



## SSC8L612PN6

### N-Channel Enhancement Mode MOSFET

#### ➤ Features

V <sub>DS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub>	I <sub>D</sub>
60V	±20V	2.2mΩ@10V	160A

#### ➤ 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
- Portable Devices
- DCDC Conversion
- Power Supplies
- Synchronous Rectification

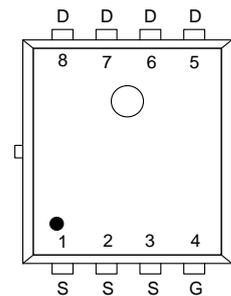
#### ➤ Ordering Information

Device	Package	Shipping
SSC8L612PN6	PDFN5X6-8L	5000/Reel

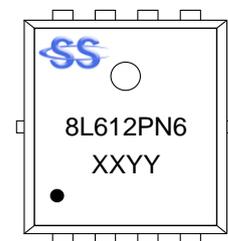
#### ➤ Pin configuration



**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>	$T_C=25^\circ\text{C}$	160
		$T_C=100^\circ\text{C}$	90
$I_{DSM}$	Continuous Drain Current <sup>a</sup>	$T_A=25^\circ\text{C}$	39
		$T_A=70^\circ\text{C}$	28
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	640	A
$P_D$	Power Dissipation <sup>c</sup>	$T_C=25^\circ\text{C}$	96
		$T_C=100^\circ\text{C}$	38
$P_{DSM}$	Power Dissipation <sup>a</sup>	$T_A=25^\circ\text{C}$	5.4
		$T_A=70^\circ\text{C}$	3.5
$I_{AS}$	Avalanche Current <sup>b</sup> $L=0.5\text{mH}$ Single Pulse	38	A
$E_{AS}$	Avalanche Energy <sup>b</sup> $L=0.5\text{mH}$ Single Pulse	361	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	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>	22	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	1.3	

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  $T_{J(\text{MAX})}=150^\circ\text{C}$ , 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.

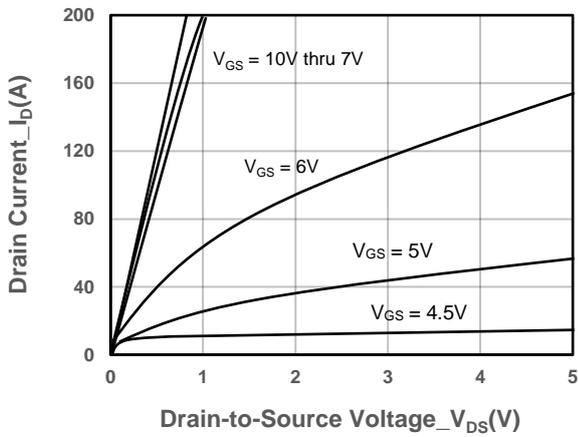


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

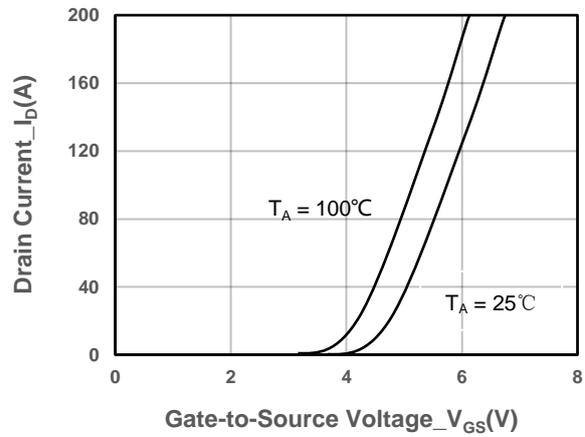
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	2	3	4	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		2.2	2.9	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> = 10V, I <sub>D</sub> = 10A		22		s
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 15A		0.8	1.3	V
Gate Resistance	R <sub>G</sub>	V <sub>DS</sub> = 0V, f = 1MHz		1	2.4	Ω
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1MHz		3200		pF
Output Capacitance	C <sub>OSS</sub>			670		
Reverse Transfer Capacitance	C <sub>RSS</sub>			655		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, I <sub>D</sub> = 15A		38		nC
Gate to Source Charge	Q <sub>GS</sub>			15		
Gate to Drain Charge	Q <sub>GD</sub>			10		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, R <sub>L</sub> = 10Ω, R <sub>G</sub> = 2.5Ω		18		ns
Rise Time	T <sub>r</sub>			29		
Turn-off Delay Time	T <sub>D(OFF)</sub>			58		
Fall Time	T <sub>f</sub>			21		
Diode Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		32		ns
Diode Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=500A/us		65		nC



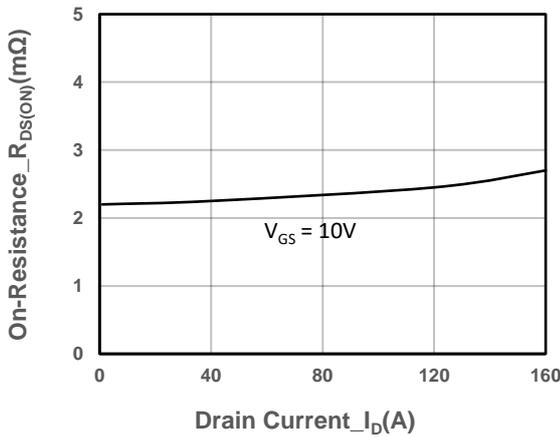
➤ **Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**



