



SSCL045N40GN6

N-Channel Enhancement Mode MOSFET

➤ Features

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D
40V	±20V	4.5 mΩ@10V	72A
		6.6 mΩ@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.

Lead-Free

100% UIS + ΔVDS + Rg Tested!

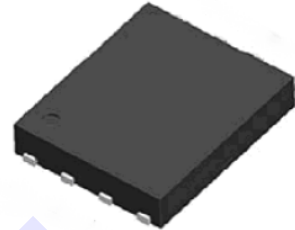
➤ Applications

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

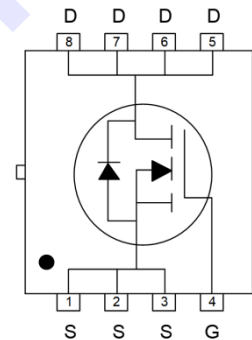
➤ Ordering Information

Device	Package	Shipping
SSCL045N40GN6	PDFN5X6-8L	5000/Reel

➤ Pin Configuration



PDFN5X6-8L (Top View)



Pin Configuration



Marking

(XXYY: Internal Traceability Code)



➤ Absolute Maximum Ratings (T_A=25°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°C	72
		T _C =100°C	46
I _{DSM}	Continuous Drain Current ^a	T _A =25°C	17
		T _A =70°C	14
I _{DM}	Pulsed Drain Current ^b	288	A
P _D	Power Dissipation ^c	T _C =25°C	50
		T _C =100°C	20
P _{DSM}	Power Dissipation ^a	T _A =25°C	2.7
		T _A =70°C	1.7
I _{AS}	Avalanche Current ^b L=0.5mH Single Pulse	18	A
E _{AS}	Avalanche Energy ^b L=0.5mH Single Pulse	81	mJ
T _J	Operation junction temperature	-55~150	°C
T _{STG}	Storage temperature range	-55~150	

➤ Thermal Resistance Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Ratings	Max.	Unit
R _{θJA}	Junction-to-Ambient Thermal Resistance ^a	46	60	°C/W
R _{θJC}	Junction-to-Case Thermal Resistance	2.5	3.3	

Note:

- The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz.copper, in a still air environment with T_A=25°C. The value in any given application depends on the user is specific board design. The power dissipation is based on the t≤10s thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation P_D is based on T_{J(MAX)}=150°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.

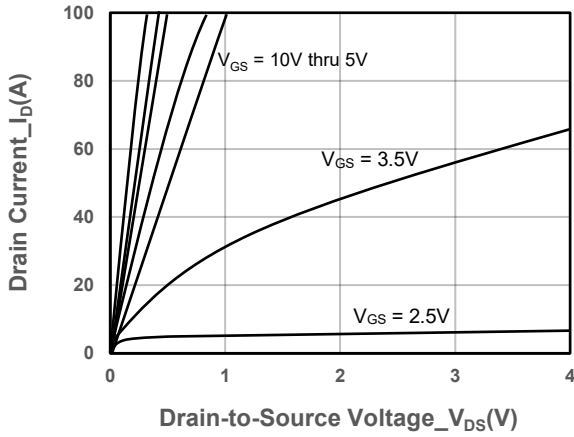


➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

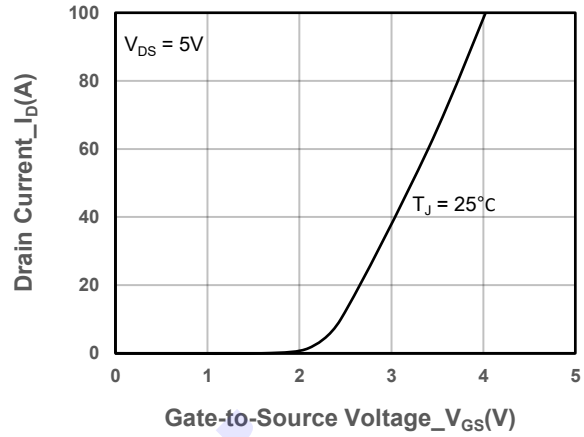
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.0	1.6	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		4.5	6.6	mΩ
		V _{GS} = 4.5V, I _D = 10A		6.6	9.5	
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 = 10A		17		S
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 10A		0.75	1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		3.1		Ω
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		951		pF
Output Capacitance	C _{OSS}			560		
Reverse Transfer Capacitance	C _{RSS}			33		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 20V, I _D = 20A		16		nC
Gate to Source Charge	Q _{GS}			4		
Gate to Drain Charge	Q _{GD}			2.5		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 20V, I _D = 20A, R _G = 3Ω		7		ns
Rise Time	T _r			3.5		
Turn-off Delay Time	T _{D(OFF)}			29		
Fall Time	T _f			4		
Diode Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us		39		ns
Diode Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		23		nC



