



## SSC8630GN6

### N and P-Channel Enhancement Mode Power MOSFET

#### ➤ Features

##### N-Channel

$V_{DS}$	$V_{GS}$	$R_{DS(ON)}$ Typ.	$I_D$
30V	$\pm 20V$	9m $\Omega$ @10V	42A
		11m $\Omega$ @4V5	

##### P-Channel

$V_{DS}$	$V_{GS}$	$R_{DS(ON)}$ Typ.	$I_D$
-30V	$\pm 20V$	20m $\Omega$ @-10V	-28A
		29m $\Omega$ @-4V5	

#### ➤ Description

The SSC8630GN6 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

**100% UIS +  $\Delta V_{DS}$  +  $R_g$  Tested!**

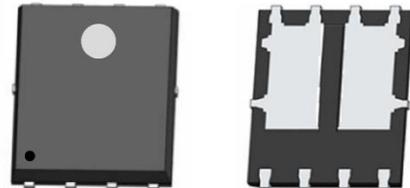
#### ➤ Applications

- PWM Applications
- Load Switch
- DC-DC Converters
- Wireless Chargers

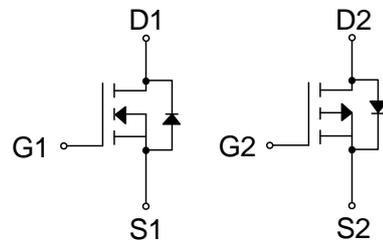
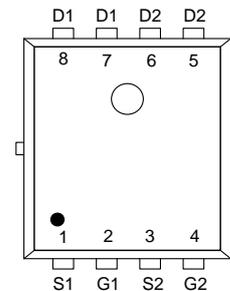
#### ➤ Ordering Information

Device	Package	Shipping
SSC8630GN6	PDFN5X6-8L	5000/Reel

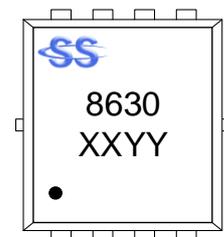
#### ➤ Pin configuration



**PDFN5X6-8L**



**Pin Configuration (Top View)**



**Marking**

(XXYY: Internal Traceability Code)



### ➤ Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-to-Source Voltage		$V_{DSS}$	30	-30	V
Gate-to-Source Voltage		$V_{GSS}$	$\pm 20$	$\pm 20$	V
Continuous Drain Current <sup>a</sup>	$T_A=25^{\circ}\text{C}$	$I_D$	42	-28	A
	$T_A=100^{\circ}\text{C}$		23	-15	A
Pulsed Drain Current <sup>b</sup>		$I_{DM}$	168	-112	A
Power Dissipation <sup>a</sup>		$P_{DSM}$	4.5	4	W
Avalanche Energy <sup>b</sup> L=0.5mH Single Pulse		$E_{AS}$	81	50	mJ
Power Dissipation <sup>c</sup>	$T_A=25^{\circ}\text{C}$	$P_D$	26	25	W
	$T_A=100^{\circ}\text{C}$		10	9.8	W
Operation junction temperature		$T_J$	-55 to 150	-55 to 150	$^{\circ}\text{C}$
Storage temperature range		$T_{STG}$	-55 to 150	-55 to 150	$^{\circ}\text{C}$

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

Symbol	Parameter	N-Channel	P-Channel	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>	28	31	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	4.8	5.1	

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's specific board design. The current rating 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.



➤ **N-Channel 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	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	1	1.4	3	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		9	11	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A		11	18	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, 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> = 5A		10		s
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 5A		0.8	1.3	V
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		890		pF
Output Capacitance	C <sub>OSS</sub>			135		
Reverse Transfer Capacitance	C <sub>RSS</sub>			112		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 10A		19		nC
Gate to Source Charge	Q <sub>GS</sub>			3.1		
Gate to Drain Charge	Q <sub>GD</sub>			2.6		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, R <sub>L</sub> = 10Ω, R <sub>GEN</sub> = 6Ω,		12		ns
Rise Time	T <sub>r</sub>			11		
Turn-off Delay Time	T <sub>D(OFF)</sub>			24		
Fall Time	T <sub>f</sub>			7.8		

