



## SSC8L60GN6

### N-Channel Enhancement Mode MOSFET

#### ➤ Features

$V_{DS}$	$V_{GS}$	$R_{DS(ON)}$ Typ.	$I_D$
60V	$\pm 20V$	2.2 m $\Omega$ @10V	165A
		3.0m $\Omega$ @4.5V	

#### ➤ 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 +  $\Delta V_{DS}$  +  $R_g$  Tested!**

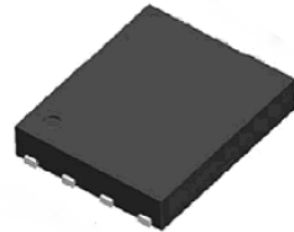
#### ➤ Applications

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

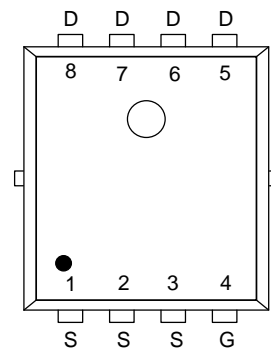
#### ➤ Ordering Information

Device	Package	Shipping
SSC8L60GN6	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		60	V
$V_{GSS}$	Gate-to-Source Voltage		$\pm 20$	V
$I_D$	Continuous Drain Current <sup>d</sup>	$T_C=25^{\circ}\text{C}$	165	A
		$T_C=100^{\circ}\text{C}$	92	
$I_{DSM}$	Continuous Drain Current <sup>a</sup>	$T_A=25^{\circ}\text{C}$	28	A
		$T_A=70^{\circ}\text{C}$	21	
$I_{DM}$	Pulsed Drain Current <sup>b</sup>		660	A
$P_D$	Power Dissipation <sup>c</sup>	$T_C=25^{\circ}\text{C}$	96	W
		$T_C=100^{\circ}\text{C}$	38	
$P_{DSM}$	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> $L=0.5\text{mH}$ Single Pulse		30	A
$E_{AS}$	Avalanche Energy <sup>b</sup> $L=0.5\text{mH}$ Single Pulse		225	mJ
$T_J$	Operation junction temperature		-55~150	$^{\circ}\text{C}$
$T_{STG}$	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>	44	60	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	1.3	1.7	

Note:

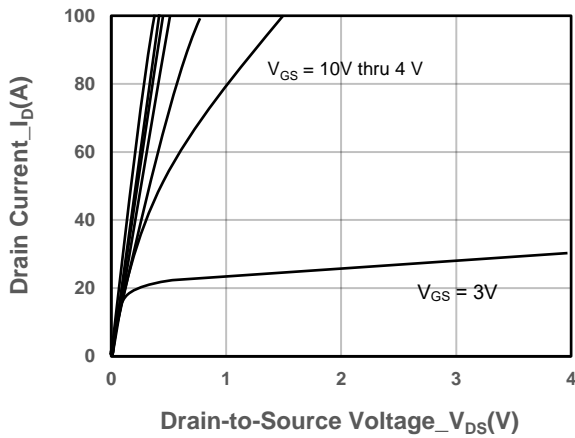
- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz.copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user is specific board design. The power dissipation is based on the  $t \leq 10\text{s}$  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)**

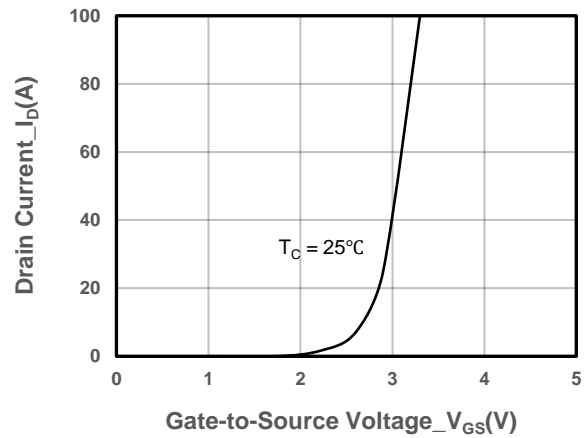
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	1.0	1.7	2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		2.2	3.0	mΩ
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A		3.0	4.0	mΩ
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> =10A		33		S
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A		0.76	1.3	V
Gate Resistance	R <sub>G</sub>	V <sub>DS</sub> = 0V, f = 1MHz		2.0		Ω
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1MHz		4500		pF
Output Capacitance	C <sub>OSS</sub>			1200		
Reverse Transfer Capacitance	C <sub>RSS</sub>			40		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, I <sub>D</sub> = 20A		76		nC
Gate to Source Charge	Q <sub>GS</sub>			15		
Gate to Drain Charge	Q <sub>GD</sub>			12		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, R <sub>L</sub> = 1.5Ω, R <sub>G</sub> = 3Ω		10		ns
Rise Time	T <sub>r</sub>			29		
Turn-off Delay Time	T <sub>D(OFF)</sub>			90		
Fall Time	T <sub>f</sub>			62		
Diode Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		64		ns
Diode Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		272		nC



