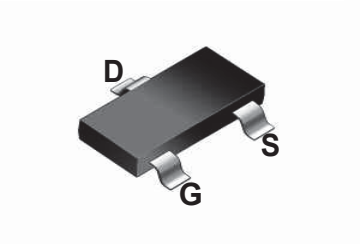
100V N-Channel MOSFETS LDN0988

SOT23-3 Pin Configuration

BVDSS	RDSON	ID
100V	41mΩ	3.5A

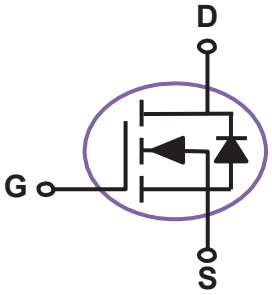


Feature

- *100V,3.5A, RDS(ON) =41mΩ@VGS = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

Applications

- *Notebook*
- *Load Switch*
- *LED applications*
- *Hand-held Instruments*



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Souce Voltage	V_{GS}	+20 / -12	V
Drain Current – Continuous (T_A=25℃)	I_D	3.5	A
Drain Current – Continuous (T_A=70 ℃)		2.7	A
Drain Current – Pulsed[1]	I_{DM}	14	A
Power Dissipation (T_A=25℃)	P_D	1.56	W
Power Dissipation – Derate above 25℃		12.5	mW/ ℃
Storage Temperature Rang℃e	T_{STG}	-55 to 150	℃
Operating Junction Temperature Rang℃	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	80	℃/W

MOSFET ELECTRICAL CHARACTERISTICS T_A= 25℃ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=-250uA	100	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=100V,VGS=0V,TJ=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=100℃	---	---	10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS} 20V , V_{DS}=0V	---	---	100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=3A	---	34	41	mΩ
		V_{GS}=4.5V , I_D=2A	---	46	60	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1	1.5	2.5	V
Forward Transconductance	gfs	V_{DS}=10V , I_D=1A	---	3.8	---	S
Total Gate Charge[2,3]	Q_g	V_{DS}=30V , V_{GS}=10V , I_D=3A	---	7.7	11	nC
Gate-Source Charge[2,3]	Q_{gs}		---	1.1	1.6	
Gate-Drain Charge[2,3]	Q_{gd}		---	3	4.5	
Turn-On Delay Time[2,3]	$T_{d(on)}$	V_{DD}=50V , V_{GS}=10V , R_G=3.3Ω I_D=1A	---	7.4	15	ns
Rise Time[2,3]	T_r		---	12	24	
Turn-Off Delay Time[2,3]	$T_{d(off)}$		---	23	46	
Fall Time[2,3]	T_f		---	16	32	
Input Capacitance	C_{iss}	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	582	3000	pF
Output Capacitance	C_{oss}		---	188	280	
Reverse Transfer Capacitance	C_{rss}		---	12	240	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	0.9	---	Ω

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	---	---	3.5	A
Pulsed Source Current	I_{SM}		---	---	7	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
Reverse Recovery Time[3]	T_{rr}	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	28	---	ns
Reverse Recovery Charge[3]	Q_{rr}		---	23	---	nC

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width 300us , duty cycle 2%.
3. Essentially independent of operating temperature.