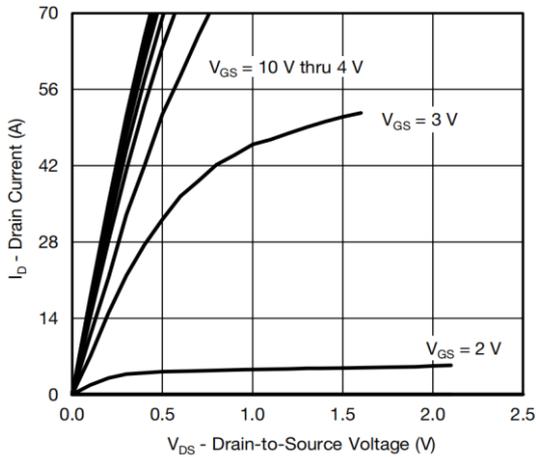


➤ **P-Channel Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

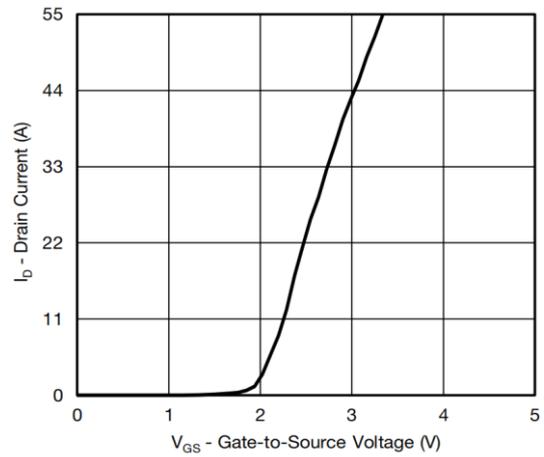
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250uA	-1	-1.5	-2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A		20	25	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -20A		29	40	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, 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> = -5A		15		s
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -5A		-0.8	-1.3	V
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz		895		pF
Output Capacitance	C <sub>OSS</sub>			159		
Reverse Transfer Capacitance	C <sub>RSS</sub>			139		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = -15V, V <sub>DS</sub> = -10V, I <sub>D</sub> = -10A		23		nC
Gate to Source Charge	Q <sub>GS</sub>			1.9		
Gate to Drain Charge	Q <sub>GD</sub>			3.4		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = -15V, V <sub>DS</sub> = -10V, R <sub>L</sub> = 10Ω, R <sub>GEN</sub> = 6Ω,		11		ns
Rise Time	T <sub>r</sub>			24		
Turn-off Delay Time	T <sub>D(OFF)</sub>			67		
Fall Time	T <sub>f</sub>			34		



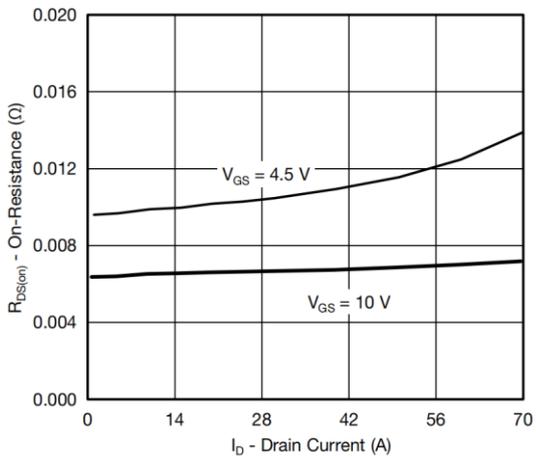
## ➤ N-Channel Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



