Lonten N-channel 70V, 70A, 8.5mΩ Power MOSFET

Description

These N-Channel enhancement mode power field effect transistors are using **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

- 70V,70A,$R_{DS(on).max}$=8.5mΩ@V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green device available

Applications

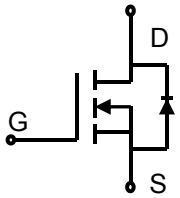
- Motor Drives
- UPS
- DC-DC Converter

Product Summary

V_{DSS}	70V
$R_{DS(on).max}$@ V_{GS}=10V	8.5mΩ
I_D	70A

Pin Configuration

TO-252



N-Channel MOSFET

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	70	V
Continuous drain current (T_C = 25°C)	I_D	70	A
(T_C = 100°C)		44	A
Pulsed drain current[1)]	I_{DM}	280	A
Gate-Source voltage	V_{GSS}	±20	V
Avalanche energy[2)]	E_{AS}	144	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[3)]	$R_{\theta JA}$	125	°C/W

Package Marking and Ordering Information

Device	Device Package	Marking	Units/Reel
LNG07R085H	TO- 252	LNG07R085H	2500

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	70	---	---	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2.0	3.0	4.0	V
Drain-source leakage current	I_{DSS}	V_{DS}=70 V, V_{GS}=0 V, T_J = 25°C	---	---	1	μA
		V_{DS}=56 V, V_{GS}=0 V, T_J = 125°C	---	---	30	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=30 A,T_J = 25°C	---	7.2	8.5	mΩ
Forward transconductance	g_{fs}	V_{DS} =5 V , I_D=30A	---	63	---	S
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f= 1MHz	---	3570	---	pF
Output capacitance	C_{oss}		---	248	---	
Reverse transfer capacitance	C_{rss}		---	197	---	
Turn-on delay time	$t_{d(on)}$	V_{DD} = 30V,V_{GS}=10V, I_D =30 A	---	17.8	---	ns
Rise time	t_r		---	27.6	---	
Turn-off delay time	$t_{d(off)}$		---	102	---	
Fall time	t_f		---	28.6	---	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	---	3.25	---	Ω
Gate charge characteristics						
Gate to source charge	Q_{gs}	V_{DS}=30 V, I_D=30A, V_{GS}= 10 V	---	21.2	---	nC
Gate to drain charge	Q_{gd}		---	17.9	---	
Gate charge total	Q_g		---	65.4	---	
Gate plateau voltage	$V_{plateau}$		---	5	---	V
Drain-Source diode characteristics and Maximum Ratings						
Continuous Source Current	I_S		---	---	65	A
Pulsed Source Current[4)]	I_{SM}		---	---	260	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=30A, T_J=25℃	---	---	1.2	V
Reverse Recovery Time	t_{rr}	I_S=25A, di/dt=100A/us, T_J=25℃	---	28.4	---	ns
Reverse Recovery Charge	Q_{rr}		---	21.3	---	nC

Notes:

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

2: V_{DD}=35V, V_{GS}=10V, L=0.5mH, I_{AS}=24A, R_G=25Ω, Starting T_J=25℃.

3: The value of R_{thJA} is measured by placing the device in a still air box which is one cubic foot.

