



SSC8640GN4

N and P-Channel Enhancement Mode Power MOSFET

➤ Features

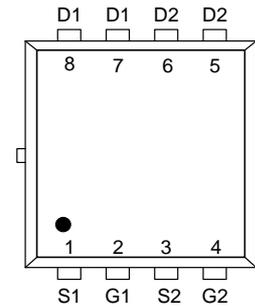
N-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
40V	$\pm 20V$	15m Ω @10V	28A
		20m Ω @4V5	

P-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-40V	$\pm 20V$	26m Ω @-10V	-21A
		34m Ω @-4V5	

➤ Pin configuration



PDFN3.3X3.3-8L (Top View)

➤ Description

The SSC8640GN4 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.

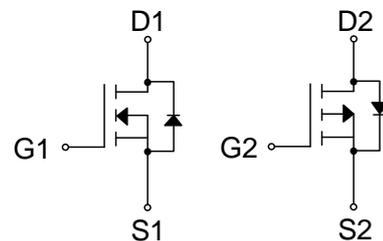
100% UIS + ΔV_{DS} + R_g Tested!

➤ Applications

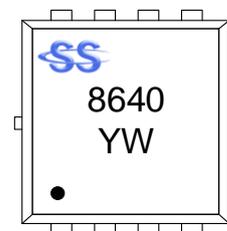
- PWM Applications
- Load Switch
- DC-DC Converters

➤ Ordering Information

Device	Package	Shipping
SSC8640GN4	PDFN3.3X3.3-8L	5000/Reel



Pin Configuration



Marking

(YW: 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	28	-21	A
	$T_A = 100^\circ\text{C}$		15	-11	A
Pulsed Drain Current ^b		I_{DM}	110	-84	A
Power Dissipation ^a		I_{DSM}	9	-7	A
Power Dissipation ^c	$T_A = 25^\circ\text{C}$	P_D	19	19	W
	$T_A = 100^\circ\text{C}$		7	7	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	55	55	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	6.5	6.5	

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'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	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		0.8	1.3	V
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		870		pF
Output Capacitance	C _{OSS}			67		
Reverse Transfer Capacitance	C _{RSS}			8		
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		

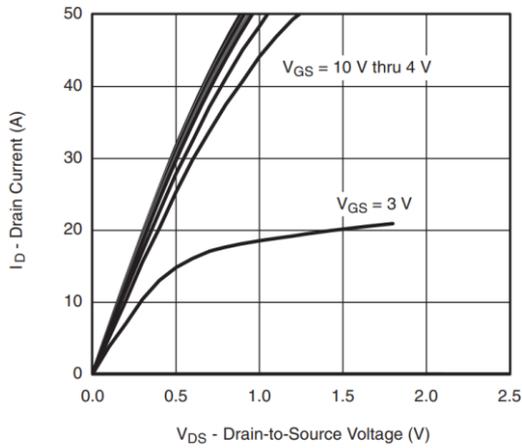


➤ **P-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)**

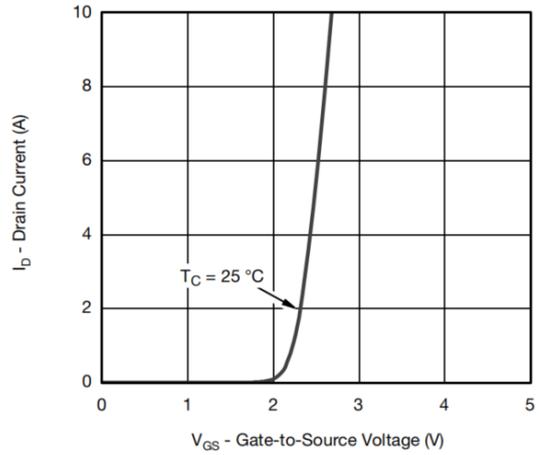
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250uA	-1	-1.5	-2	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -7A		26	45	mΩ
		V _{GS} = -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		-0.8	-1.3	V
Input Capacitance	C _{ISS}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz		1300		pF
Output Capacitance	C _{OSS}			122		
Reverse Transfer Capacitance	C _{RSS}			8		
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		



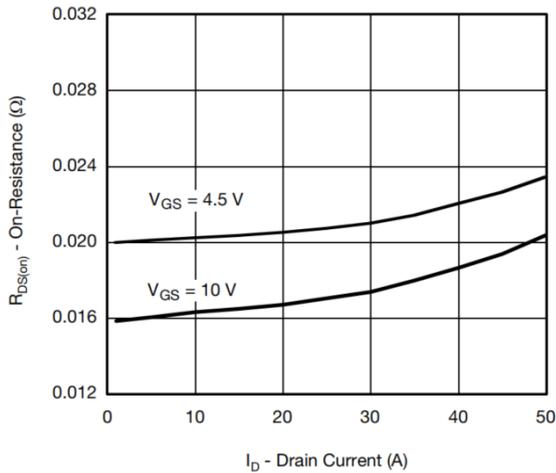
➤ N-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