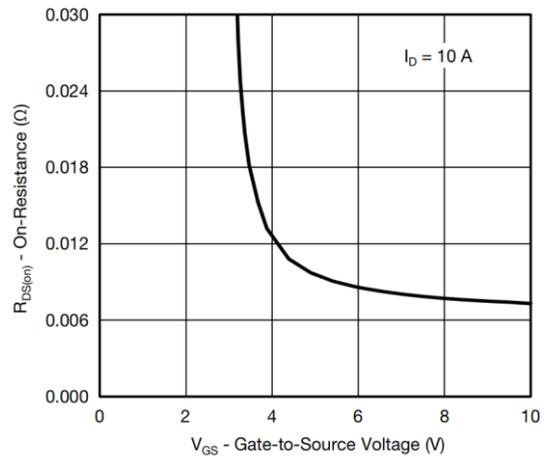
**Output Characteristics**



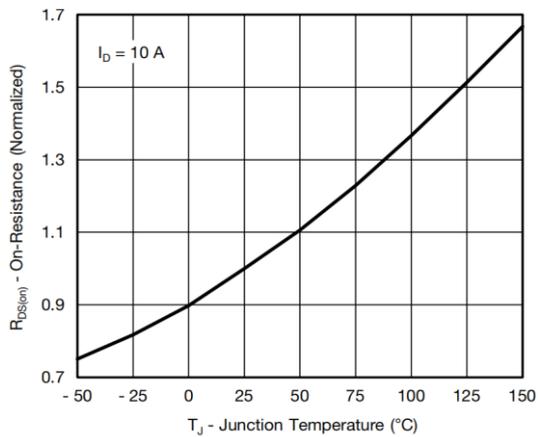
**Transfer Characteristics**



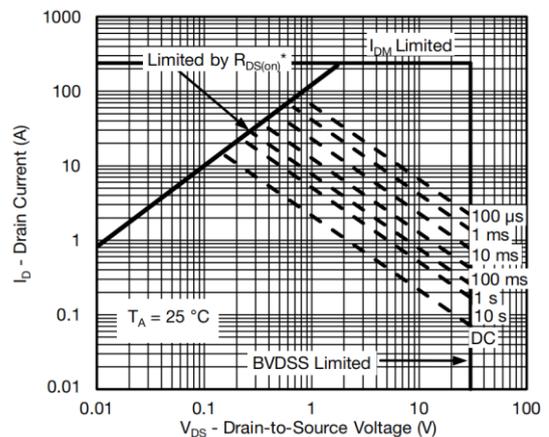
**On-Resistance vs. Drain Current**



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



**On-Resistance vs. Junction Temperature**

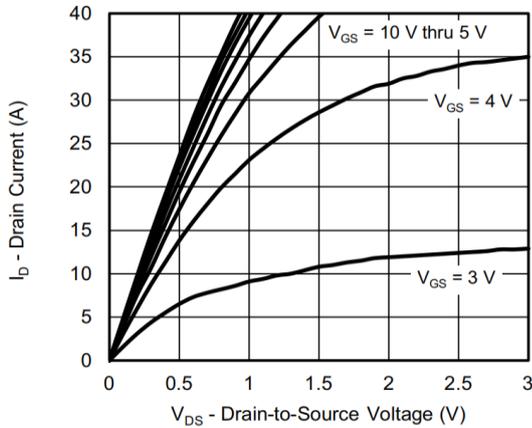


\*  $V_{GS} >$  minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified

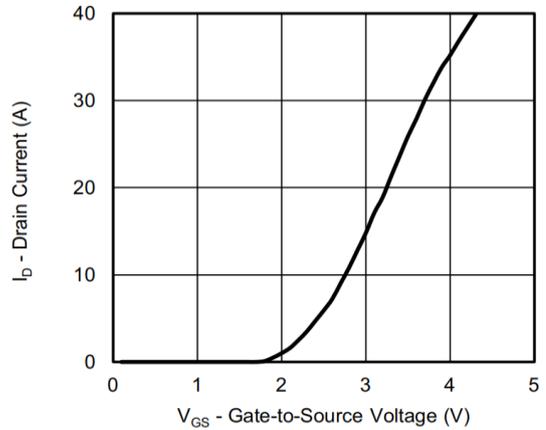
**Safe Operating Area**



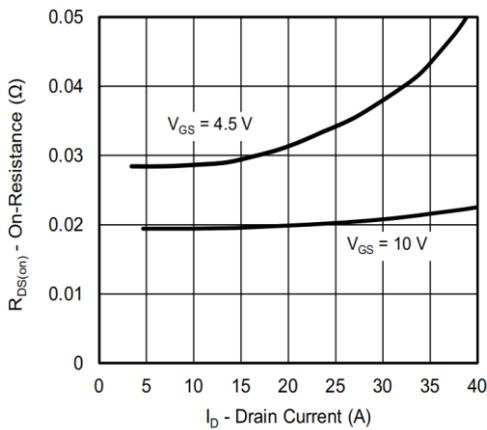
## ➤ P-Channel Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



