



SSCL07N40HPN6

N-Channel Enhancement Mode MOSFET

➤ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
40V	$\pm 20V$	$0.75m\Omega@10V$	309A

➤ Description

This device is N-Channel enhancement MOSFET. Uses SGT technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit.

100% UIS + ΔV_{DS} + R_g Tested!

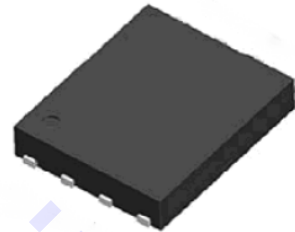
➤ Applications

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

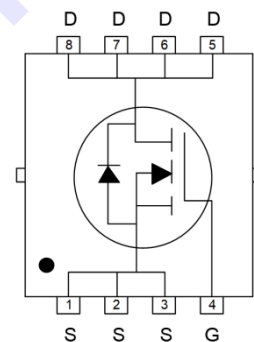
➤ Ordering Information

Device	Package	Shipping
SSCL07N40HPN6	PDFN5X6-8L	5000/Reel

➤ Pin Configuration



PDFN5X6-8L (Top View)



Pin Configuration



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	$T_{\text{C}}=25^{\circ}\text{C}$	309	A
		$T_{\text{C}}=100^{\circ}\text{C}$	195	
I_{DSM}	Continuous Drain Current ^a	$T_{\text{A}}=25^{\circ}\text{C}$	37	A
		$T_{\text{A}}=70^{\circ}\text{C}$	23	
I_{DM}	Pulsed Drain Current ^b		1237	A
P_{D}	Power Dissipation ^c	$T_{\text{C}}=25^{\circ}\text{C}$	156	W
		$T_{\text{C}}=100^{\circ}\text{C}$	62	
P_{DSM}	Power Dissipation ^a	$T_{\text{A}}=25^{\circ}\text{C}$	2.27	W
		$T_{\text{A}}=70^{\circ}\text{C}$	0.91	
I_{AS}	Avalanche Current ^b $L=0.5\text{mH}$ Single Pulse		51	A
E_{AS}	Avalanche Energy ^b $L=0.5\text{mH}$ Single Pulse		650	mJ
T_{J}	Operation junction temperature		-55~175	$^{\circ}\text{C}$
T_{STG}	Storage temperature range		-55~175	

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

Symbol	Parameter	Ratings	Max.	Unit
$R_{\theta\text{JA}}$	Junction-to-Ambient Thermal Resistance ^a	41	55	$^{\circ}\text{C}/\text{W}$
$R_{\theta\text{JC}}$	Junction-to-Case Thermal Resistance	0.4	0.8	

Note:

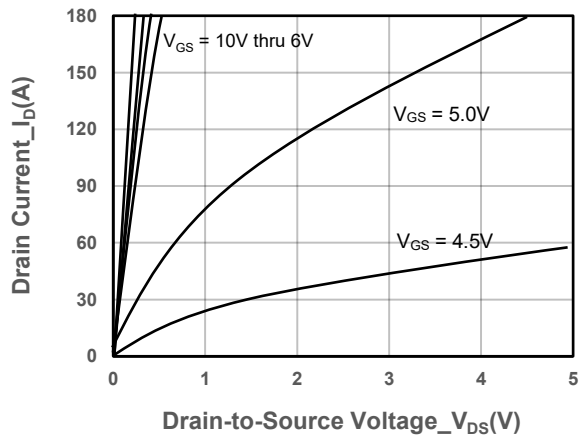
- The value of $R_{\theta\text{JA}}$ is measured with the device mounted on 1 in² FR-4 board with 2oz.copper, in a still air environment with $T_{\text{A}}=25^{\circ}\text{C}$. The value in any given application depends on the user is specific board design. The power dissipation is based on the $t \leq 10\text{s}$ thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation P_{D} is based on $T_{\text{J(MAX)}}=150^{\circ}\text{C}$, 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)**

