



SSCL9DN40GN6

Dual N-Channel Enhancement Mode MOSFET

Features

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D
40V	±20V	7.5mΩ@10V	54A
		10.5mΩ@4.5V	

Description

This device is N-Channel enhancement MOSFET. Uses SGT technology and design to provide excellent RDSON with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit.

100% UIS + ΔVDS + Rg Tested!

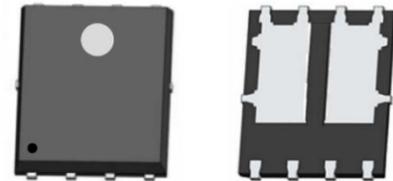
Applications

- Motor Drive Control
- DCDC Conversion
- Power Supplies
- Synchronous Rectification

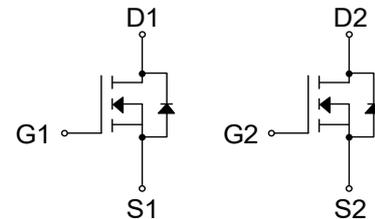
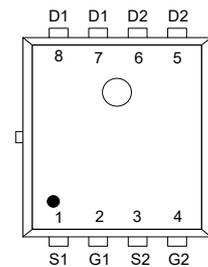
Ordering Information

Device	Package	Shipping
SSCL9DN40GN6	PDFN5X6-8L	5000/Reel

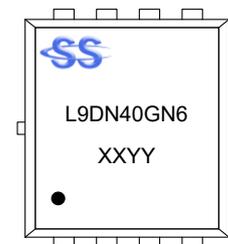
Pin Configuration



PDFN5X6-8L



Pin Configuration (Top View)



Marking

(XXYY: Internal Traceability Code)



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

Symbol	Parameter	Ratings	Unit	
V_{DSS}	Drain-to-Source Voltage	40	V	
V_{GSS}	Gate-to-Source Voltage	± 20	V	
I_D	Continuous Drain Current ^d	$T_C=25^\circ\text{C}$	54	A
		$T_C=100^\circ\text{C}$	29	
I_{DSM}	Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	12	A
		$T_A=70^\circ\text{C}$	8.8	
I_{DM}	Pulsed Drain Current ^b	215	A	
P_D	Power Dissipation ^c	$T_C=25^\circ\text{C}$	42	W
		$T_C=100^\circ\text{C}$	17	
P_{DSM}	Power Dissipation ^a	$T_A=25^\circ\text{C}$	2.1	W
		$T_A=70^\circ\text{C}$	1.3	
I_{AS}	Avalanche Current ^b L=0.5mH Single Pulse	12	A	
E_{AS}	Avalanche Energy ^b L=0.5mH Single Pulse	36	mJ	
T_J	Operation junction temperature	-55~150	°C	
T_{STG}	Storage temperature range	-55~150		

➤ **Thermal Resistance Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)**

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	60	°C/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	3	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz.copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user is specific board design. The power dissipation is based on the $t \leq 10\text{s}$ thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
- The maximum current rating is package limited.

