



## SSCL083N60GN6

### N-Channel Enhancement Mode MOSFET

#### ➤ Features

V <sub>DS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub> Typ.	I <sub>D</sub>
60V	±20V	8.3mΩ@10V	57A
		10.7mΩ@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!**

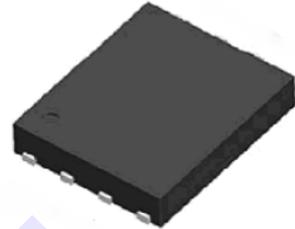
#### ➤ Applications

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

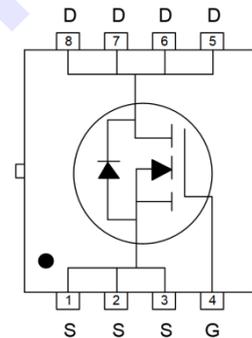
#### ➤ Ordering Information

Device	Package	Shipping
SSCL083N60GN6	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	60	V	
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current <sup>d</sup>	$T_C=25^\circ\text{C}$	57	A
		$T_C=100^\circ\text{C}$	36	
$I_{DSM}$	Continuous Drain Current <sup>a</sup>	$T_A=25^\circ\text{C}$	13	A
		$T_A=70^\circ\text{C}$	10	
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	228	A	
$P_D$	Power Dissipation <sup>c</sup>	$T_C=25^\circ\text{C}$	57	W
		$T_C=100^\circ\text{C}$	23	
$P_{DSM}$	Power Dissipation <sup>a</sup>	$T_A=25^\circ\text{C}$	2.8	W
		$T_A=70^\circ\text{C}$	1.8	
$I_{AS}$	Avalanche Current <sup>b</sup> L=0.5mH Single Pulse	14	A	
$E_{AS}$	Avalanche Energy <sup>b</sup> L=0.5mH Single Pulse	53	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	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>	45	60	°C/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	2.2	3.0	

Note:

- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> 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.

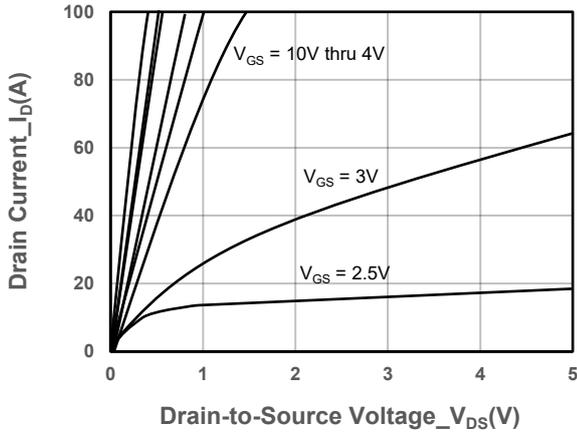


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

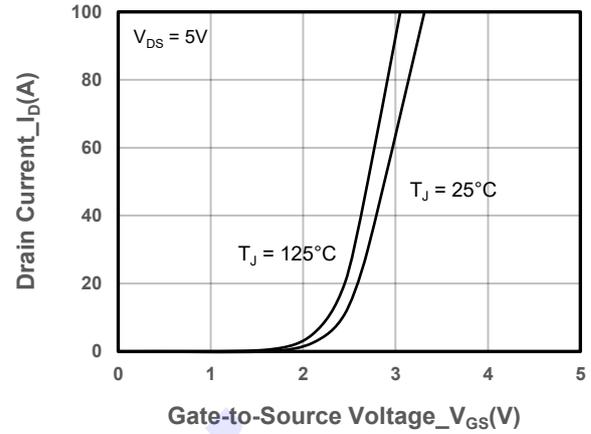
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	1.0	1.6	2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		8.3	10.8	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A		10.7	14	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 60V, V <sub>GS</sub> = 0V			1	μA
Gate-Source Leak Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Transconductance	G <sub>FS</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 20A		24		S
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A		0.85	1.3	V
Gate Resistance	R <sub>G</sub>	V <sub>DS</sub> = 0V, f = 1MHz		2.1		Ω
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1MHz		932		pF
Output Capacitance	C <sub>OSS</sub>			271		
Reverse Transfer Capacitance	C <sub>RSS</sub>			18		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, I <sub>D</sub> = 20A		16		nC
Gate to Source Charge	Q <sub>GS</sub>			4.4		
Gate to Drain Charge	Q <sub>GD</sub>			2.3		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, I <sub>D</sub> = 20A, R <sub>G</sub> = 3Ω		5.4		ns
Rise Time	T <sub>r</sub>			18.3		
Turn-off Delay Time	T <sub>D(OFF)</sub>			17.4		
Fall Time	T <sub>f</sub>			18.4		
Diode Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		22		ns
Diode Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		54		nC