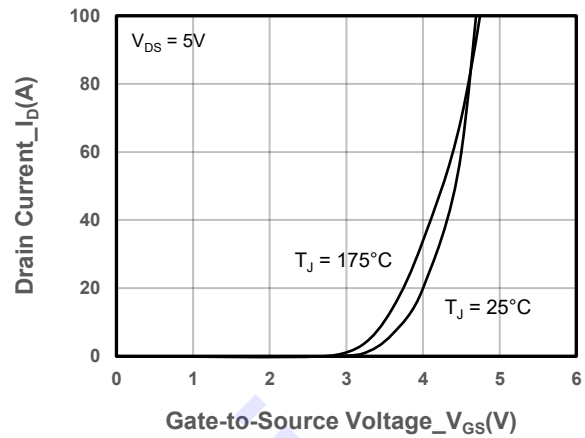
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.9	2.8	3.7	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		0.75	1.0	mΩ
Zero Gate 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 = 20A		46		S
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 20A		0.75	1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		1.4		Ω
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		7014		pF
Output Capacitance	C _{OSS}			3367		
Reverse Transfer Capacitance	C _{RSS}			76		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 20V, I _D = 20A		90		nC
Gate to Source Charge	Q _{GS}			21		
Gate to Drain Charge	Q _{GD}			9.6		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 20V, I _D = 20A, R _G = 3.3Ω		26		ns
Rise Time	T _r			87		
Turn-off Delay Time	T _{D(OFF)}			74		
Fall Time	T _f			26		
Diode Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us		69		ns
Diode Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		100		nC



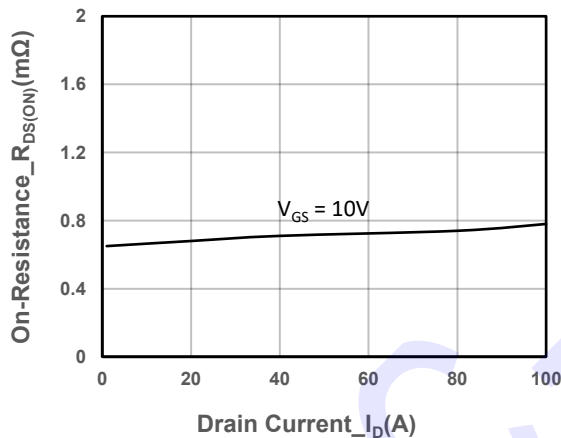
➤ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



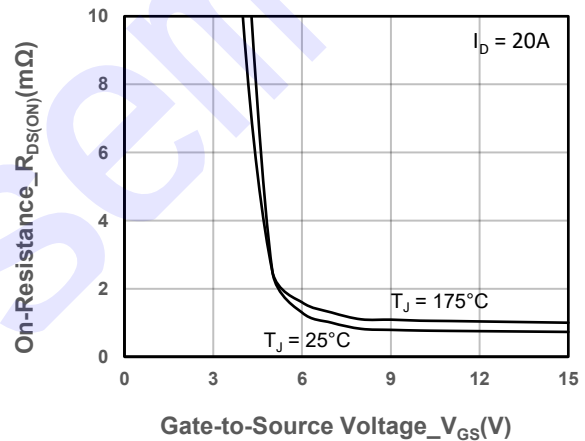
Output Characteristics



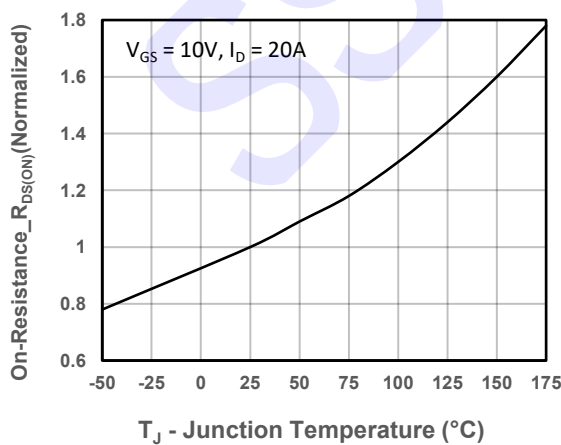
Transfer Characteristics



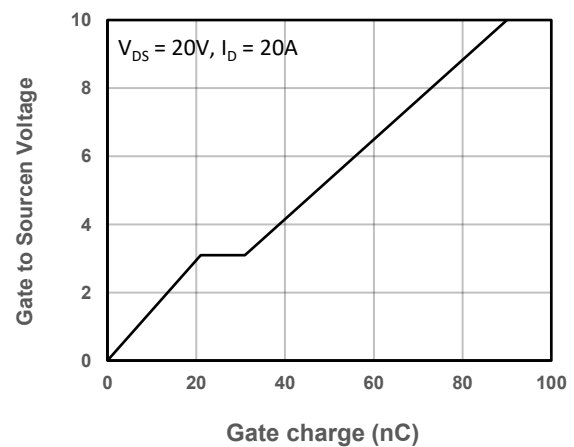
On-Resistance vs. Drain Current and Gate Voltage



