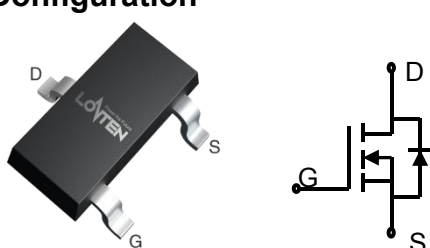


Lonten N-channel 30V, 5.8A, 26mΩ Power MOSFET

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 ◆ 30V,5.8A,$R_{DS(ON),max}=26m\Omega@V_{GS}=10V$ ◆ Improved dv/dt capability ◆ Fast switching ◆ Green device available Applications ◆ PWM application ◆ Load switch ◆ Power management	Product Summary <table> <tr> <td>V_{DSS}</td><td>30V</td></tr> <tr> <td>$R_{DS(on),max}@V_{GS}=10V$</td><td>26mΩ</td></tr> <tr> <td>I_D</td><td>5.8A</td></tr> </table> Pin Configuration  SOT-23 N-Channel MOSFET 	V_{DSS}	30V	$R_{DS(on),max}@V_{GS}=10V$	26mΩ	I_D	5.8A
V_{DSS}	30V						
$R_{DS(on),max}@V_{GS}=10V$	26mΩ						
I_D	5.8A						

Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	30	V
Continuous drain current ($T_A = 25^\circ\text{C}$)	I_D	5.8	A
Continuous drain current ($T_A = 100^\circ\text{C}$)		3.7	A
Pulsed drain current ¹⁾	I_{DM}	23.2	A
Gate-Source voltage	V_{GSS}	± 12	V
Power Dissipation ($T_A = 25^\circ\text{C}$)	P_D	1.4	W
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	89	$^\circ\text{C/W}$

Package Marking and Ordering Information

Device	Device Package	Marking
LNSC3400	SOT-23	3400

Electrical Characteristics
 $T_J = 25^{\circ}\text{C}$ 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	30	---	---	V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.65	1.0	1.35	V
Drain-source leakage current	I _{DSS}	V _{DS} =30 V, V _{GS} =0 V, T _J = 25°C	---	---	1	μA
		V _{DS} =24 V, V _{GS} =0 V, T _J = 125°C	---	---	10	μA
Gate leakage current, Forward	I _{GSSF}	V _{GS} =12 V, V _{DS} =0 V	---	---	100	nA
Gate leakage current, Reverse	I _{GSSR}	V _{GS} =-12 V, V _{DS} =0 V	---	---	-100	nA
Drain-source on-state resistance	R _{DS(on)}	V _{GS} =10 V, I _D =5.8 A	---	18	26	mΩ
		V _{GS} =4.5 V, I _D =5 A	---	20	32	mΩ
		V _{GS} =2.5V, I _D =4A	---	31	52	mΩ
Forward transconductance	g _{fs}	V _{DS} =5 V , I _D =5.8A	---	30	---	S
Dynamic characteristics						
Input capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, F = 1MHz	---	494	---	pF
Output capacitance	C _{oss}		---	62.4	---	
Reverse transfer capacitance	C _{rss}		---	53.7	---	
Gate resistance	R _g	V _{GS} =0V,V _{DS} =0V,f=1MHz	---	4.2	---	mΩ
Turn-on delay time	t _{d(on)}	V _{DD} = 15V,V _{GS} =10V, I _D =5.8 A, R _g =10Ω	---	7.6	---	ns
Rise time	t _r		---	113.2	---	
Turn-off delay time	t _{d(off)}		---	44.4	---	
Fall time	t _f		---	13.6	---	
Gate charge characteristics						
Gate to source charge	Q _{gs}	V _{DS} =15V, I _D =5.8A, V _{GS} = 10V	---	3.3	---	nC
Gate to drain charge	Q _{gd}		---	2.1	---	
Gate charge total	Q _g		---	13.6	---	
Drain-Source diode characteristics and Maximum Ratings						
Continuous Source Current	I _S		---	---	5.8	A
Pulsed Source Current ²⁾	I _{SM}		---	---	23.2	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =5.8A, T _J =25°C	---	---	1.2	V

Notes:

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

2: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Electrical Characteristics Diagrams