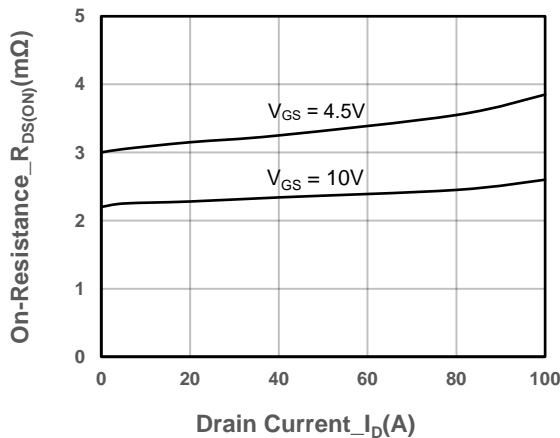
## ➤ Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



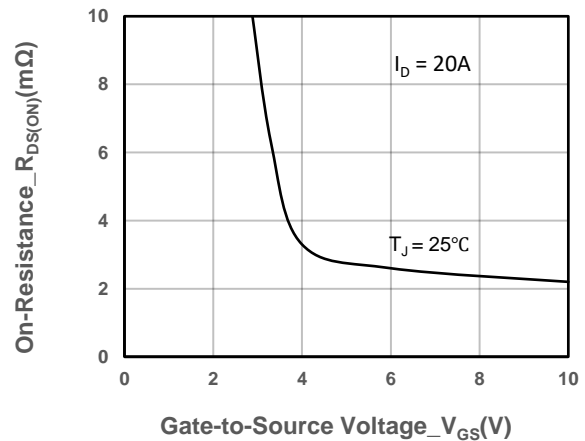
Output Characteristics



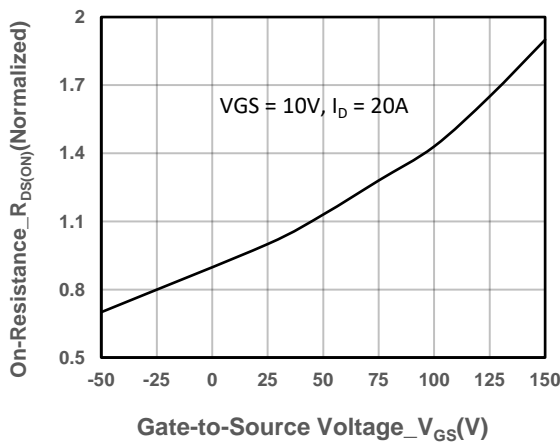
Transfer Characteristics



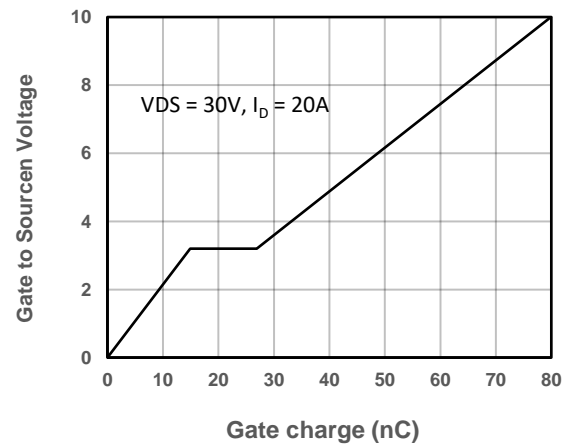
On-Resistance vs. Drain Current and Gate Voltage