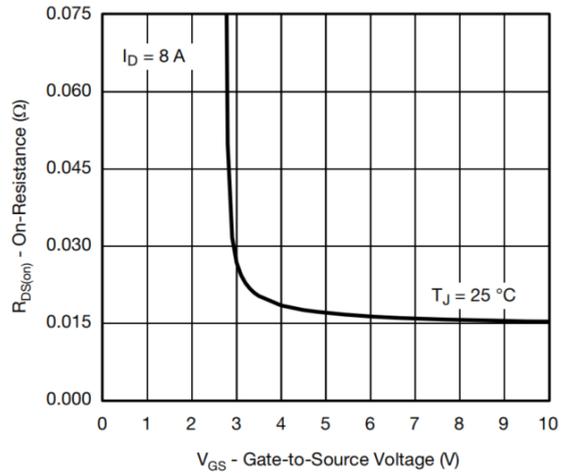
Output Characteristics



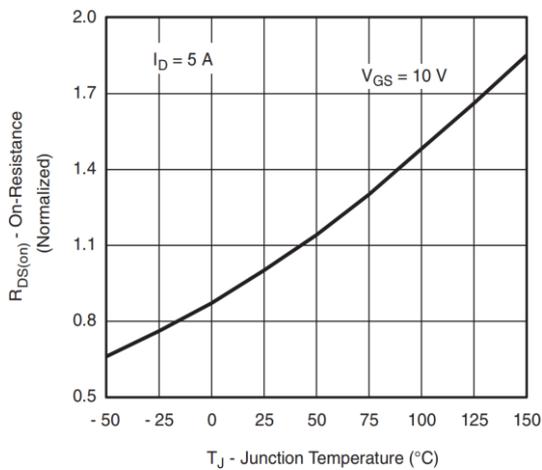
Transfer Characteristics



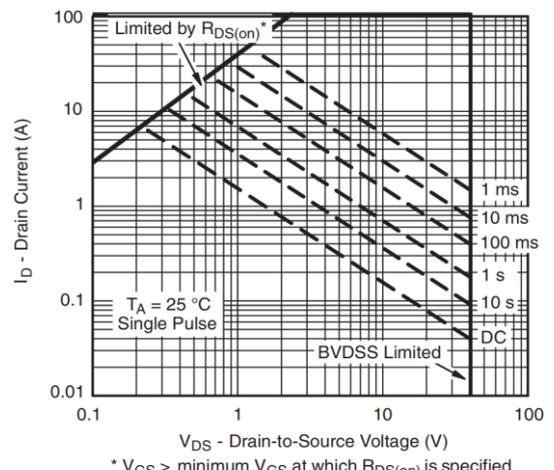
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



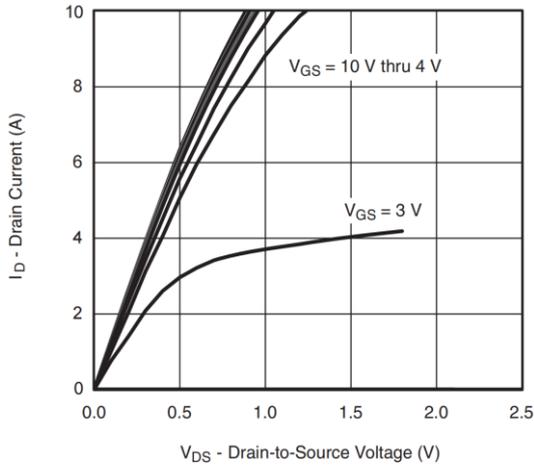
On-Resistance vs. Junction Temperature



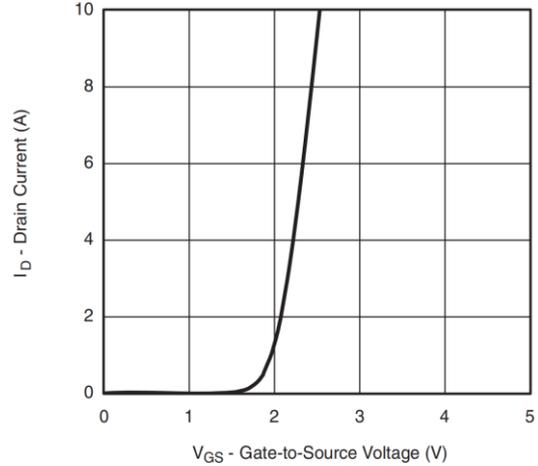
Safe Operating Area, Junction-to-Ambient