Figure 1. Typ. Output Characteristics

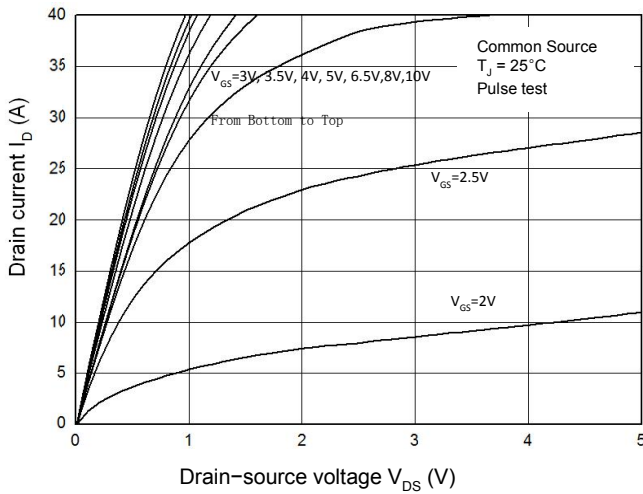


Figure 2. Transfer Characteristics

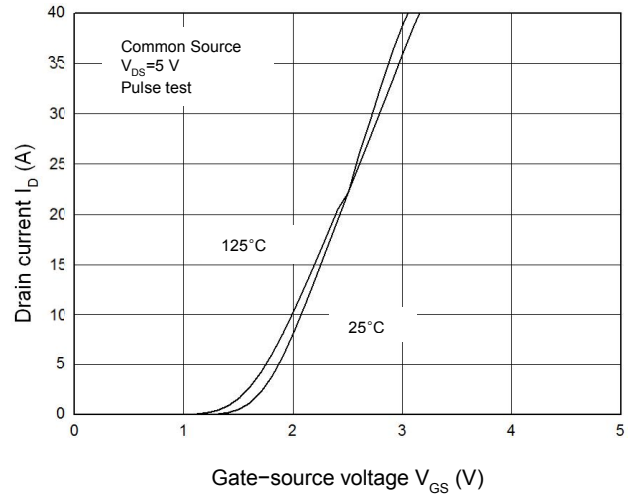


Figure 3. Capacitance Characteristics

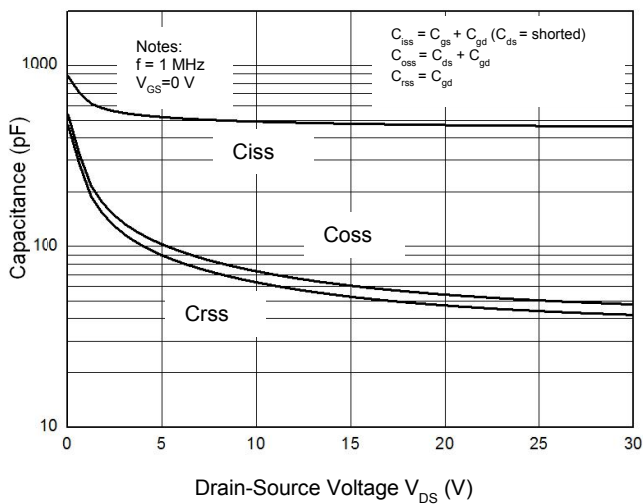


Figure 4. Gate Charge Waveform

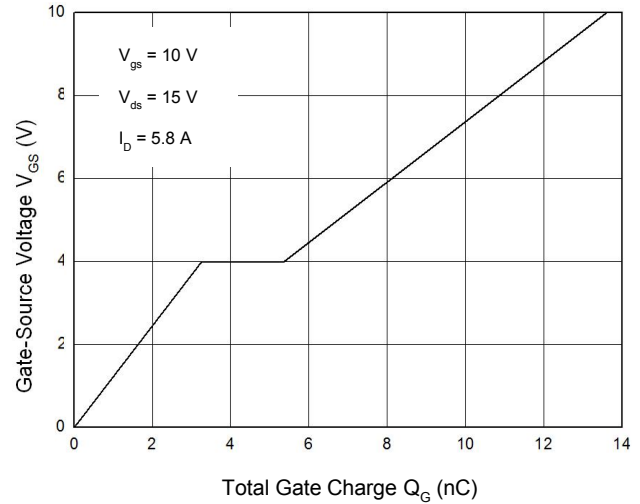


Figure 5. Body-Diode Characteristics

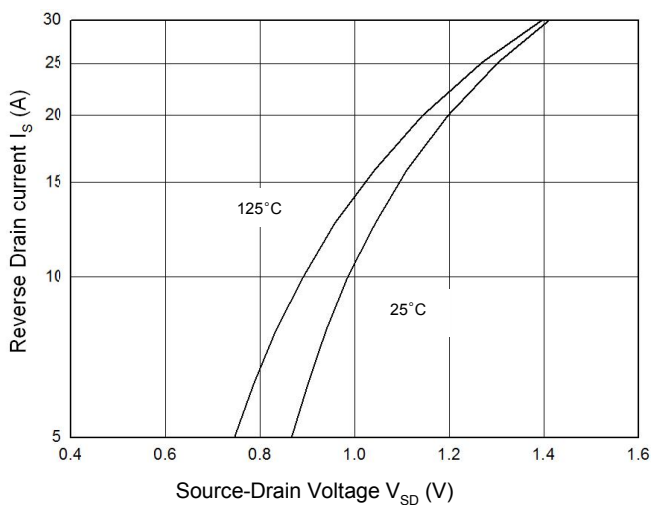


Figure 6. Rdson-Drain Current

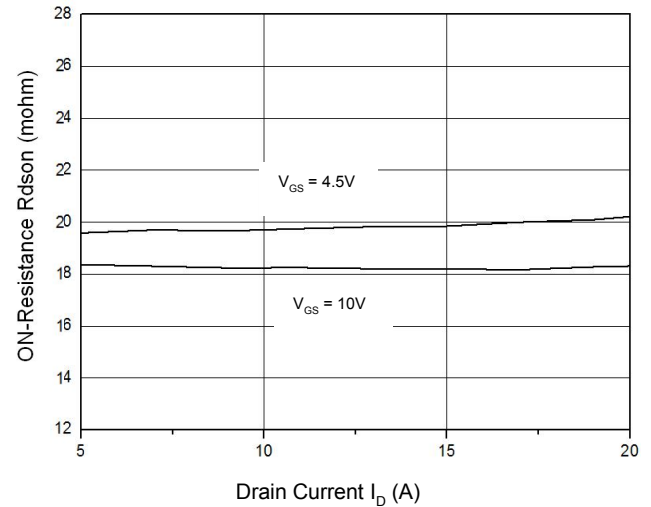


Figure 7. $R_{DS(on)}$ -Junction Temperature($^{\circ}\text{C}$)