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

Electrical Characteristics Diagrams

Figure 1. Typ. Output Characteristics

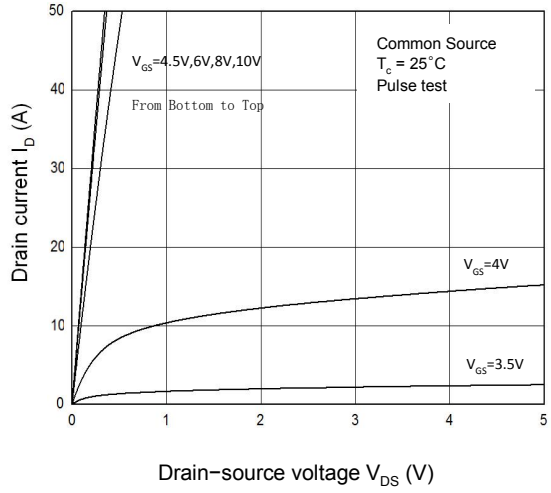


Figure 2. Transfer Characteristics

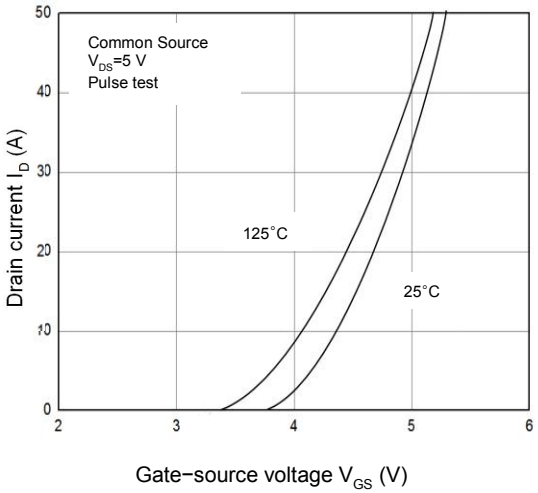


Figure 3. On-Resistance vs.Drain Current

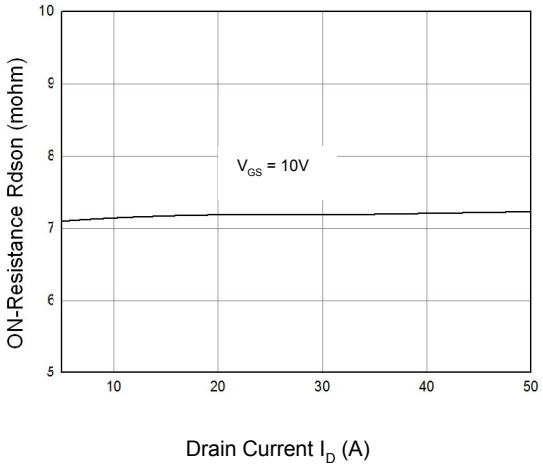


Figure 4.On-Resistance vs.Temperature

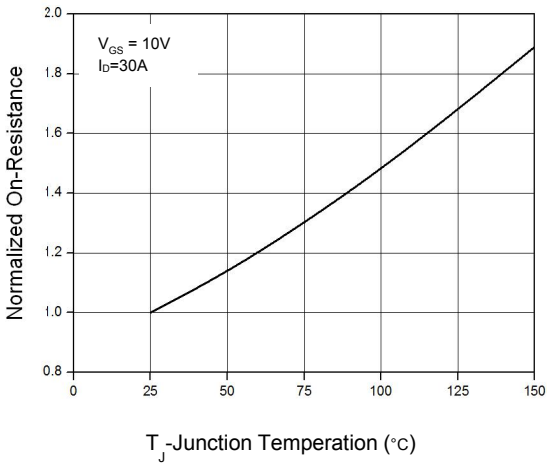


Figure 5.Body-Diode Characteristics

