SSCL022N40GN6

N-Channel Enhancement Mode MOSFET

➢ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
40V	±20V	2.2 mΩ@10V	130A
		3 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.

100% UIS + ΔVDS + Rg Tested!

➢ Applications

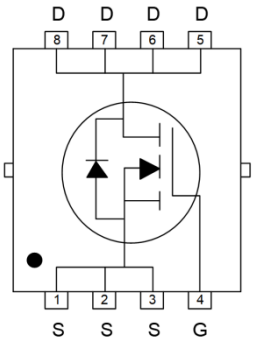
- DC/DC converters
- Power supplies
- Motor Drive Control
- Synchronous rectification

➢ Ordering Information

Device	Package	Shipping
SSCL022N40GN6	PDFN5X6-8L	5000/Reel

➢ Pin Configuration

PDFN5X6-8L (Top View)



Pin Configuration

Marking

(XXYY: Internal Traceability Code)

➢ Absolute Maximum Ratings (T_A=25℃ 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℃	130	A
		T_C=100℃	82	
I_{DSM}	Continuous Drain Current [a]	T_A=25℃	25	A
		T_A=70℃	21	
I_{DM}	Pulsed Drain Current [b]		520	A
P_D	Power Dissipation [c]	T_C=25℃	83	W
		T_C=100℃	33	
P_{DSM}	Power Dissipation [a]	T_A=25℃	3.1	W
		T_A=70℃	2.0	
I_{AS}	Avalanche Current [b] L=0.5mH Single Pulse		24	A
E_{AS}	Avalanche Energy [b] L=0.5mH Single Pulse		144	mJ
T_J	Operation junction temperature		-55~150	℃
T_{STG}	Storage temperature range		-55~150	

➢ Thermal Resistance Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	40	55	℃/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	1.5	2.0	

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz.copper, in a still air environment with T_A=25℃.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.

b. Repetitive rating, pulse width limited by junction temperature.

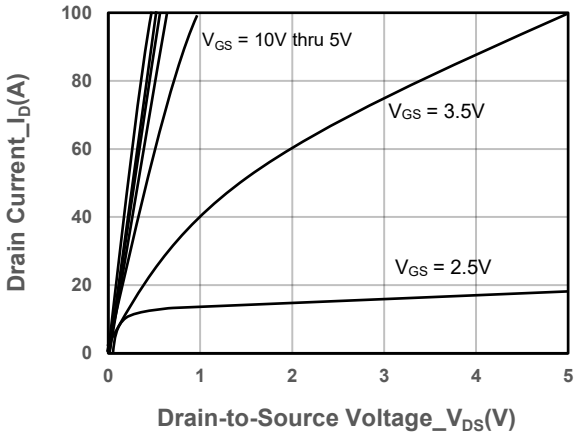
c. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

d. The maximum current rating is package limited.

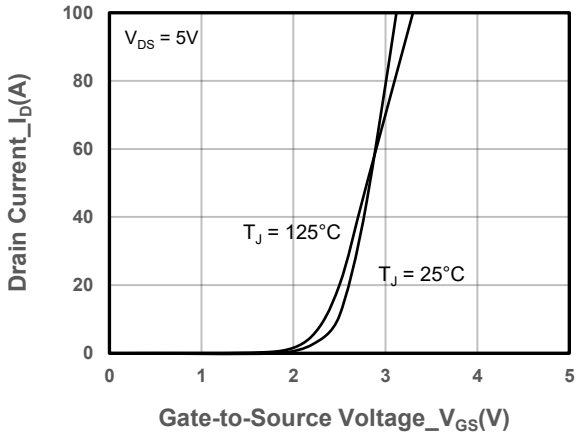
➢ Electrical Characteristics (T_A=25℃ unless otherwise noted)

