



SSC8L42PN6

N-Channel Enhanced MOSFET

➤ Features

VDS	VGS	RDSON Typ.	ID
40V	±20V	1.0mR@10V	150A
		1.5mR@4V5	

➤ 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.

➤ Applications

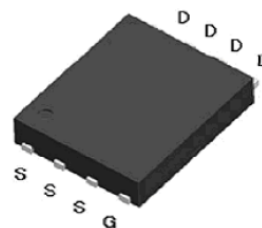
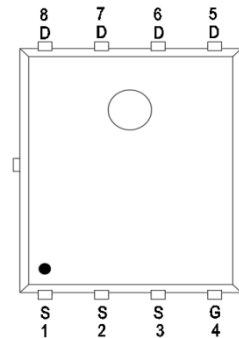
- DC/DC converters
- Power supplies
- Motor Drive Control
- Synchronous rectification

➤ Ordering Information

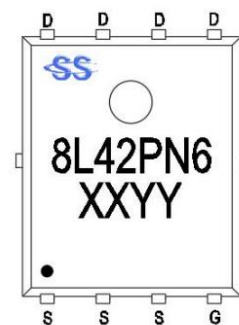
Device	Package	Shipping
SSC8L42PN6	PDFN5X6	5000/Reel

➤ Pin configuration

Top view



PDFN5X6



Marking

(XX: product year / YY: product week)

➤ **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	$T_C=25^{\circ}\text{C}$	150
		$T_C=100^{\circ}\text{C}$	95
I_{DSM}	Continuous Drain Current ^a	$T_A=25^{\circ}\text{C}$	46
		$T_A=70^{\circ}\text{C}$	34
I_{DM}	Pulsed Drain Current ^b	500	A
P_D	Power Dissipation ^c	$T_C=25^{\circ}\text{C}$	78
		$T_C=100^{\circ}\text{C}$	32
P_{DSM}	Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	7.0
		$T_A=70^{\circ}\text{C}$	4.5
I_{AS}	Avalanche Current ^b L=0.5mH Single Pulse	42	A
E_{AS}	Avalanche Energy ^b L=0.5mH Single Pulse	441	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 ^a	17	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	1.5	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² 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.

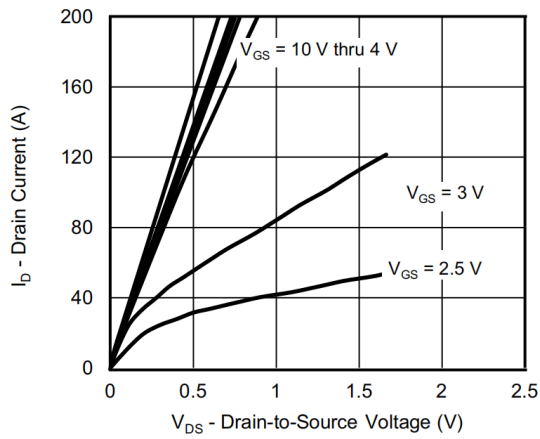


➤ **Electronics Characteristics**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

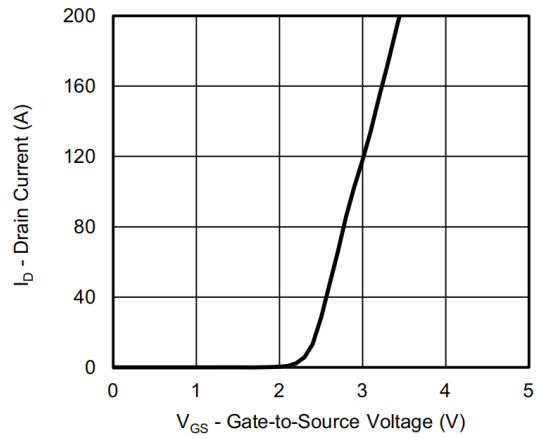
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.4	1.9	2.4	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=50A$		1.0	1.24	mR
		$V_{GS}=4.5V, I_D=50A$		1.5	2.1	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1.0	μA
I_{GSS}	Gate-Source leak current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
G_{FS}	Transconductance	$V_{DS}=5V, I_D=20A$		110		S
V_{SD}	Forward Voltage	$V_{GS}=0V, I_S=20A$			1.3	V
R_g	Gate Resistance	$V_{DS}=0V, f=1MHz$		2.3		R
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		5900		pF
C_{oss}	Output Capacitance			2100		
C_{rss}	Reverse Capacitance			112		
$T_{D(ON)}$	Turn-on delay time	$V_{GS}=10V, R_L=0.4R$ $V_{DS}=20V, R_G=4.7R$		23		ns
T_r	Rise time			64		
$T_{D(OFF)}$	Turn-off delay time			88		
T_f	Fall time			30		
Q_G	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V$ $I_D=50A$		86		nC
Q_{GS}	Gate Source Charge			27		
Q_{GD}	Gate Drain Charge			9		
T_{rr}	Diode Recovery Time	$I_F=37A, di/dt=100A/\mu s$		65		ns
Q_{rr}	Diode Recovery Charge	$I_F=37A, di/dt=100A/\mu s$		72		nC