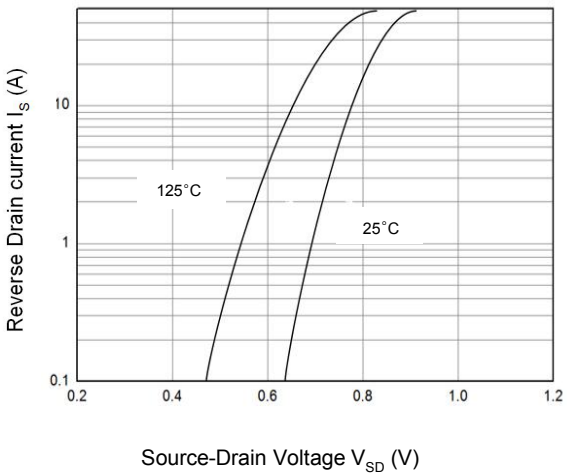


Figure 6.Capacitance Characteristics

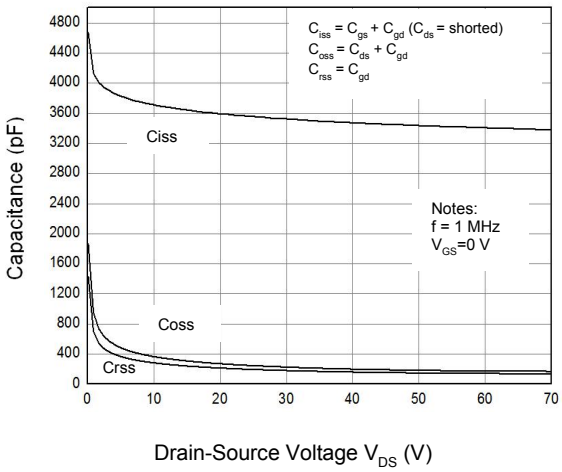


Figure 7.Gate Charge Characteristics

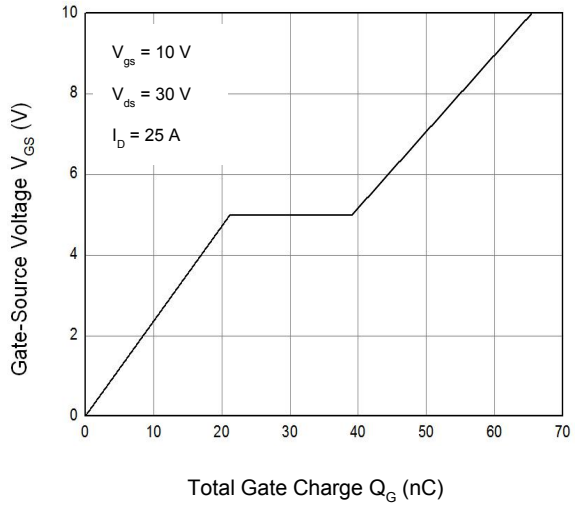


Figure 8.Drain Current Derating

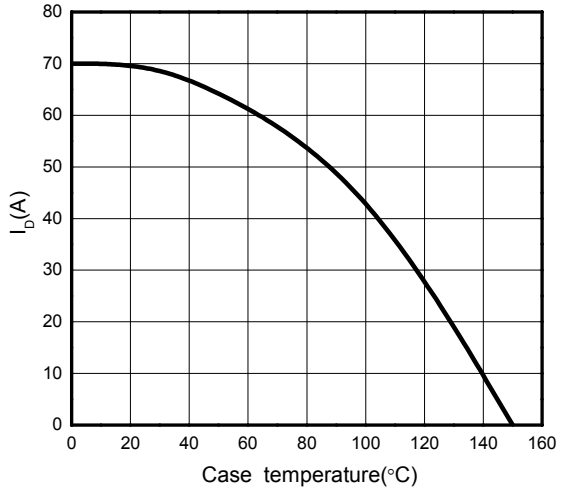


Figure 9.Power Dissipation vs.Temperature

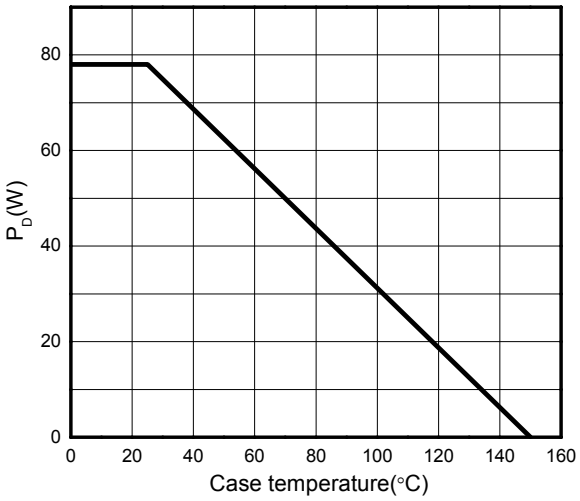


Figure 10: Safe Operating Area

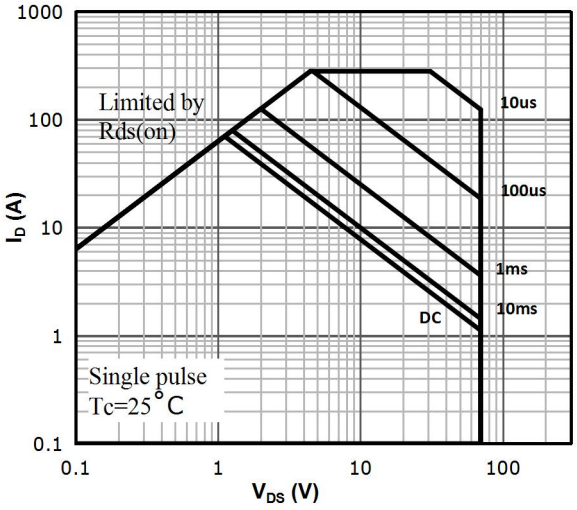