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		2.2	3	mΩ
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 10A		3	4.3	mΩ
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		38		S
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 10A		0.8	1.3	V
Gate Resistance	R_G	V_{DS} = 0V, f = 1MHz		1.2		Ω
Input Capacitance	C_{ISS}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		2070		pF
Output Capacitance	C_{OSS}			1125		
Reverse Transfer Capacitance	C_{RSS}			40		
Total Gate Charge	Q_G	V_{GS} = 10V, V_{DS} = 20V, I_D = 20A		32		nC
Gate to Source Charge	Q_{GS}			6.5		
Gate to Drain Charge	Q_{GD}			6		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = 10V, V_{DS} = 20V, I_D = 20A, R_G = 3Ω		15		ns
Rise Time	T_r			6		
Turn-off Delay Time	$T_{D(OFF)}$			43		
Fall Time	T_f			12		
Diode Recovery Time	T_{rr}	I_F=20A, di/dt=100A/us		66		ns
Diode Recovery Charge	Q_{rr}	I_F=20A, di/dt=100A/us		15		nC

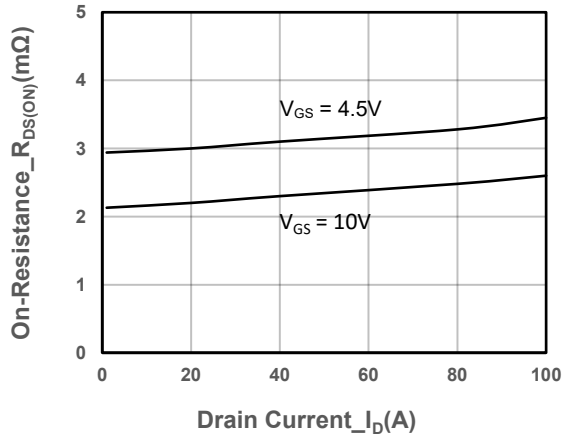
➢ Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



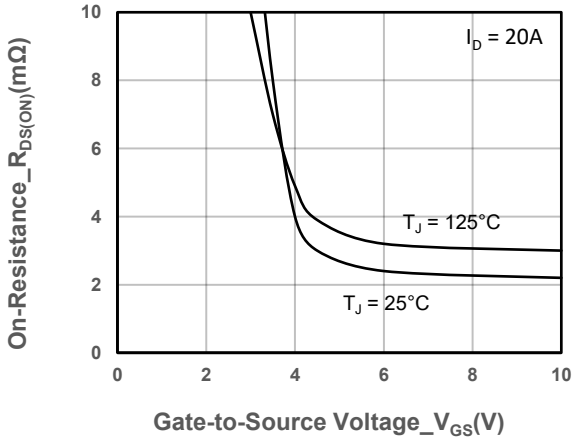
Output Characteristics



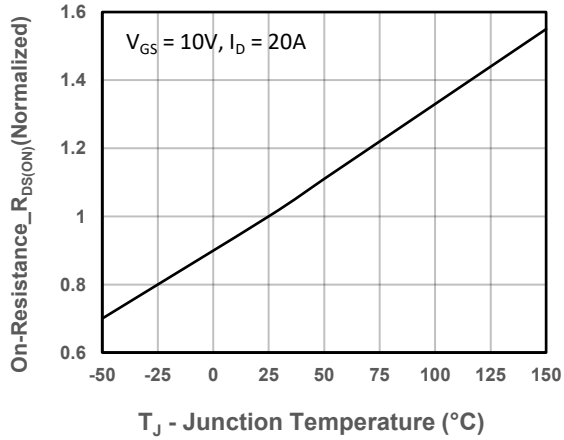
Transfer Characteristics



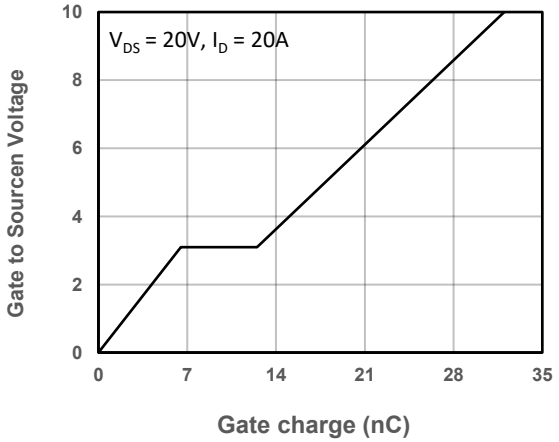
On-Resistance vs. Drain Current and Gate Voltage