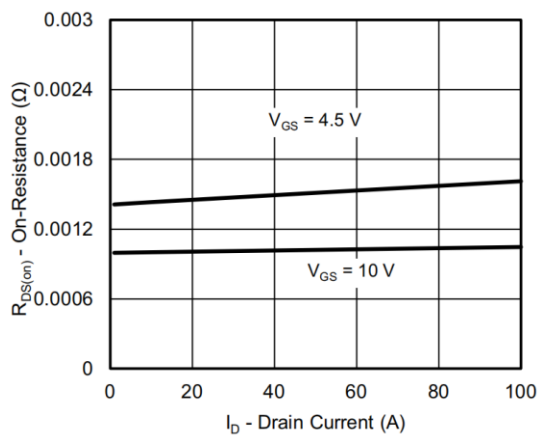
➤ **Typical Characteristics** ($T_A = 25^\circ\text{C}$ unless otherwise noted)



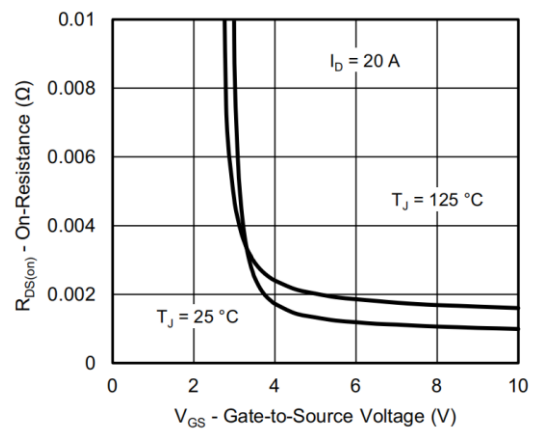
Output Characteristics



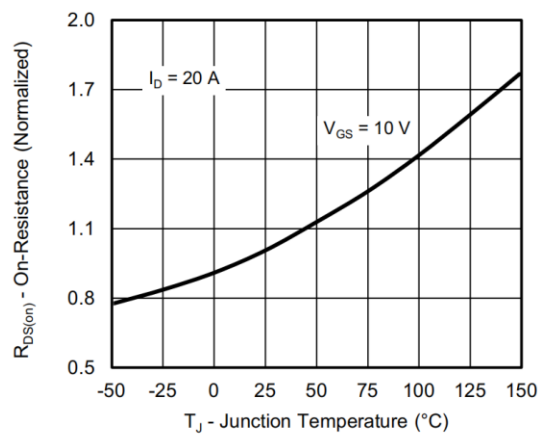
Transfer Characteristics



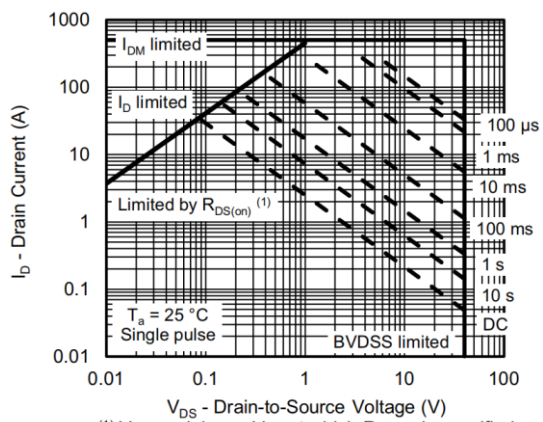
On-Resistance vs. Drain Current



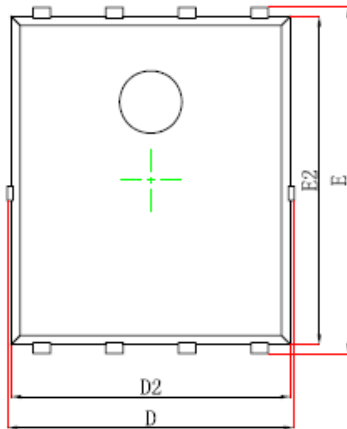
On-Resistance vs. Gate-to-Source Voltage



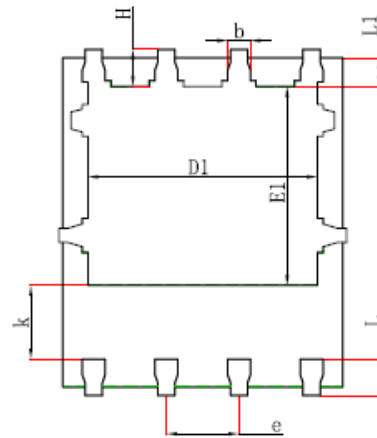
On-Resistance vs. Junction Temperature



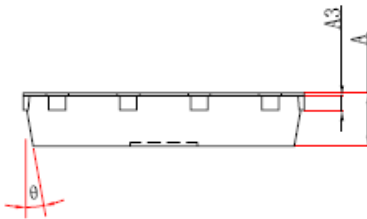
Safe Operating Area, Junction-to-Ambient

➤ Package Information


Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

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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