

CHILINK N-Channel Enhancement Mode SGT Power MOSFET

Description

The LXS1H100M combines advanced SGT technology to provide excellent $R_{DS(ON)}$. It is tailored to minimize conduction loss, and provide superior switching performance.

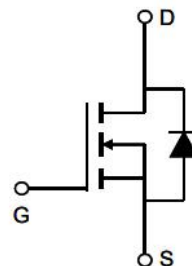
Features

- $V_{DS}=100V$, $I_D=100A$
 $R_{DS(ON)typ.}=6m\Omega@V_{GS}=10V$
 $R_{DS(ON)typ.}=8m\Omega@V_{GS}=4.5V$
- Fast Switching
- High Power and Current Handling Capability
- Termination is Lead-free and RoHS Compliant

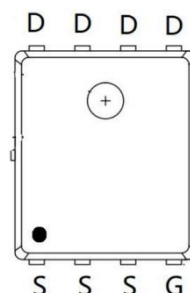


Applications

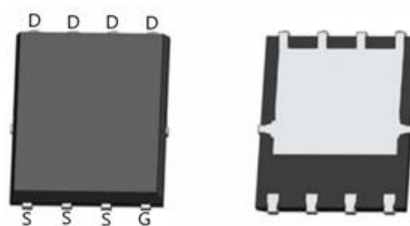
- Synchronous Rectification for AC/DC Adapter
- Load Switch
- Power Management



Schematic Diagram



Pin Assignment



PDFN5*6 Package

Maximum Ratings

($T_A = 25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	MAX	UNIT
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D(T_C=25^\circ C)$	100	A
	$I_D(T_C=100^\circ C)$	65	A
Pulsed Drain Current ^{BC}	I_{DM}	300	A
Power Dissipation	P_D	3.6	W
Maximum Power Dissipation ^A	P_{DSM}	75	W
Single Pulse Avalanche Energy	E_{AS}	402	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Characteristic

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	35	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

($T_A = 25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100			V
Gate-Threshold Voltage	V _{th(GS)}	V _{DS} = V _{GS} , I _D =250 uA	1.5	2	2.5	V
Gate-Body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	uA
Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =30A		6	8	mΩ
		V _{GS} =4.5V, I _D =30A		8	10	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		40		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, F=1MHz		4780		pF
Output Capacitance	C _{oss}			610		
Reverse Transfer Capacitance	C _{rss}			24		
Switching Capacitance						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50V, R _L =3Ω V _{GS} = 10V, R _{GEN} =3Ω		18		ns
Turn-On Rise Time	t _r			28		ns
Turn-Off Delay Time	t _{d(off)}			68		ns
Turn-Off Fall Time	t _f			73		ns
Total Gate Charge	Q _g	V _{DS} = 50V, I _D =20A, V _{GS} =10V		60		nC
Gate-Source Charge	Q _{gs}			18		nC
Gate-Drain Charge	Q _{gd}			15		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =20A			1.4	V
Diode Forward Current	I _S				100	A

Notes:

- The Power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using $\leq 10\text{s}$ junction-to ambient thermal resistance.
- Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^{\circ}\text{C}$.
- The Static characteristics in Figures are obtained using $<300\mu\text{s}$ pulses, duty cycle 2% max.