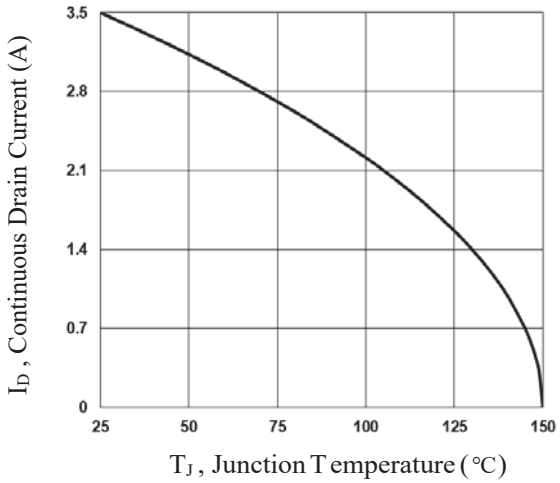


Fig.1 Continuous Drain Current vs. T_J

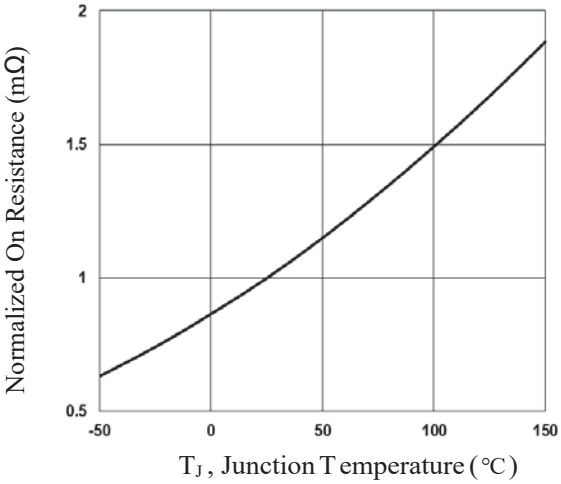


Fig.2 Normalized RDSON vs. T_J

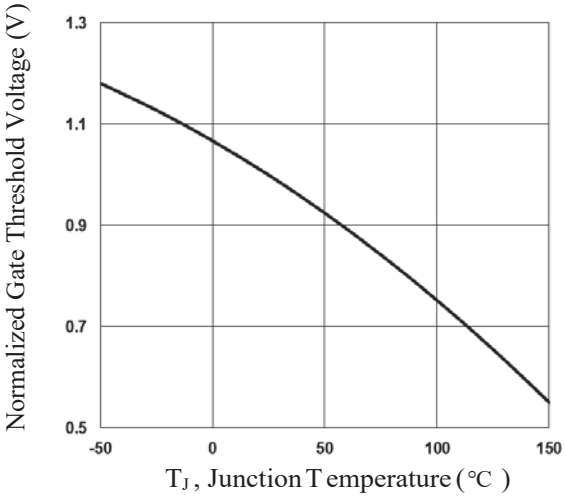


Fig.3 Normalized V_{th} vs. T_J

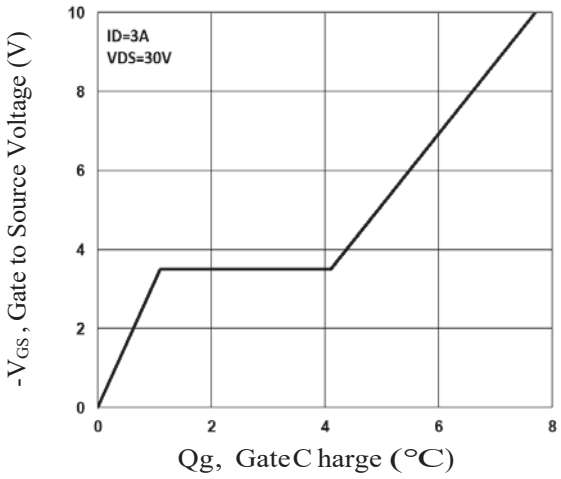


Fig.4 Gate Charge Waveform

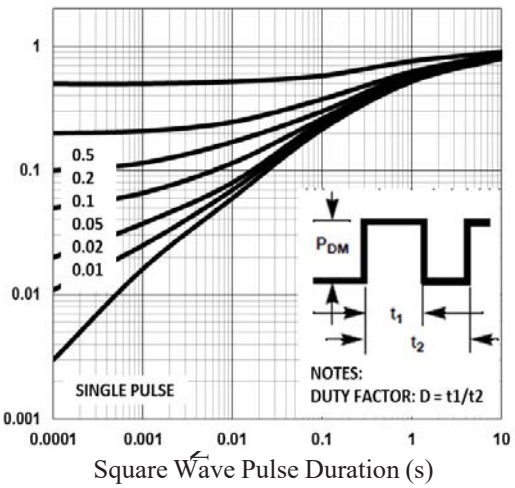


Fig.5 Normalized Transient Impedance

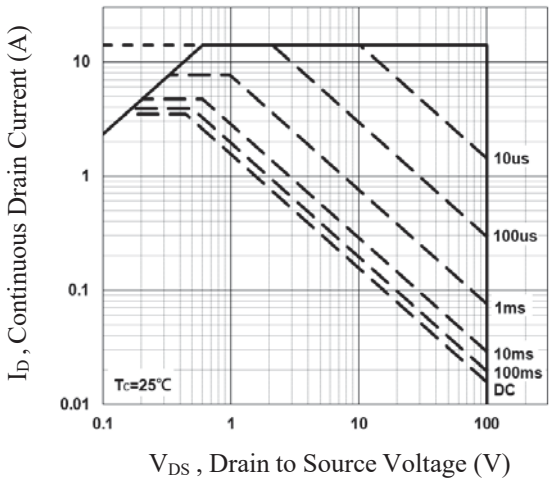


Fig.6 Maximum Safe Operation Area

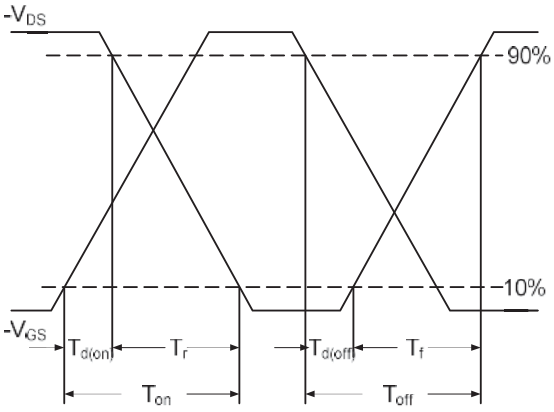