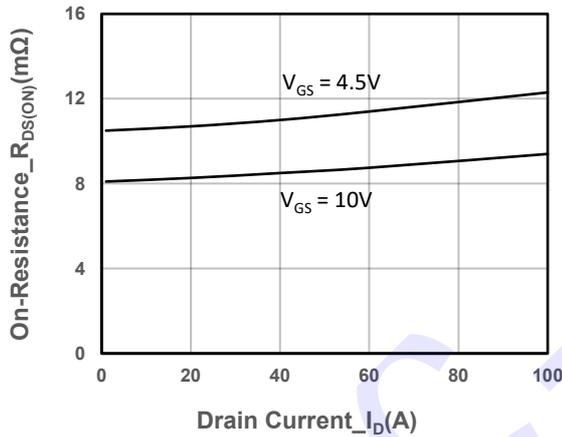
## Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



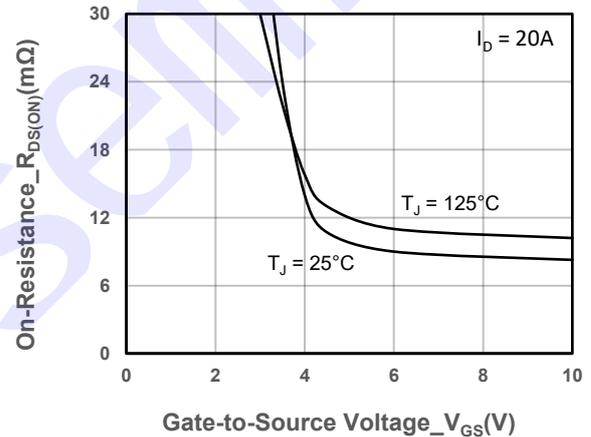
Output Characteristics



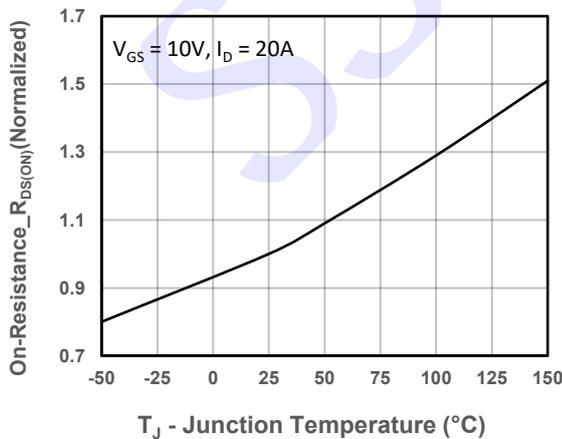
Transfer Characteristics



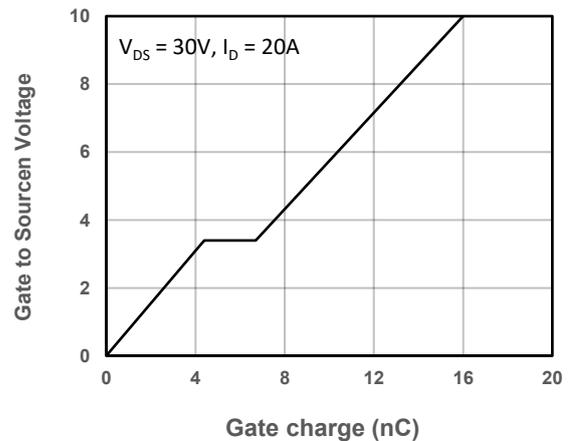
On-Resistance vs. Drain Current and Gate Voltage