Typical Electrical and Thermal Characteristics

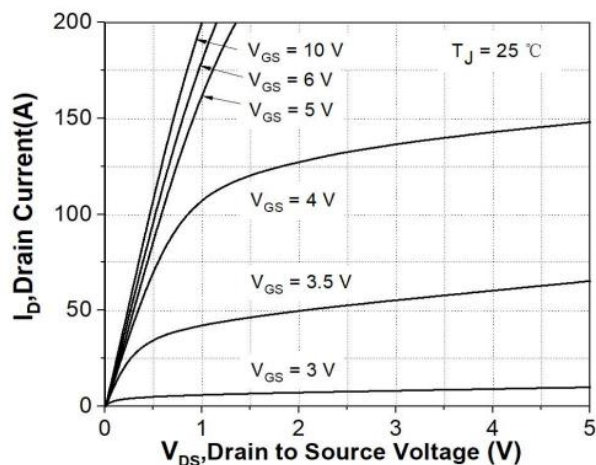


Figure 1. Output Characteristics

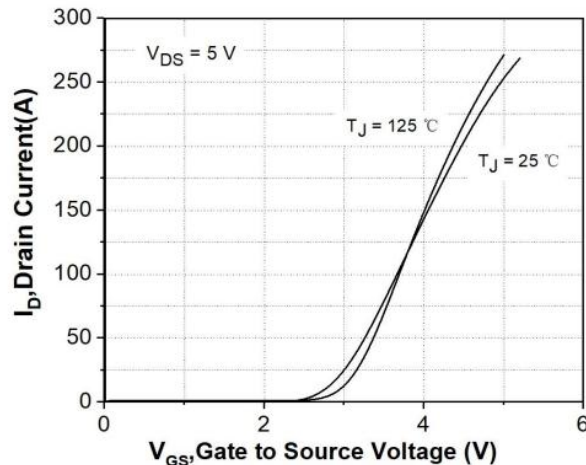


Figure 2. Transfer Characteristics

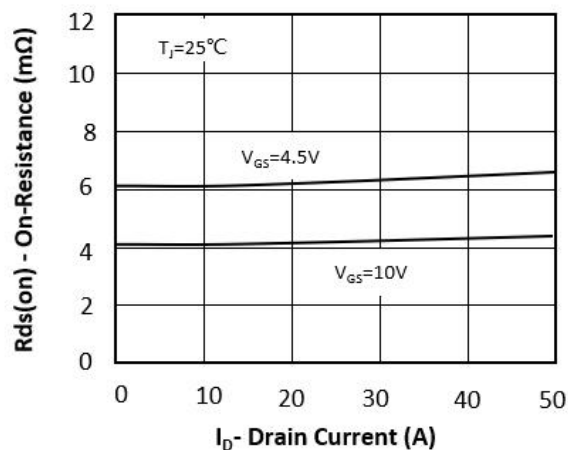


Figure 3. On-Resistance vs. Drain Current

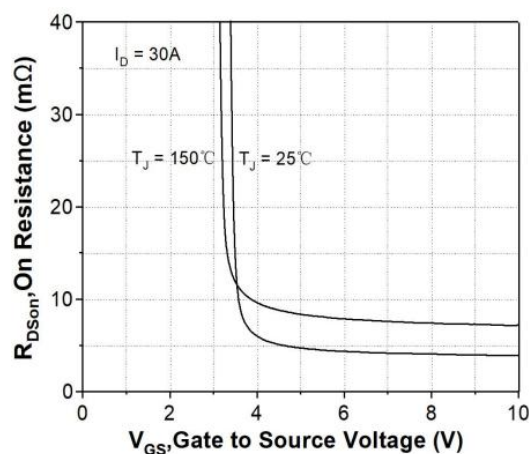


Figure 4. On-Resistance vs. Gate-to-Source Voltage

