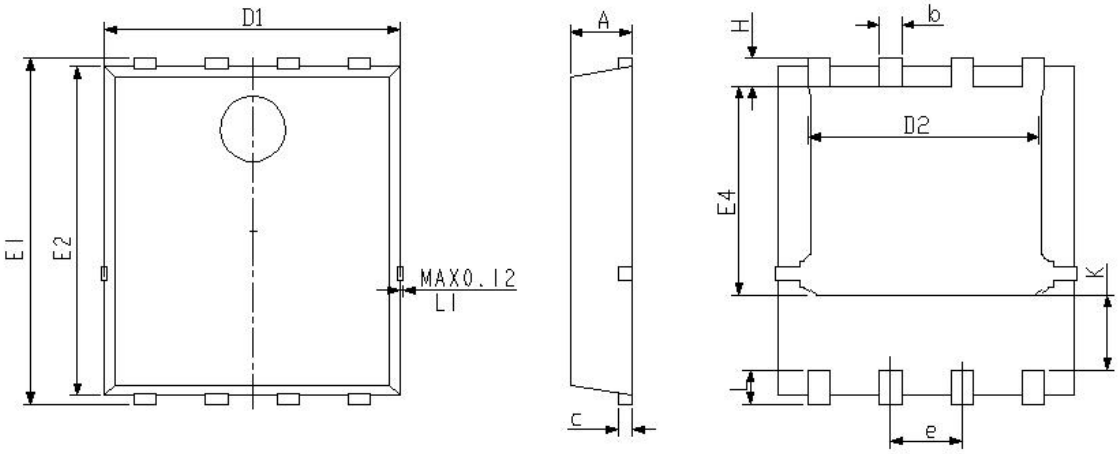
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Mechanical Dimensions for DFN5×6



DIMENSIONS IN MILLITMETERS			DIMENSIONS IN INCHES	
SYMBOL	MIN	MAX	MIN	MAX
A	0.85	1.20	0.033	0.047
b	0.30	0.51	0.012	0.020
c	0.15	0.35	0.006	0.014
D1	4.80	5.40	0.189	0.213
D2	3.70	4.55	0.146	0.179
E1	5.95	6.35	0.234	0.250
E2	5.45	6.06	0.215	0.239
E4	3.30	3.92	0.130	0.154
e	1.27BSC		0.05BSC	
L	0.3	0.71	0.012	0.028
H	0.38	0.71	0.015	0.028
K	1.15	1.45	0.045	0.057

Disclaimer

The content specified herein is for the purpose of introducing LONTEN's products (hereinafter "Products"). The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

LONTEN does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of the Products or technical information described in this document.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). LONTEN shall bear no responsibility in any way for use of any of the Products for the above special purposes.

Although LONTEN endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a LONTEN product.

The content specified herein is subject to change for improvement without notice. When using a LONTEN product, be sure to obtain the latest specifications.

单击下面可查看定价，库存，交付和生命周期等信息

>>LONTEN(龙腾)