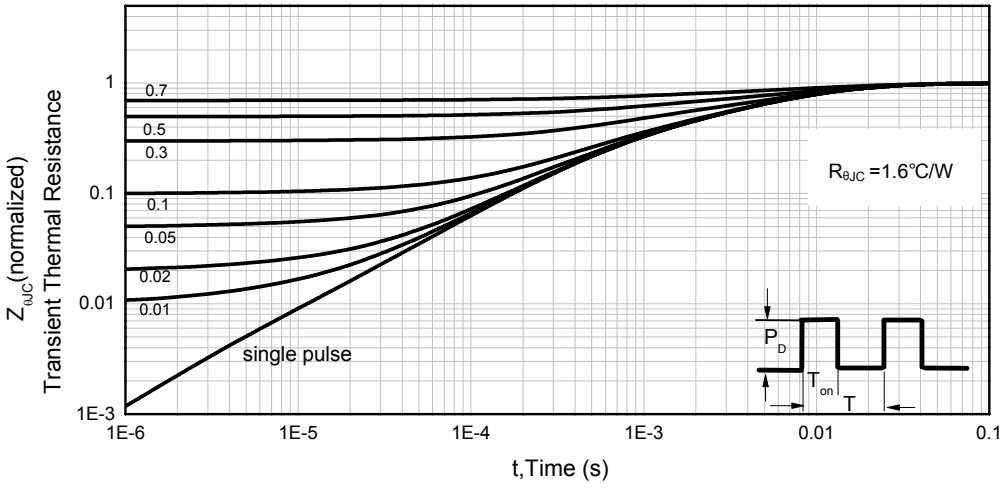
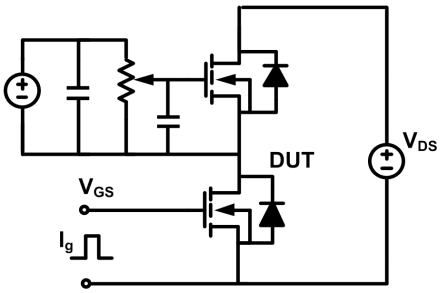


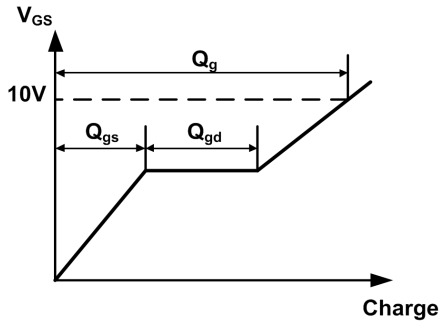
Figure 11. Normalized Maximum Transient Thermal Impedance (RthJC)



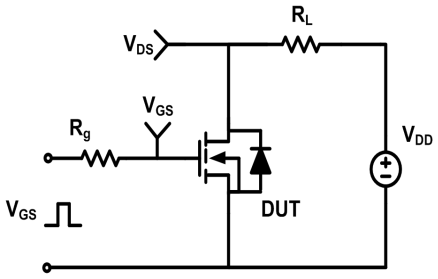
Test Circuit & Waveforms

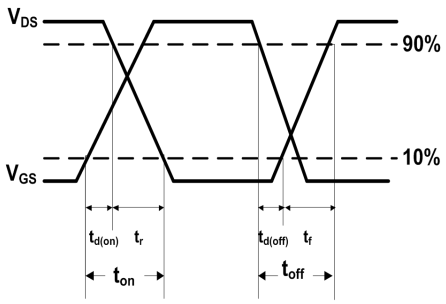
Gate Charge Test Circuit & Waveform



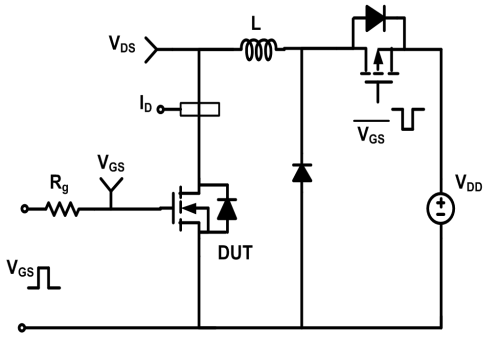


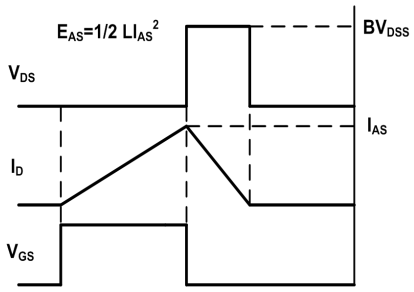
Resistive Switching Test Circuit & Waveform