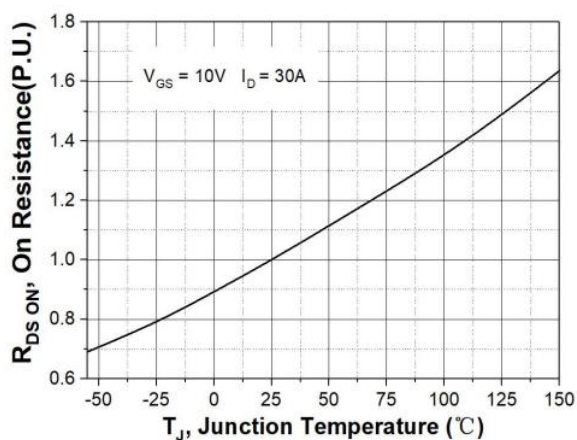


Figure 5. On-Resistance vs. Junction Temperature

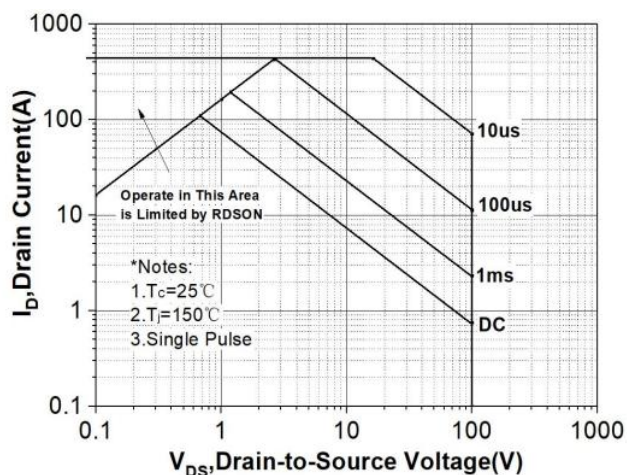


Figure 6. Safe Operating Area

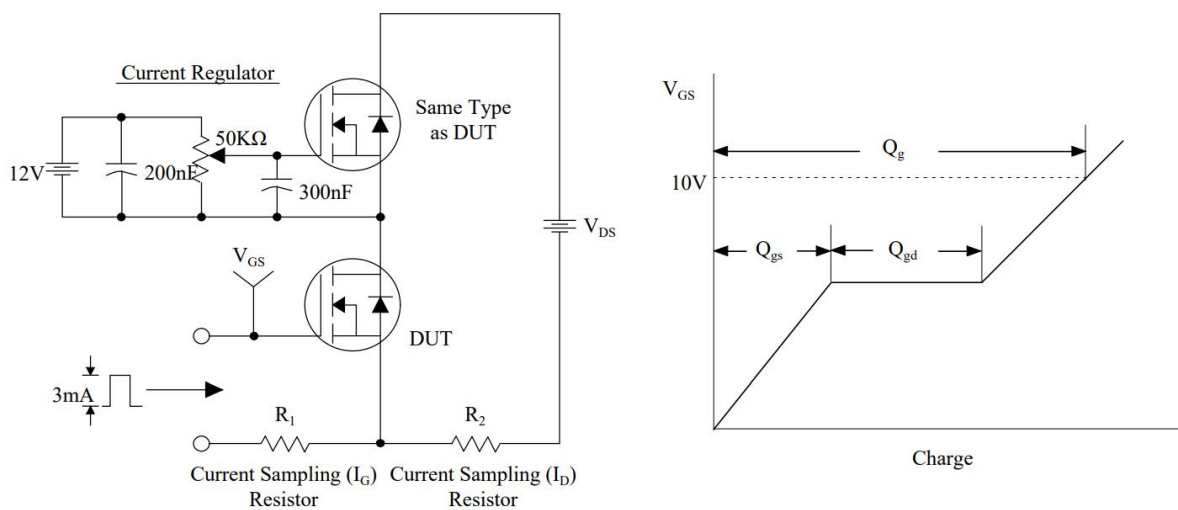


Figure 7. Gate Charge Test Circuit & Waveform

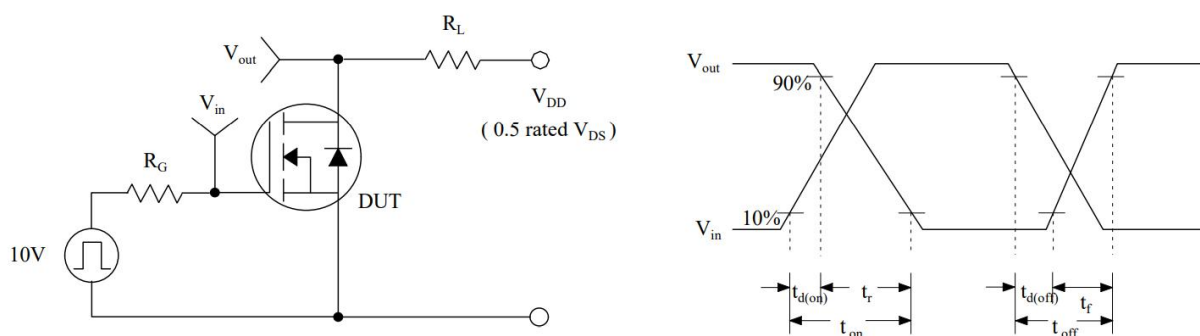


Figure 8. Resistive Switching Test Circuit & Waveforms