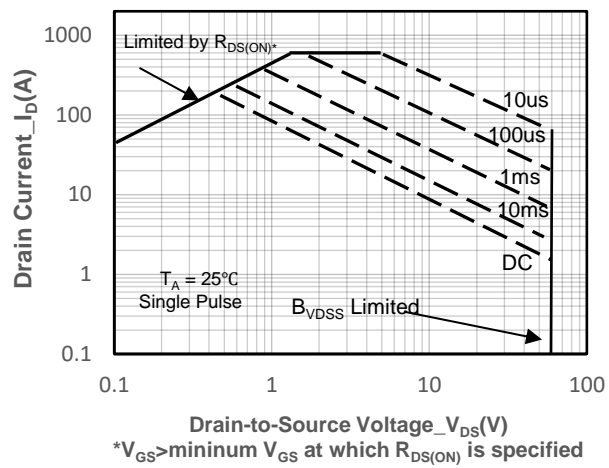
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

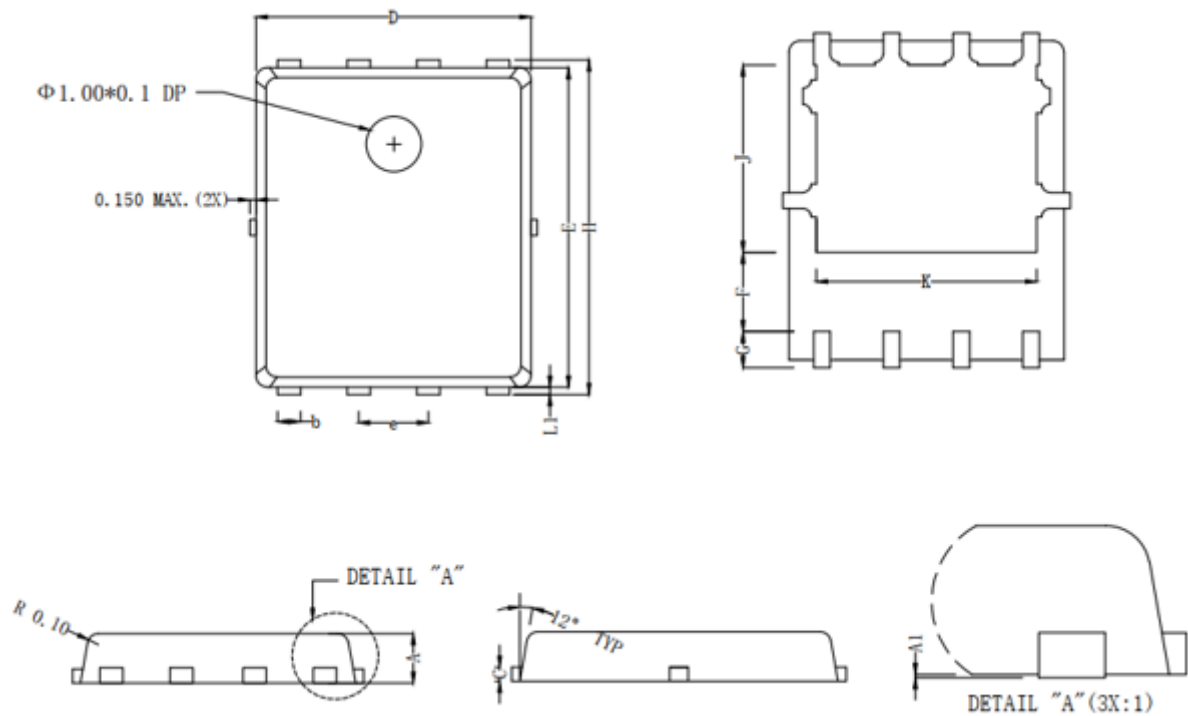


Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient

## ➤ Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.90	1.00	1.10
A1	0.00	0.03	0.05
b	0.25	0.03	0.35
c	0.254 REF		
D	4.80	4.90	5.00
F	1.35 REF		
E	5.65	5.75	5.85
e	1.27 BSC		
H	5.90	6.00	6.10
L1	0.10	0.13	0.16
G	0.55 REF		
K	4.00 REF		
J	3.45 REF		



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