



SSC8640GN6

N and P-Channel Enhancement Mode Power MOSFET

➤ Features

N-Channel

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D
40V	±20V	15mΩ@10V	32A
		20mΩ@4V5	

P-Channel

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D
-40V	±20V	26mΩ@-10V	-24A
		34mΩ@-4V5	

➤ Description

The SSC8640GN6 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.

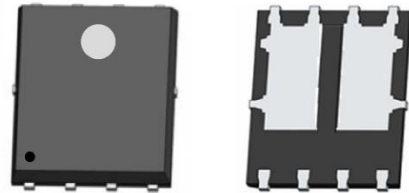
➤ Applications

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

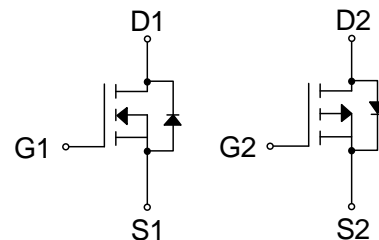
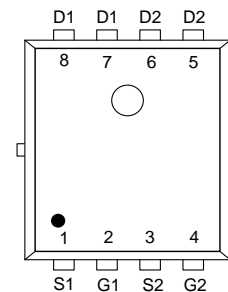
➤ Ordering Information

Device	Package	Shipping
SSC8640GN6	PDFN5X6-8L	5000/Reel

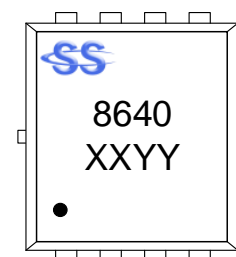
➤ Pin configuration



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}	40	-40	V
Gate-to-Source Voltage		V_{GSS}	± 20	± 20	V
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	32	-24	A
	$T_A = 100^\circ\text{C}$		18	-13	A
Pulsed Drain Current ^b		I_{DM}	128	-96	A
Power Dissipation ^a		I_{DSM}	11	-8.4	A
Power Dissipation ^c	$T_A = 25^\circ\text{C}$	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	Ratings		Unit
		N-Channel	P-Channel	
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	40	42	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	4.8	5.1	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1 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'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_A=25°C unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.5	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 8A		15	21	mΩ
		V _{GS} = 4.5V, I _D = 4A		20	29	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} = 0V			-1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} = 5V, I _D = 5A		35		s
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 8A		0.86	1.3	V
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		880		pF
Output Capacitance	C _{OSS}			70		
Reverse Transfer Capacitance	C _{RSS}			10		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 20V, I _D = 10A		27		nC
Gate to Source Charge	Q _{GS}			3.1		
Gate to Drain Charge	Q _{GD}			6.2		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 20V, R _L = 10Ω, R _{GEN} = 6Ω		6		ns
Rise Time	T _r			11		
Turn-off Delay Time	T _{D(OFF)}			24		
Fall Time	T _f			9.8		