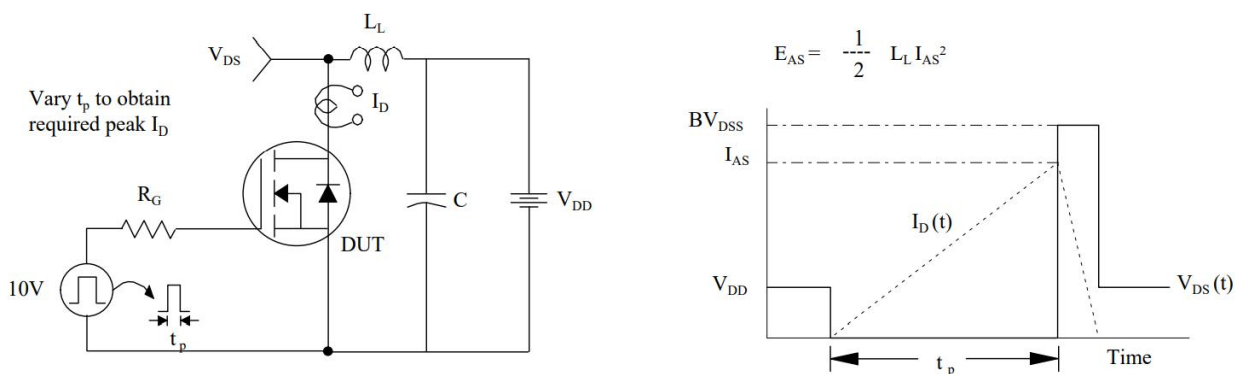
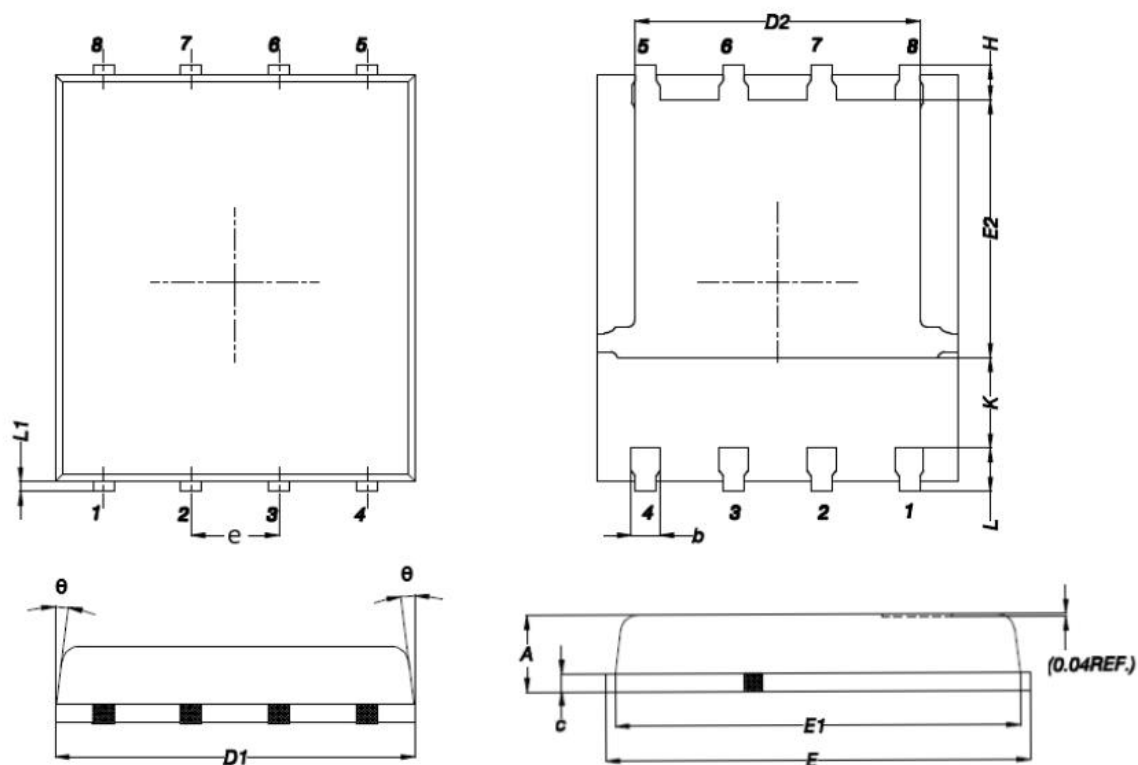


Figure 9. Unclamped Inductive Switching Test Circuit & Waveforms

PDFN5*6 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.300	0.020	0.012
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°

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