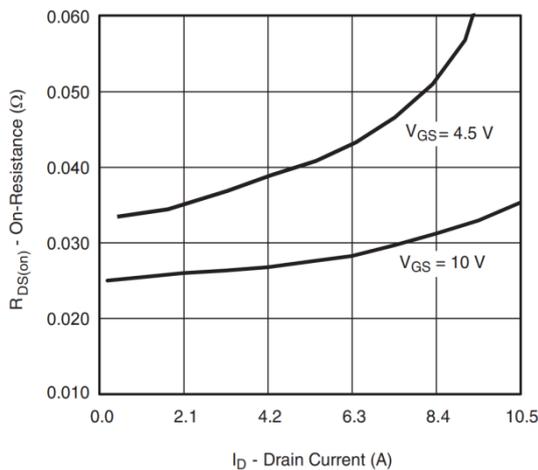
➤ P-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



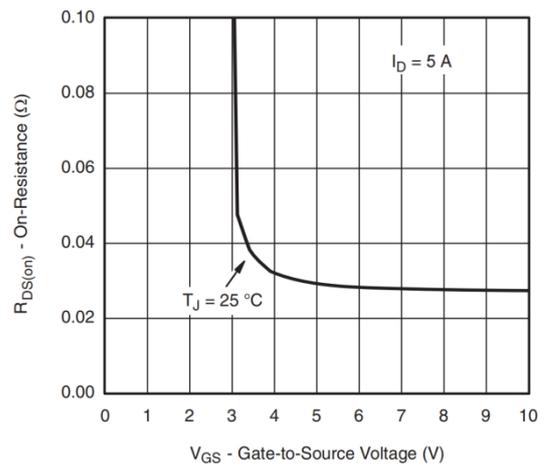
Output Characteristics



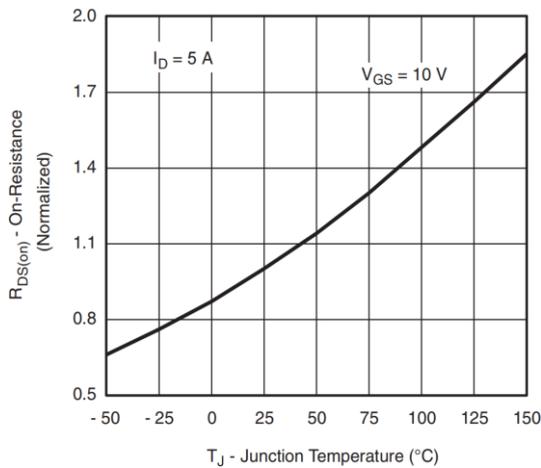
Transfer Characteristics



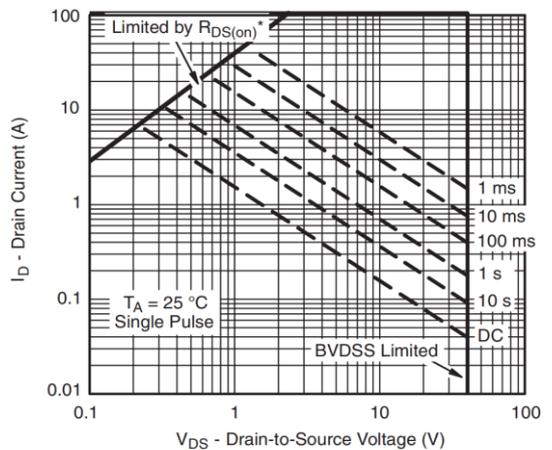
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage

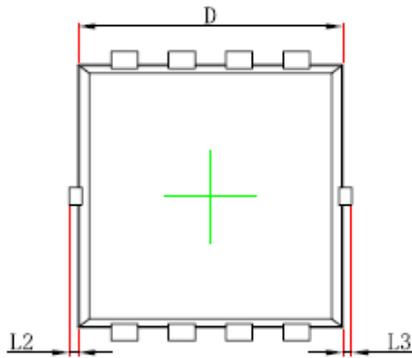


On-Resistance vs. Junction Temperature

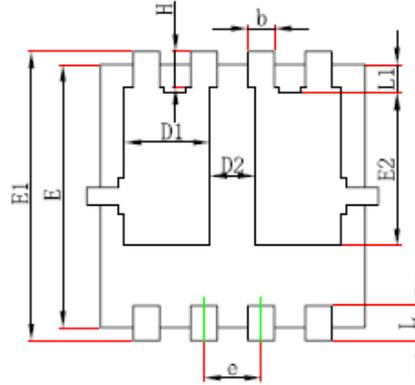


Safe Operating Area, Junction-to-Ambient

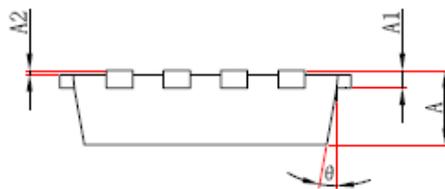
➤ Package Information



Top View
[顶视图]