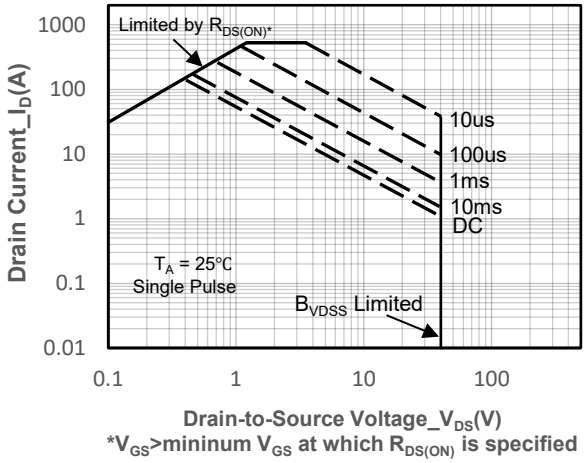
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

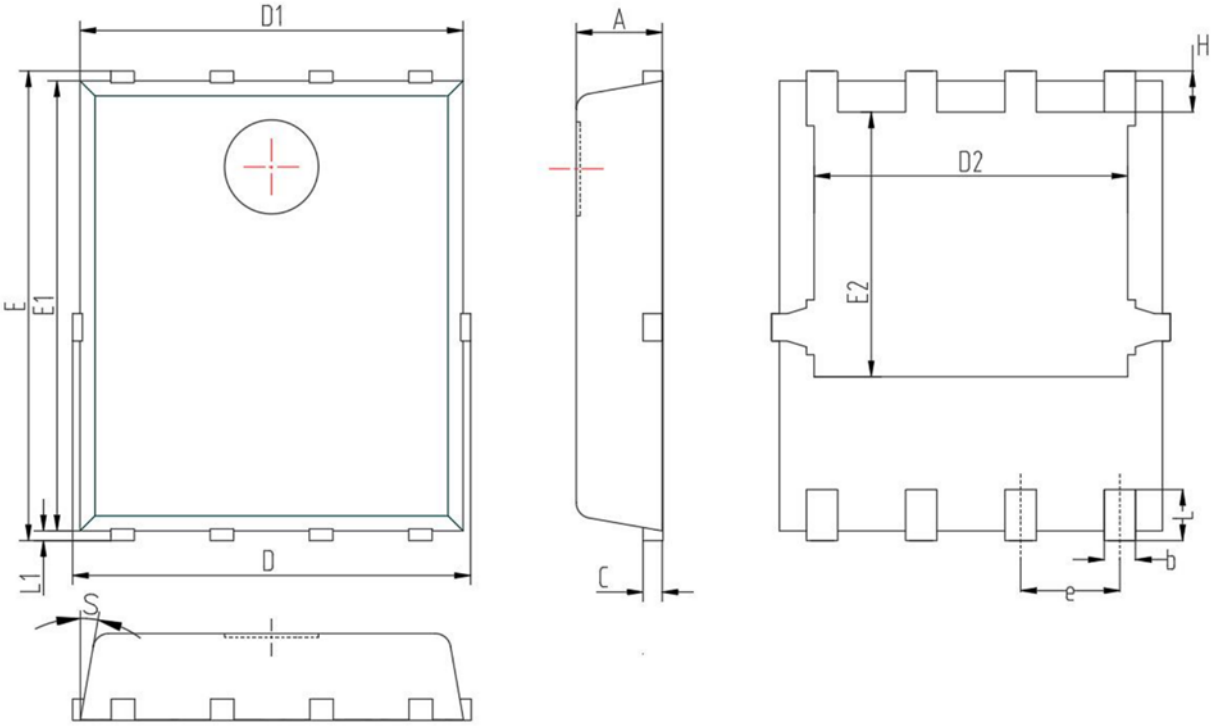


Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient

➢ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	0.90	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°

DISCLAIMER

SSCSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. SSCSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G. OUTSIDE SPECIFIED POWER SUPPLY RANGE) AND THEREFORE OUTSIDE THE WARRANTED RANGE.

OUR PRODUCT SPECIFICATIONS ARE ONLY VALID IF OBTAINED THROUGH THE COMPANY'S OFFICIAL WEBSITE, CRM SYSTEM, OR OUR SALES PERSONNEL CHANNELS. IF CHANGES OR SPECIAL VERSIONS ARE INVOLVED, THEY MUST BE STAMPED WITH A QUALITY SEAL AND MARKED WITH A SPECIAL VERSION NUMBER TO BE VALID.