Fig.7 Switching Time Waveform

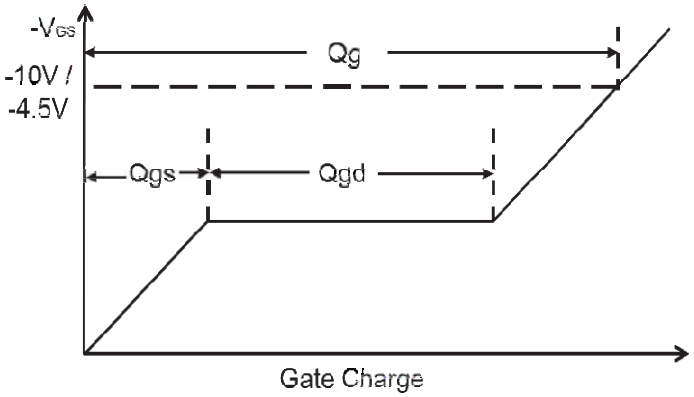
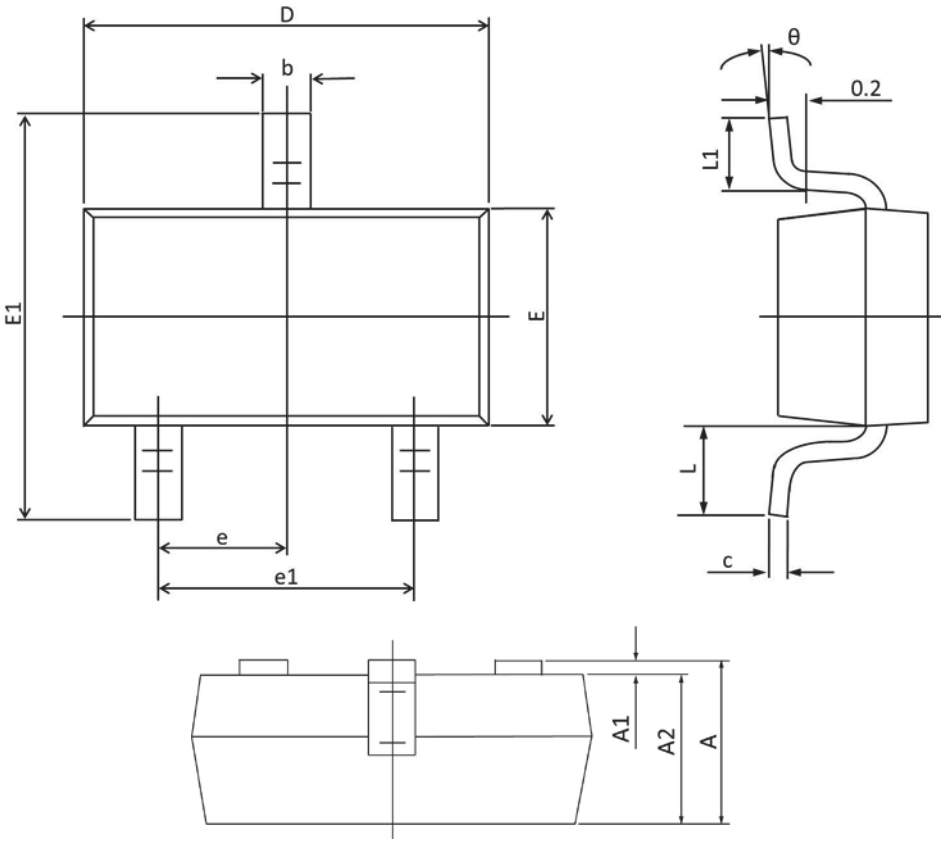


Fig.8 Gate Charge Waveform

SOT23-3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.450	0.041	0.057
A1	0.000	0.150	0.000	0.006
A2	0.900	1.300	0.035	0.051
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.050	0.111	0.119
E	1.500	1.750	0.059	0.068
E1	2.600	3.000	0.101	0.117
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.700 REF.		0.028 REF.	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°