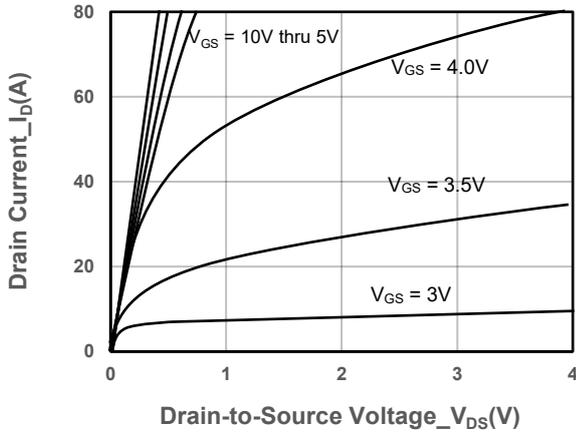


➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

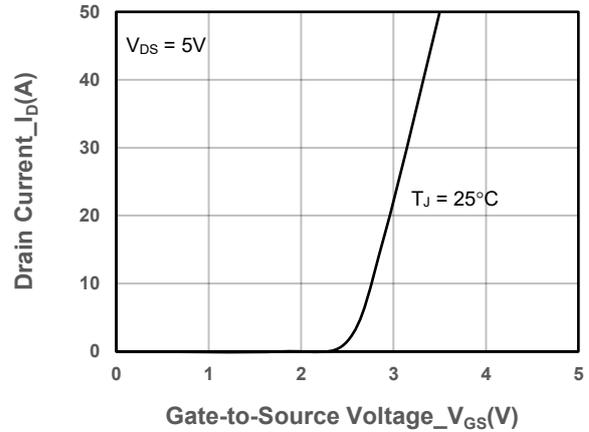
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.7	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 12A		7.5	10.5	mΩ
		V _{GS} = 4.5V, I _D = 10A		10.5	17	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} = 0V			1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} = 5V, I _D = 12A		30		S
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 12A		0.8	1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		1.5		Ω
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		830		pF
Output Capacitance	C _{OSS}			340		
Reverse Transfer Capacitance	C _{RSS}			7.0		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 20V, I _D = 12A		18		nC
Gate to Source Charge	Q _{GS}			4.0		
Gate to Drain Charge	Q _{GD}			3.6		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 20V, I _D = 12A, R _G = 3Ω		7.0		ns
Rise Time	T _r			3.5		
Turn-off Delay Time	T _{D(OFF)}			23		
Fall Time	T _f			5.6		
Diode Recovery Time	T _{rr}	I _F =12A, di/dt=100A/us		15		ns
Diode Recovery Charge	Q _{rr}	I _F =12A, di/dt=100A/us		24		nC



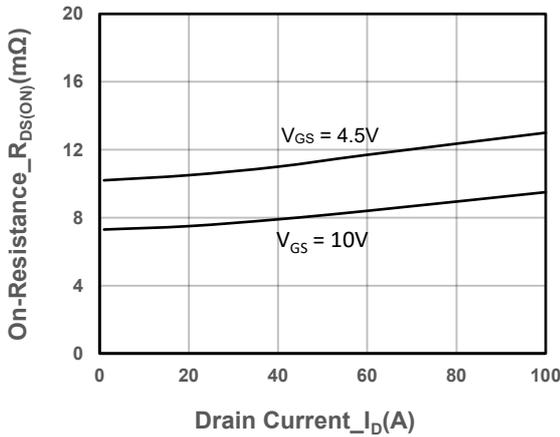
➤ **Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)**



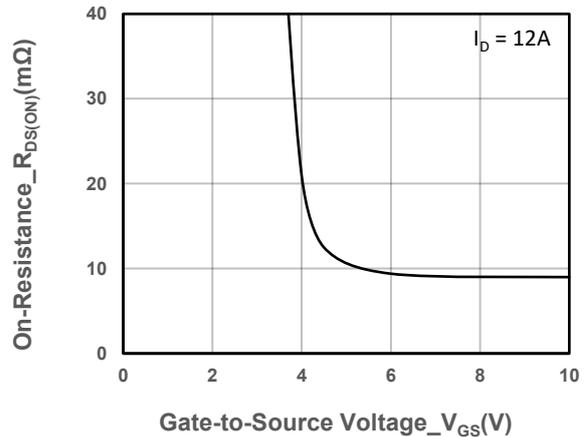
Output Characteristics



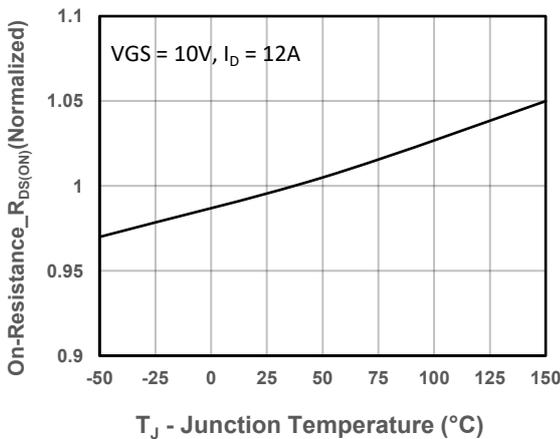
Transfer Characteristics



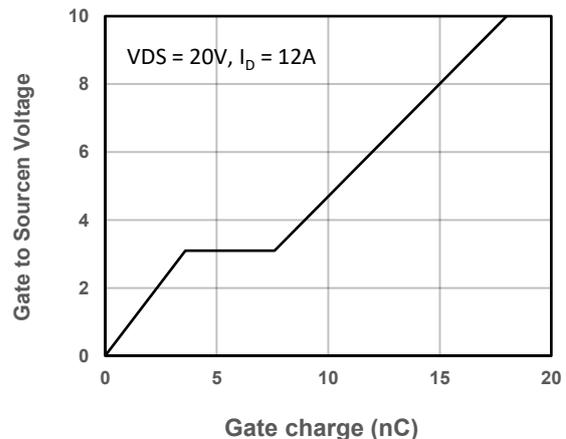
On-Resistance vs. Drain Current and Gate Voltage