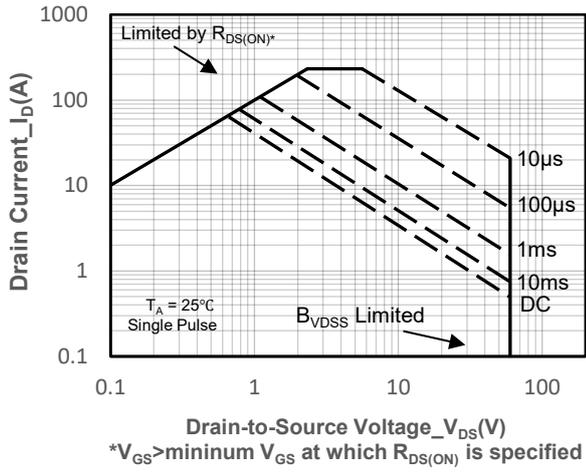
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



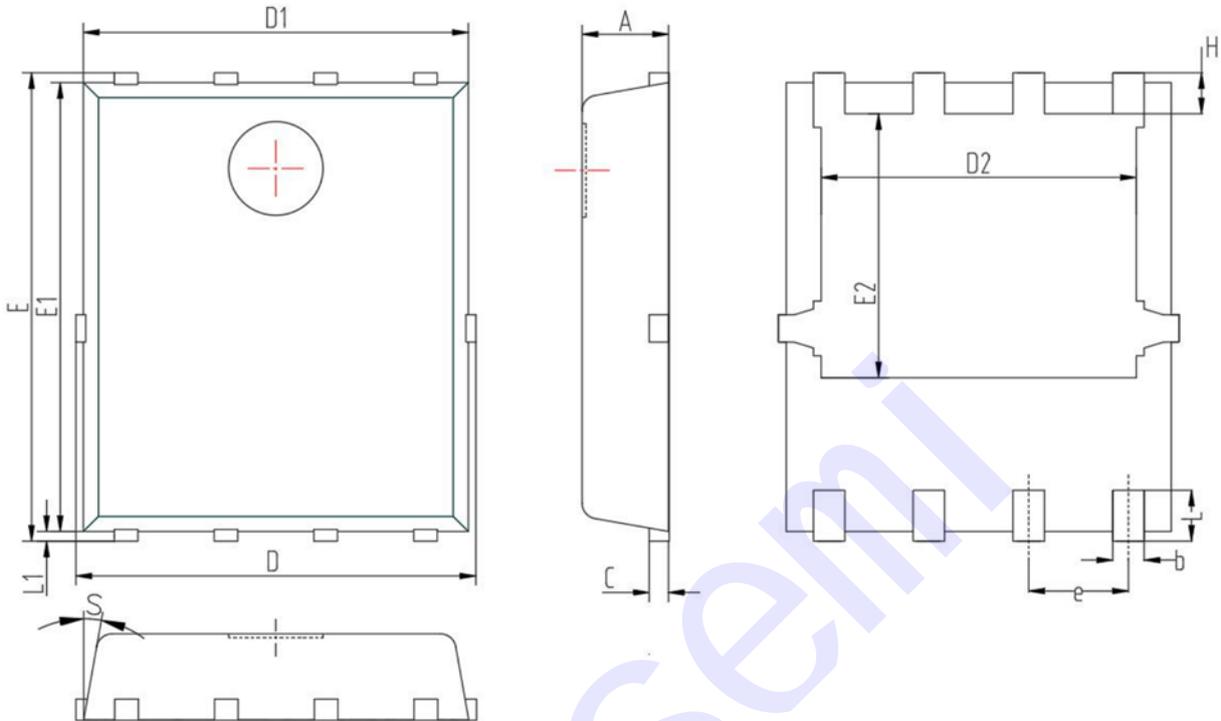
Gate-Source Voltage vs. Gate charge



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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SSC-semi