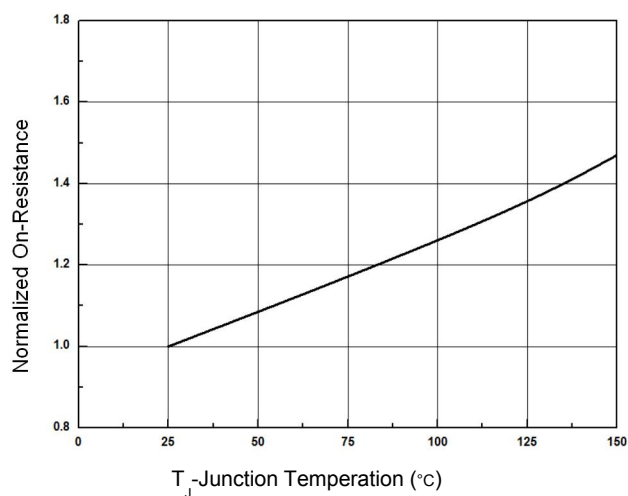


Figure 8. Maximum Safe Operating Area

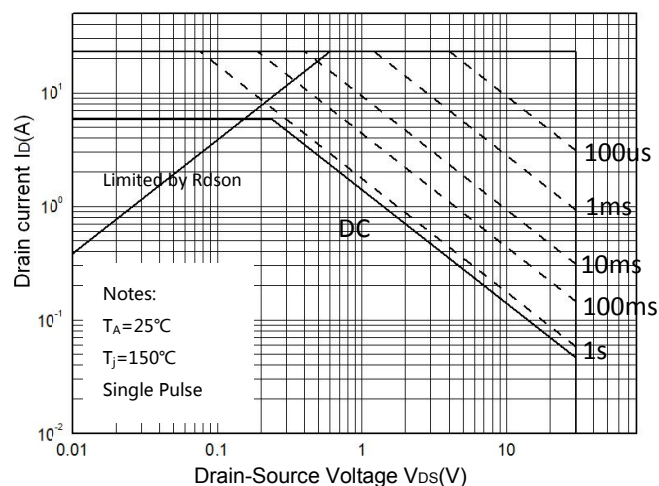
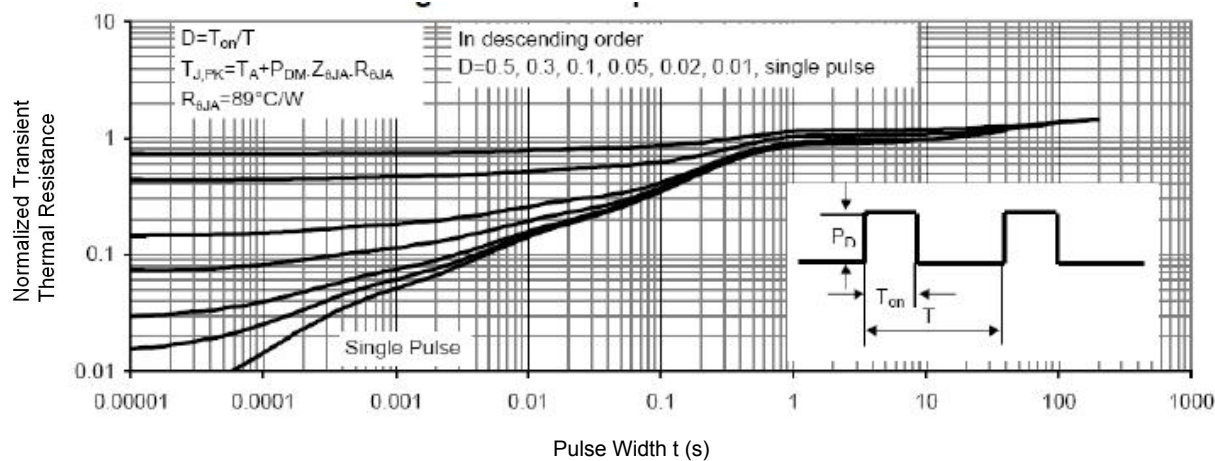


Figure 9. Normalized Maximum Transient Thermal Impedance (R_{thJA})