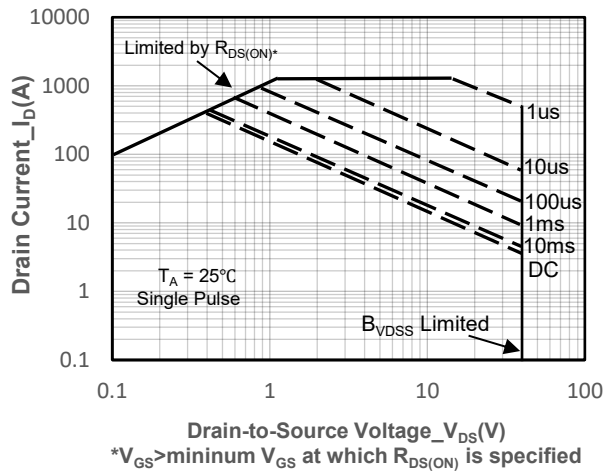
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

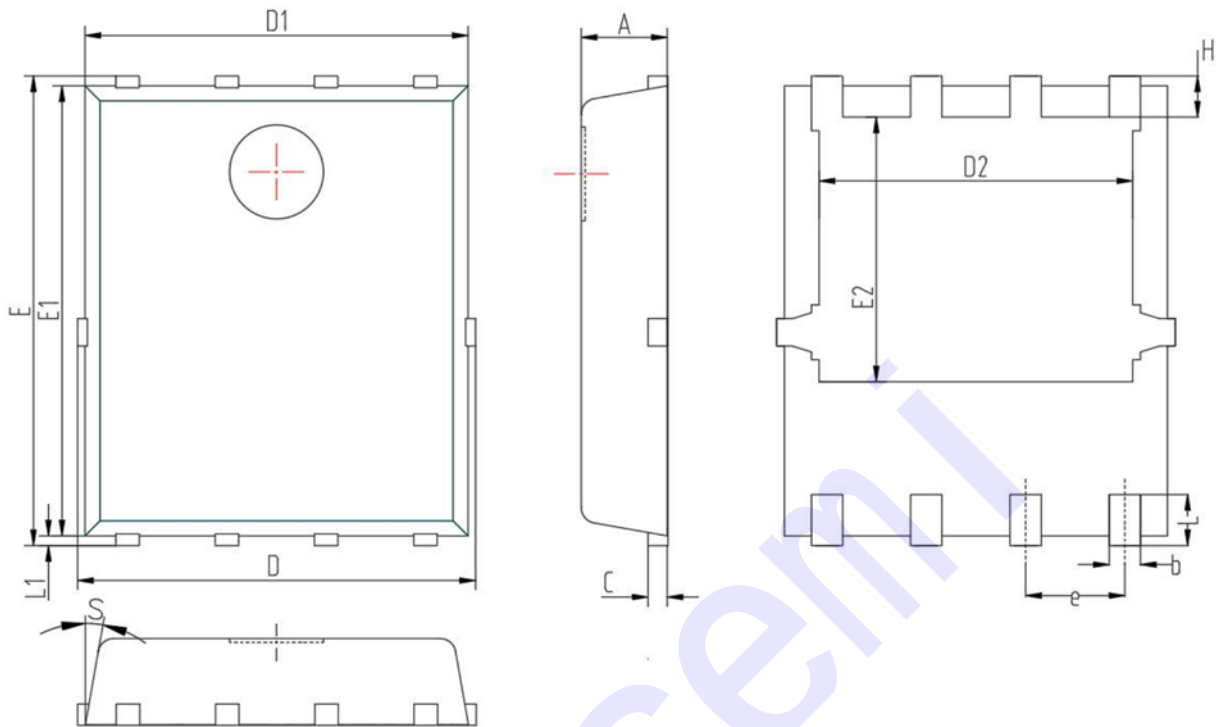


Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient

➤ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	0.90	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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