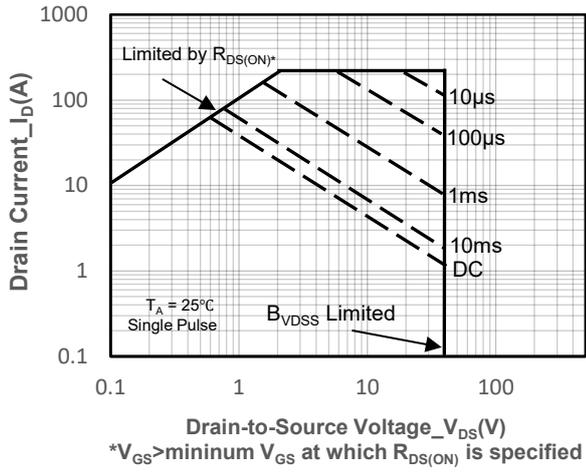
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



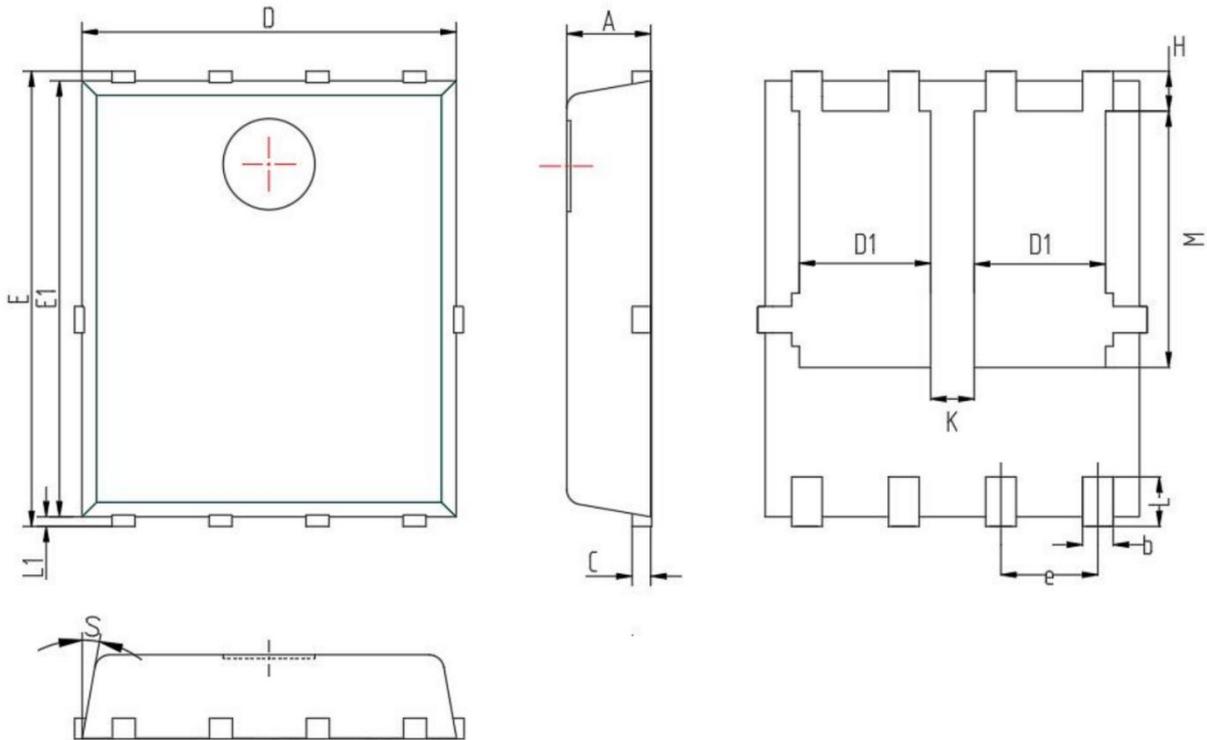
Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient



➤ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	0.9	1.10	1.20
b	0.25	0.30	0.5
C	0.20	0.25	0.35
D	4.80	5.00	5.20
D1	1.50	1.70	1.80
E	5.90	6.00	6.30
E1	5.60	5.75	5.90
e	1.27BSC		
H	0.48	0.58	0.80
K	0.50	0.60	0.70
L	0.50	0.60	0.84
L1	0.10	0.15	0.30
M	3.30	3.48	3.67
S	12° BSC		



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