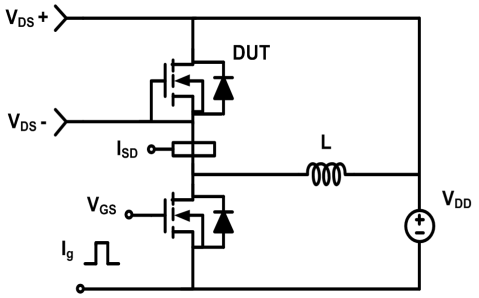


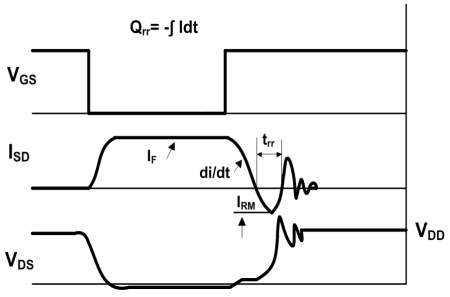
Unclamped Inductive Switching (UIS) Test Circuit & Waveform



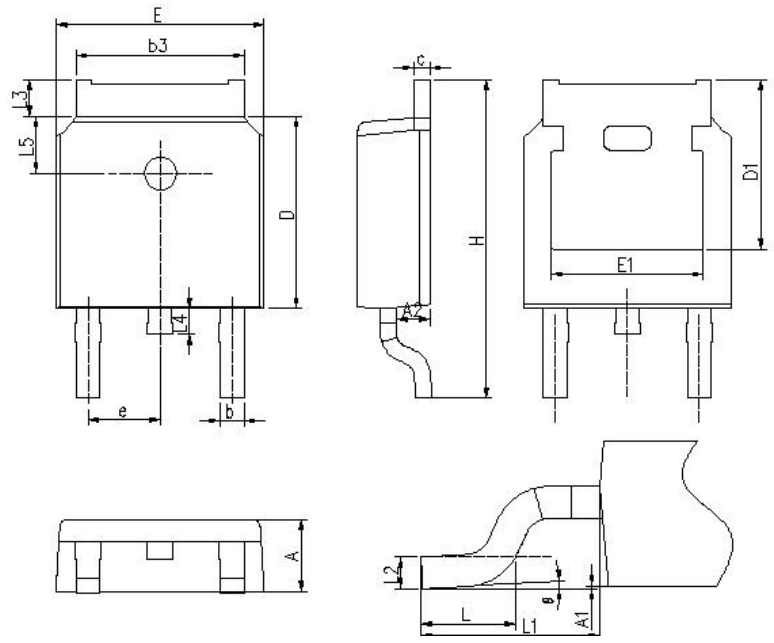


Diode Recovery Test Circuit & Waveform





Mechanical Dimensions for TO-252



DIMENSIONS IN MILLITMETERS			DIMENSIONS IN INCHES	
SYMBOL	MIN	MAX	MIN	MAX
A	2.18	2.4	0.086	0.094
A1	-	0.2	-	0.008
A2	0.9	1.17	0.035	0.046
b	0.65	0.9	0.026	0.035
b3	4.95	5.5	0.195	0.217
c	0.43	0.89	0.017	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.8	0.250	0.268
E1	4.32	-	0.170	-
e	2.286BSC		0.09BSC	
H	9.4	10.5	0.370	0.413
L	0.38	1.78	0.015	0.070
L1	2.90BSC		0.114BSC	
L2	0.51BSC		0.020BSC	
L3	0.88	1.28	0.035	0.050
L4	-	1.02	-	0.040
L5	1.65	1.95	0.065	0.077
θ	0°	10°	0°	10°

Version Information

LNG07R085H

Revision:2020-11-19,Rev 0.1

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