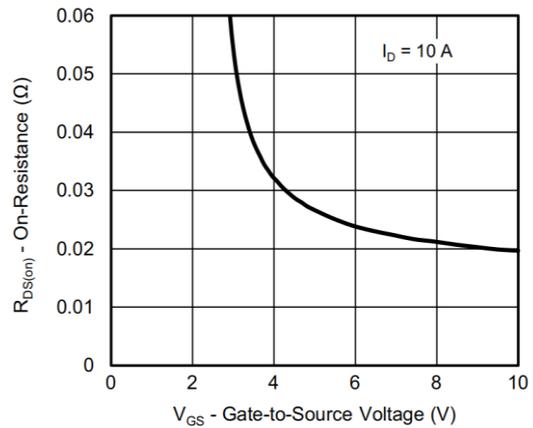
**Output Characteristics**



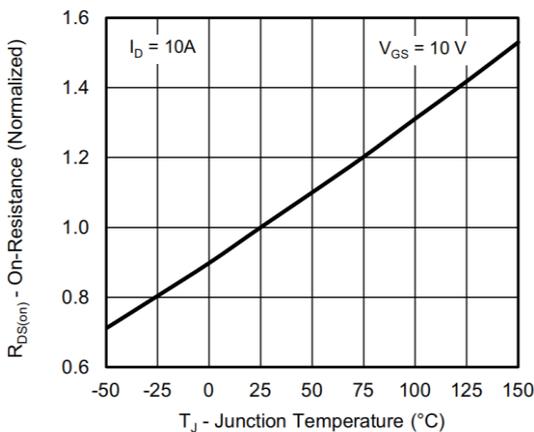
**Transfer Characteristics**



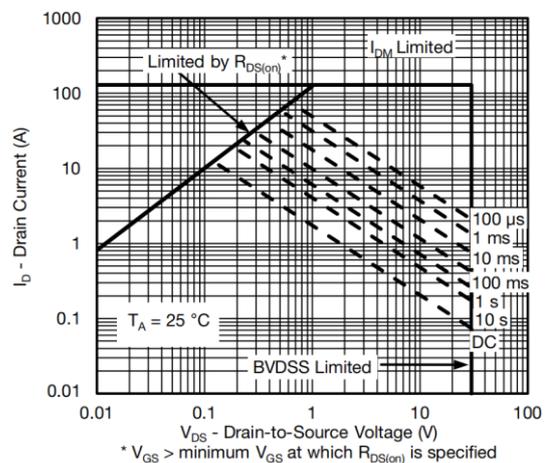
**On-Resistance vs. Drain Current and Gate Voltage**



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

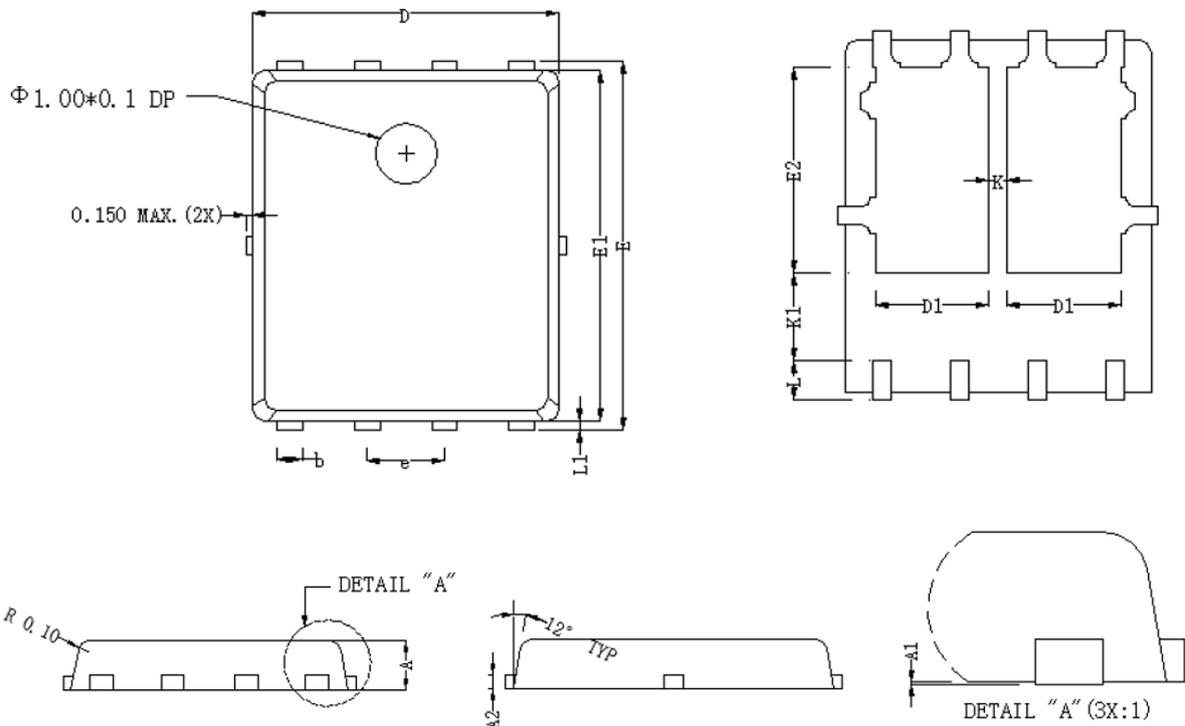


**On-Resistance vs. Junction Temperature**



**Safe Operating Area**

## ➤ Package Information



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.03	0.05
A2	0.254 REF		
b	0.25	0.30	0.35
D	4.80	4.90	5.00
D1	1.60	1.70	1.80
E	5.90	6.00	6.10
E1	5.65	5.75	5.85
E2	3.38	3.48	3.58
e	1.27 BSC		
K	0.55	0.60	0.65
K1	1.35 REF		
L	0.55	0.60	0.65
L1	0.10	0.13	0.16



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