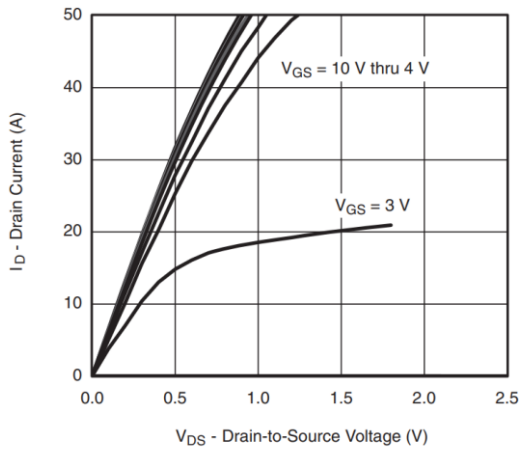


➤ **P-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)**

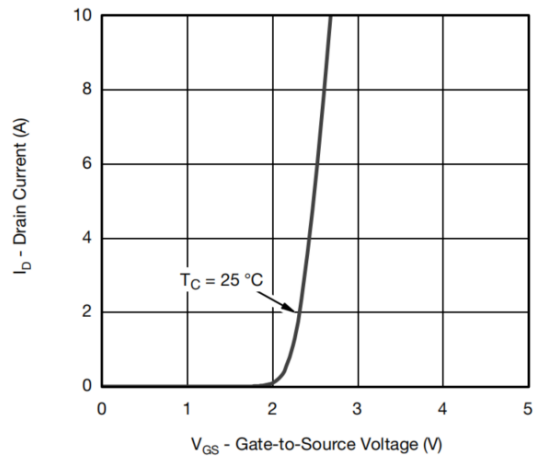
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250uA	-1	-1.5	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -7A		26	45	mΩ
		V _{GS} = -4.5V, I _D = -4A		34	55	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} = -5V, I _D = -5A		20		s
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -7A		-0.88	-1.3	V
Input Capacitance	C _{ISS}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz		1310		pF
Output Capacitance	C _{OSS}			130		
Reverse Transfer Capacitance	C _{RSS}			112		
Total Gate Charge	Q _G	V _{GS} = -20V, V _{DS} = -10V, I _D = -7A		23		nC
Gate to Source Charge	Q _{GS}			1.9		
Gate to Drain Charge	Q _{GD}			4.4		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = -10V, V _{DS} = -20V, R _L = 2.9Ω, R _G = 6Ω,		8		ns
Rise Time	T _r			6		
Turn-off Delay Time	T _{D(OFF)}			21		
Fall Time	T _f			7		



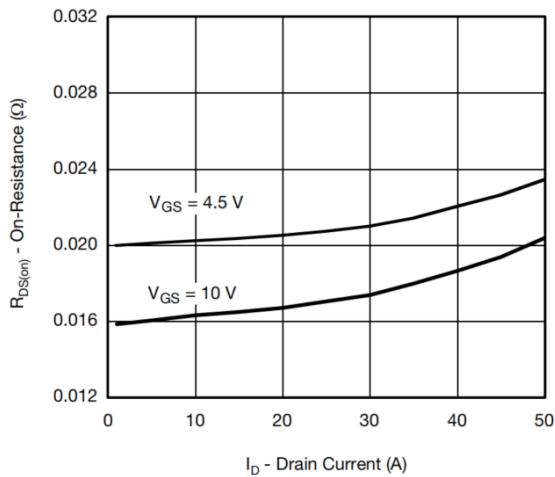
➤ N-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



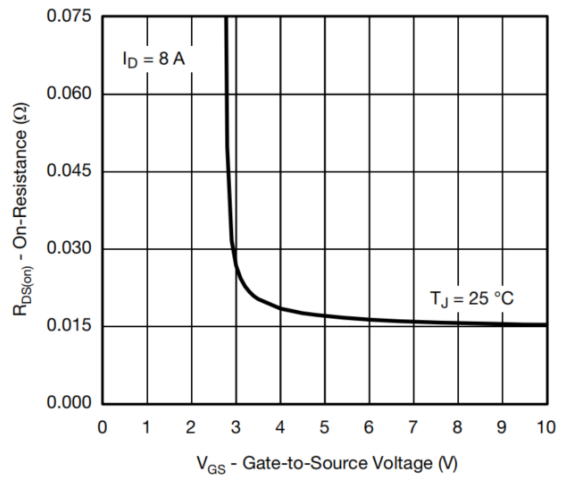
Output Characteristics



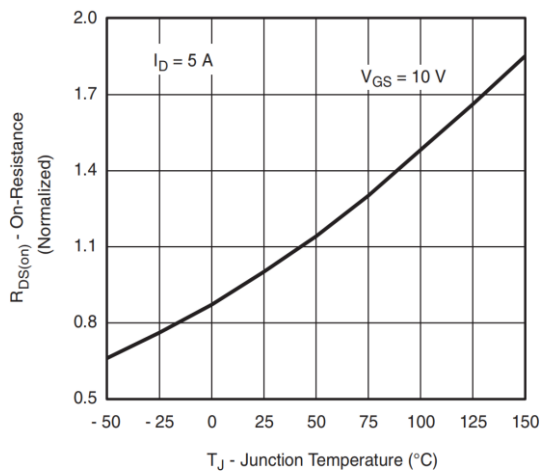
Transfer Characteristics



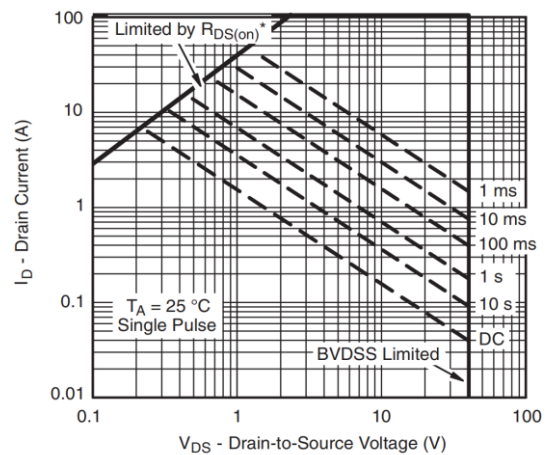
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