Bottom View
[背视图]

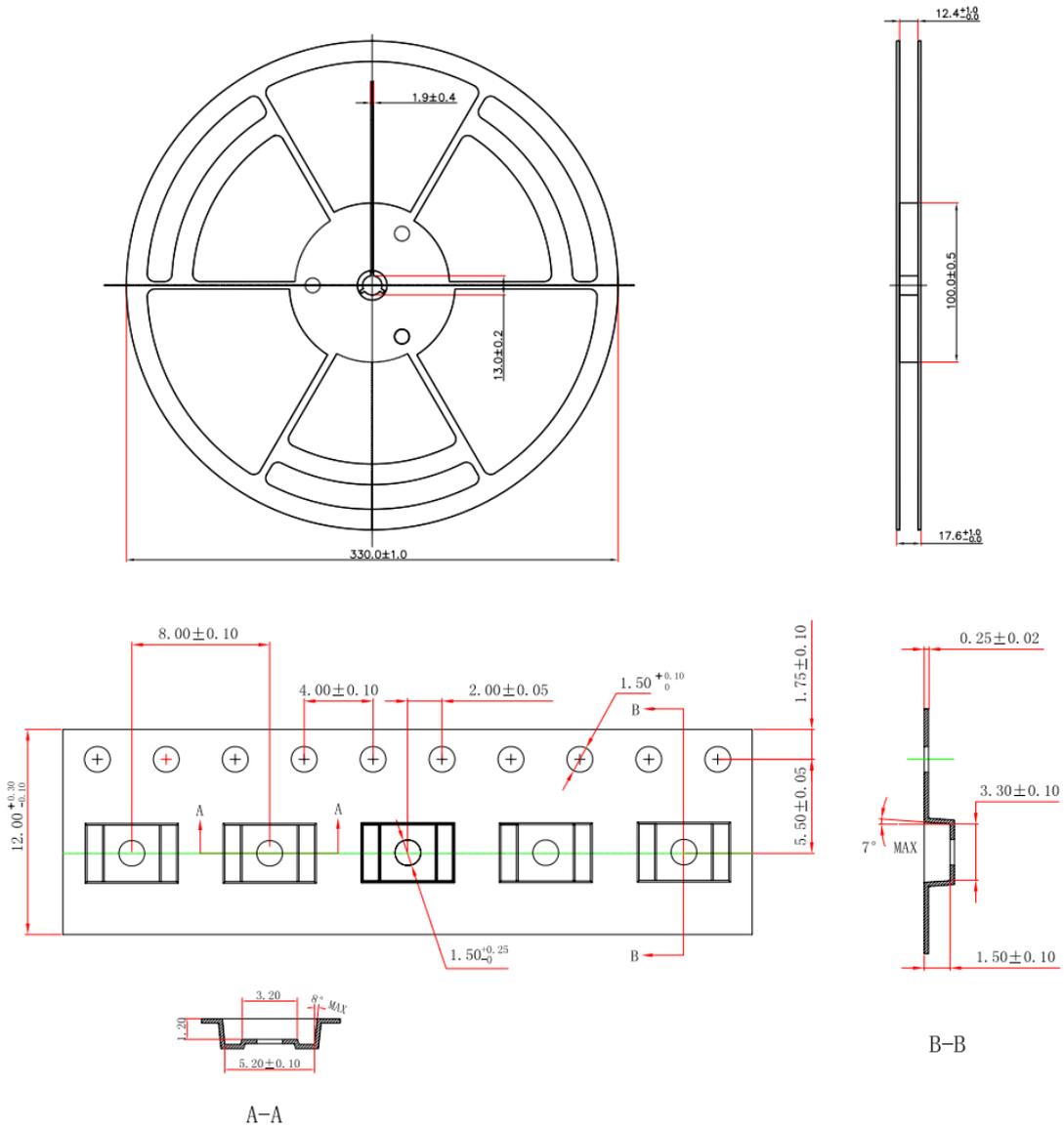


Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°



➤ Tape and Reel





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