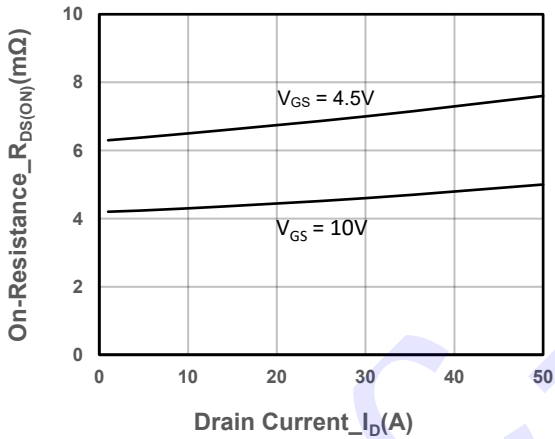
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



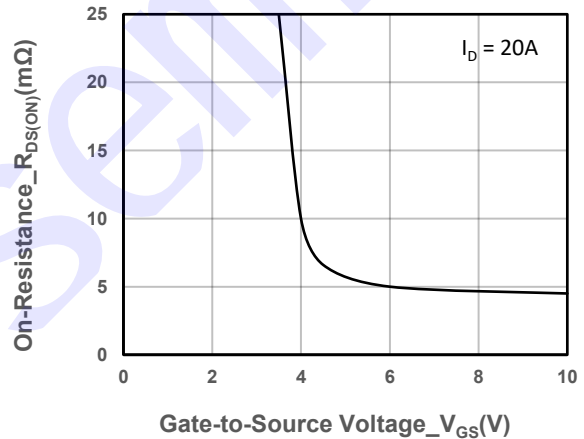
Output Characteristics



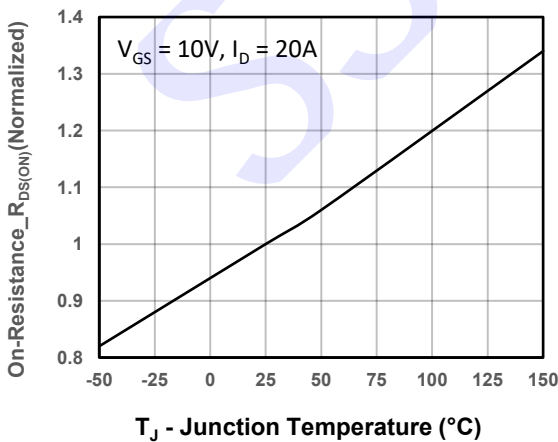
Transfer Characteristics



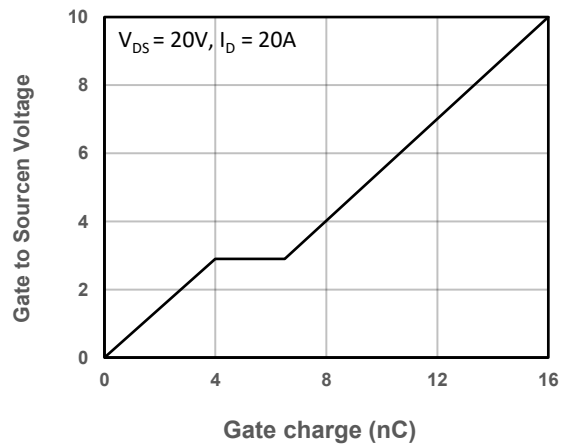
On-Resistance vs. Drain Current and Gate Voltage