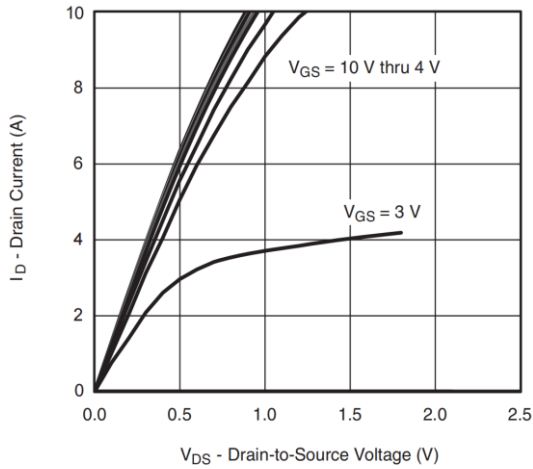


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

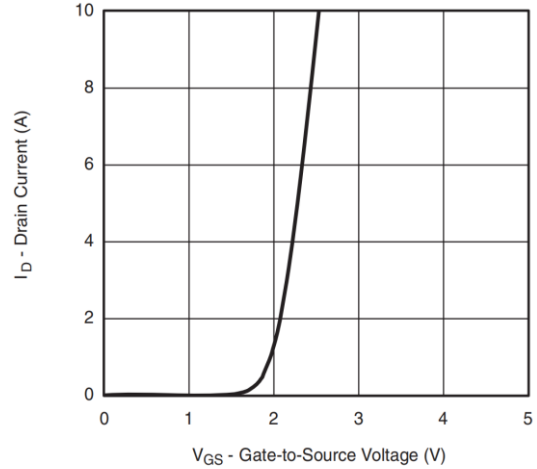
Safe Operating Area, Junction-to-Ambient



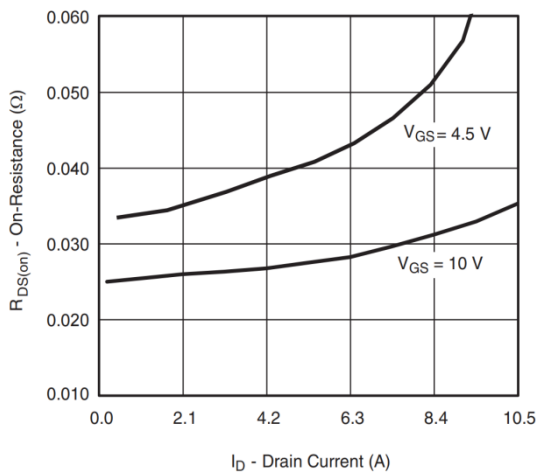
➤ P-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