Test Circuit & Waveform

Figure 8. Gate Charge Test Circuit & Waveform

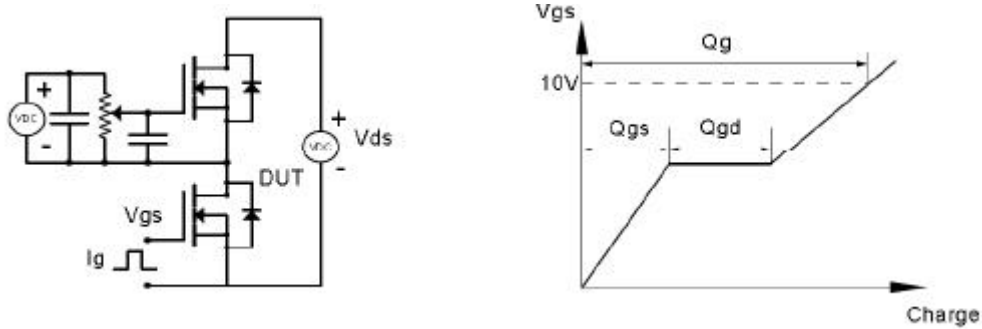


Figure 9. Resistive Switching Test Circuit & Waveforms

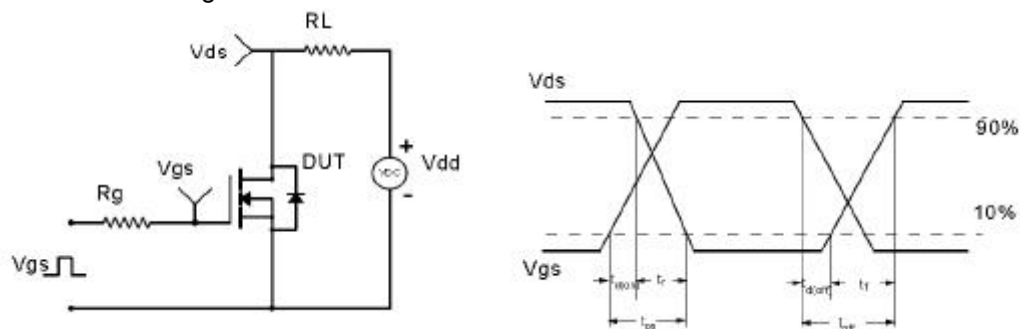


Figure 10. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

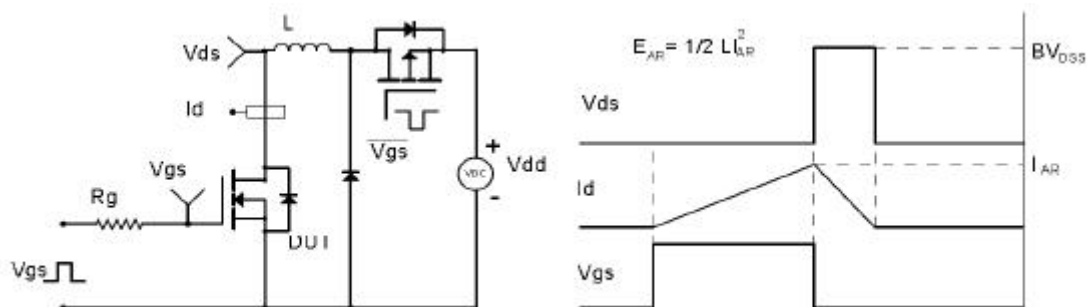
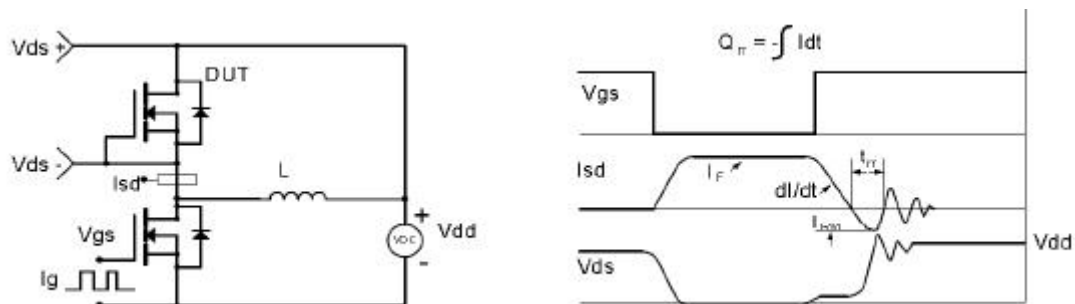
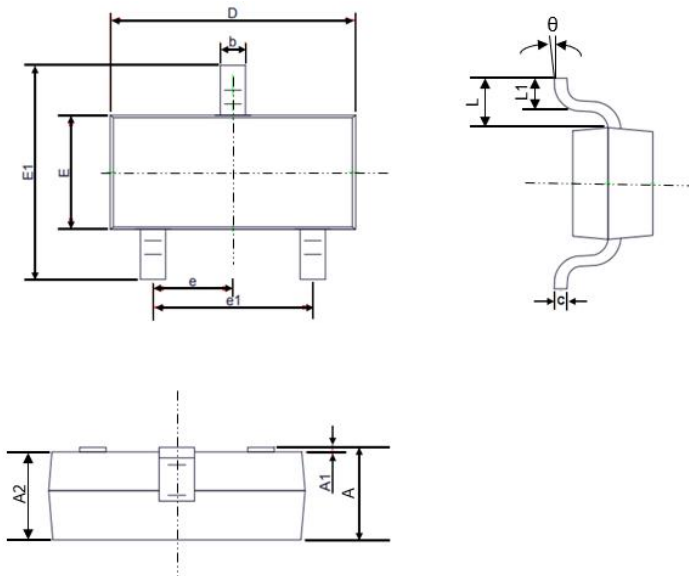


Figure 11. Diode Recovery Circuit & Waveform

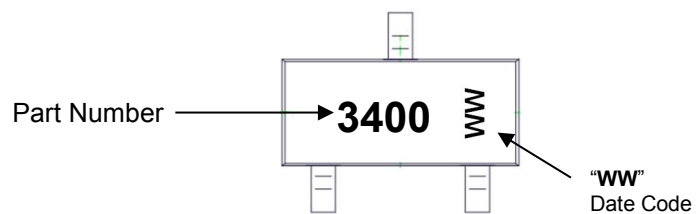


Mechanical Dimensions for SOT-23



SYMBOL	COMMON DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.20	0.035	0.047
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.043
b	0.39	0.45	0.015	0.018
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.30	2.50	0.091	0.098
e	0.95 TYP.		0.037 TYP.	
e1	1.90 REF.		0.075 REF.	
L	0.55 REF.		0.022 REF.	
L1	0.20	-	0.008	-
θ	0°	10°	0°	10°

SOT-23 Part Marking Information



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