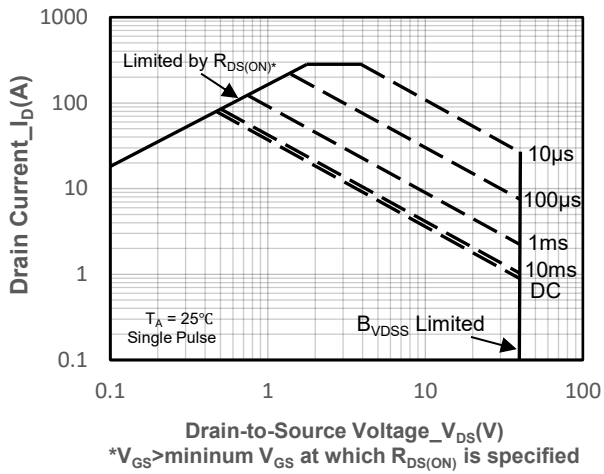
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



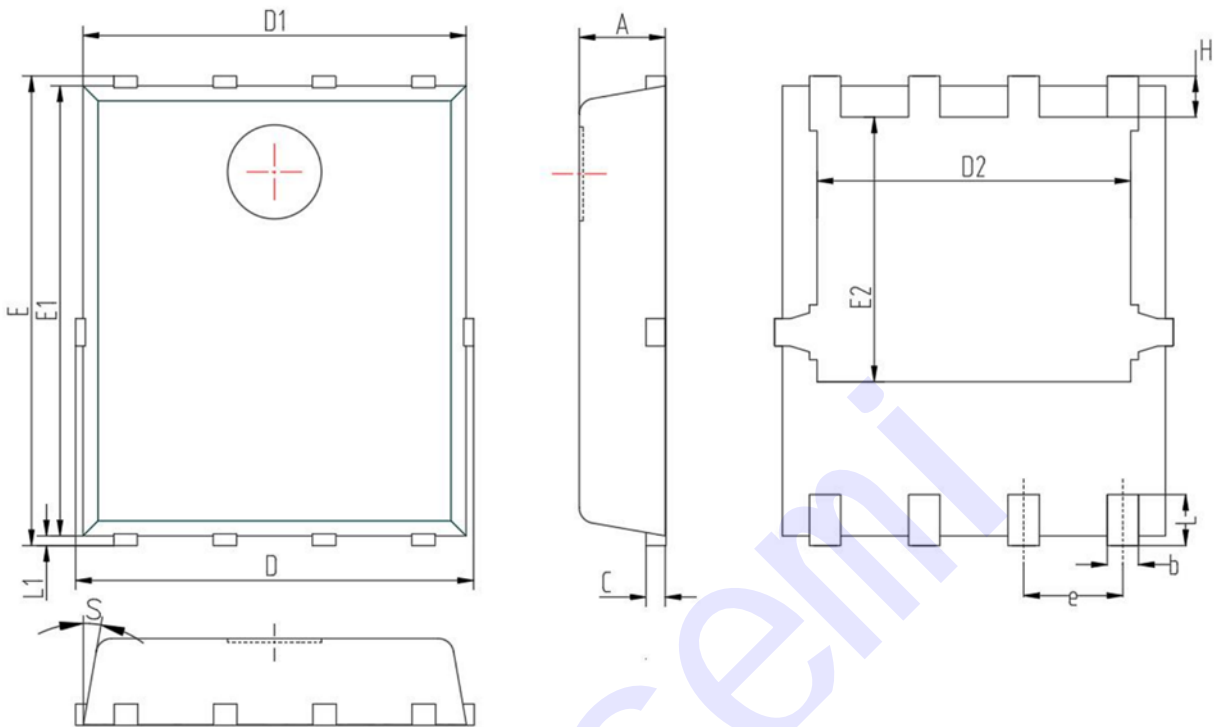
Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient

SSC-semi

➤ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	0.90	1.05	1.20
b	0.25	0.30	0.51
c	0.15	0.25	0.35
D	4.80	5.10	5.40
D1	4.80	5.00	5.20
D2	3.70	4.00	4.30
E	5.80	6.15	6.50
E1	5.50	5.75	5.95
E2	3.30	3.45	3.67
e	1.27BSC		
H	0.40	0.60	0.93
L	0.45	0.65	0.85
L1	0.00	0.10	0.25
S	0°	--	12°



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