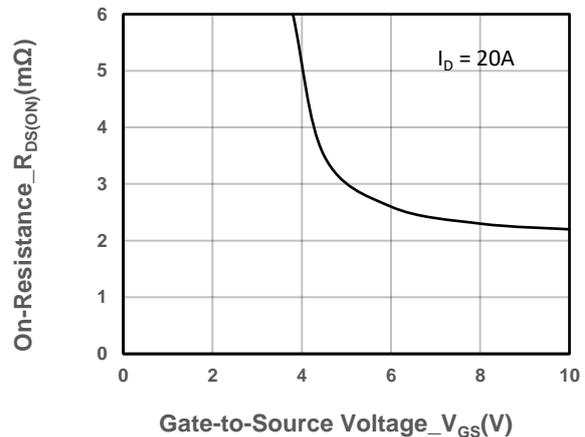
**Output Characteristics**



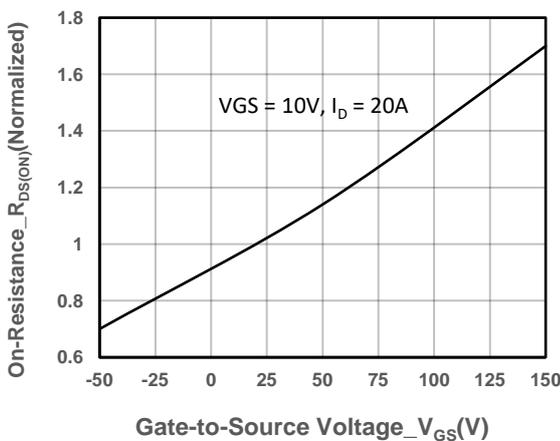
**Transfer Characteristics**



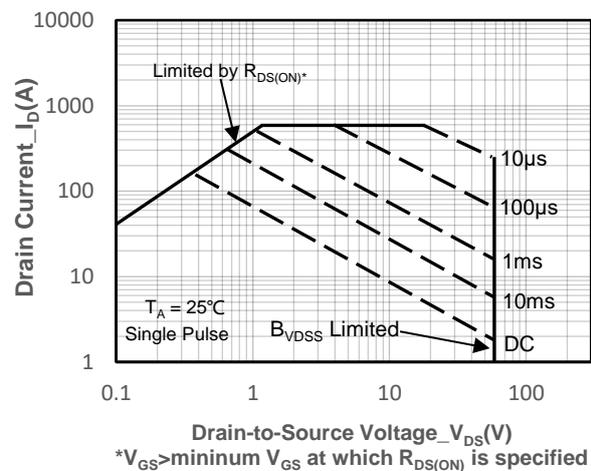
**On-Resistance vs. Drain Current and Gate Voltg**



**On-Resistance vs. Gate-to-Source Voltage**



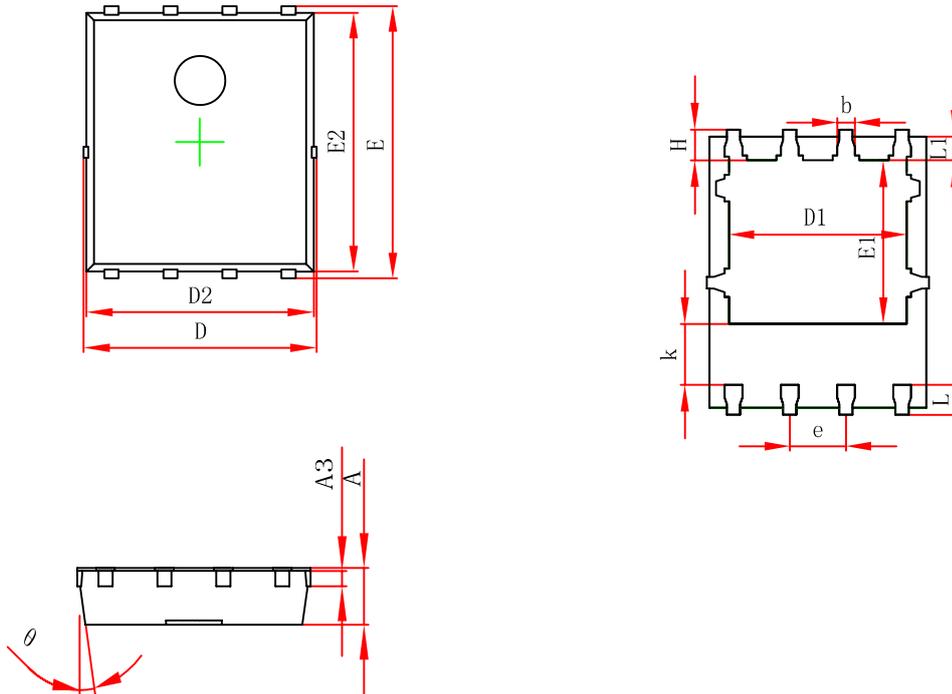
**On-Resistance vs. Junction Temperature**



**Safe Operating Area vs. Junction-to-Ambient**



➤ **Package Information**



**Package: PDNF5X6-8L**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°



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