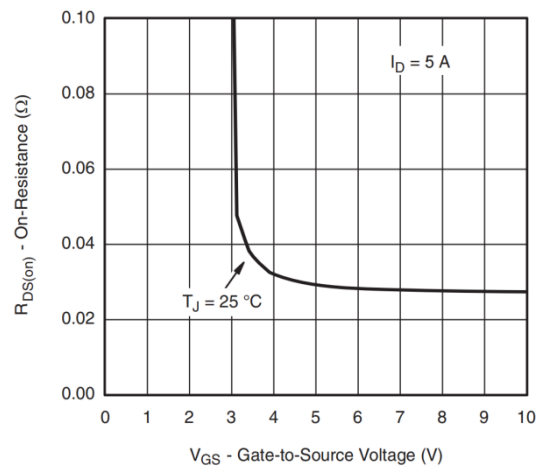
Output Characteristics



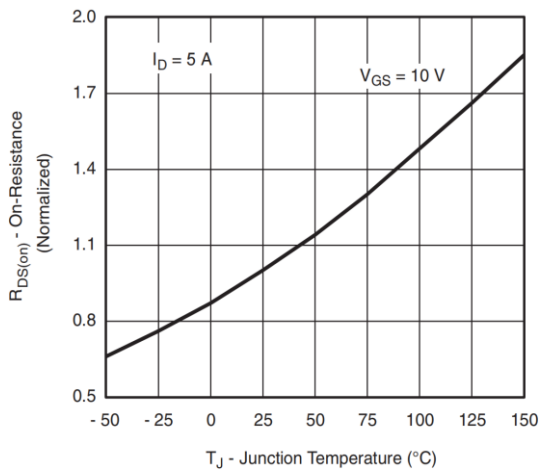
Transfer Characteristics



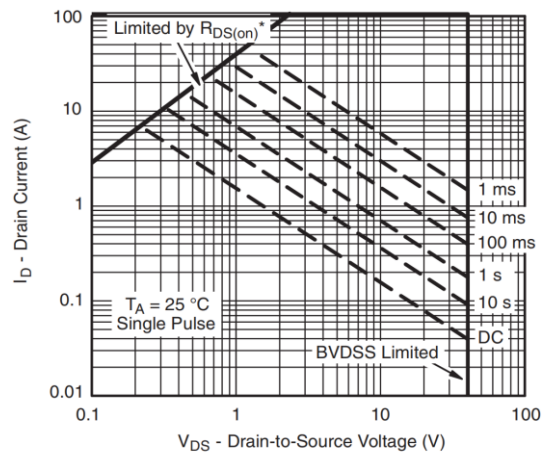
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



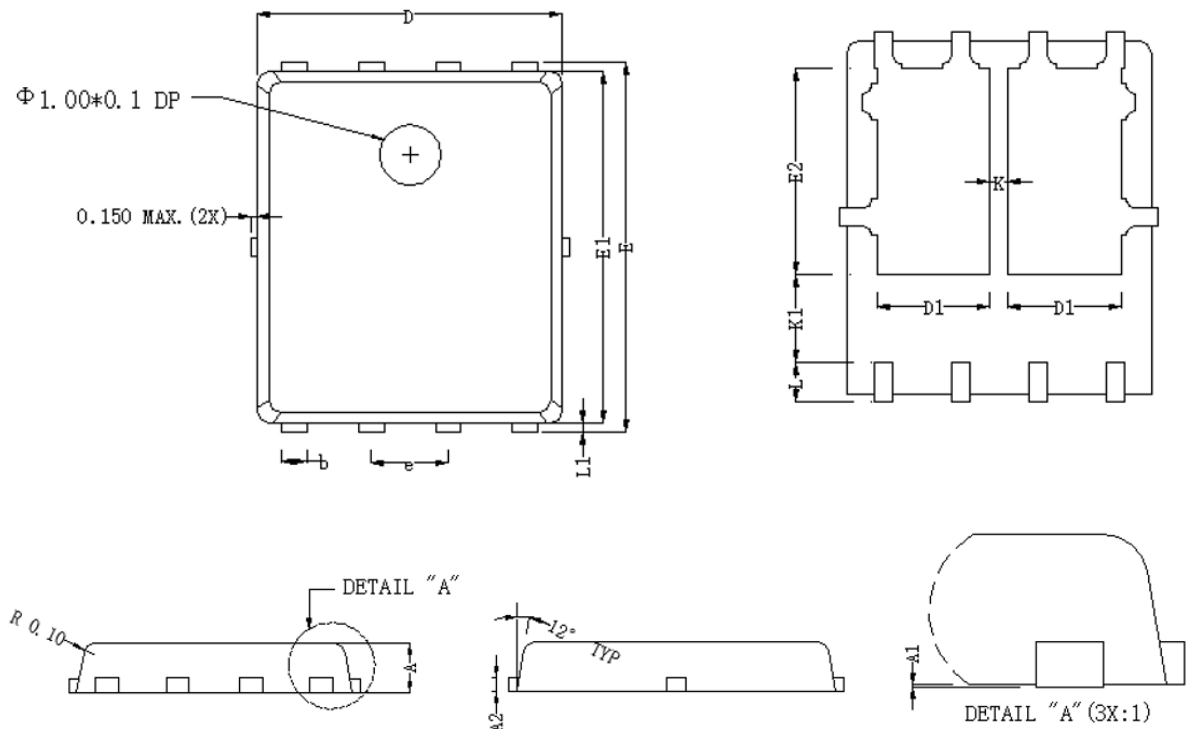
On-Resistance vs. Junction Temperature



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

Safe Operating Area, Junction-to-Ambient

➤ 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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