SSC8645GN6

N and P-Channel Enhancement Mode Power MOSFET

➢ Features

N-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
40V	±20V	9.5mΩ@10V	47A
		12.5mΩ@4V5	

P-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-40V	±20V	11.5mΩ@-10V	-43A
		16.5mΩ@-4V5	

➢ Description

The SSC8635GN6 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 + ΔVDS + Rg Tested!

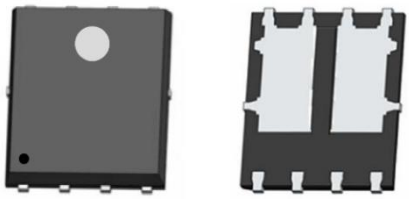
➢ Applications

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

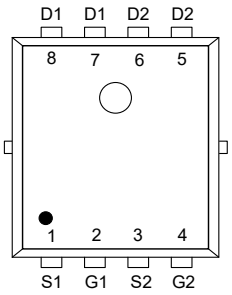
➢ Ordering Information

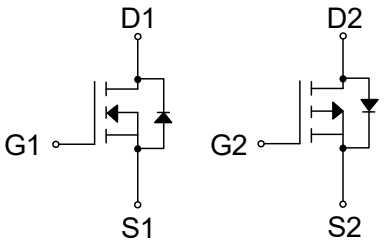
Device	Package	Shipping
SSC8645GN6	PDFN5X6-8L	5000/Reel

➢ Pin configuration



PDFN5X6-8L





Pin Configuration (Top View)

Marking

(XXYY: Internal Traceability Code)

➢ Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter		N-Channel	P-Channel	Unit
V_{DSS}	Drain-to-Source Voltage		40	-40	V
V_{GSS}	Gate-to-Source Voltage		±20	±20	V
I_D	Continuous Drain Current [d]	T_C=25℃	47	-43	A
		T_C=100℃	26	-24	
I_{DSM}	Continuous Drain Current [a]	T_A=25℃	14	-13	A
		T_A=70℃	10.5	-9.5	
I_{DM}	Pulsed Drain Current [b]		188	-172	A
P_D	Power Dissipation [c]	T_C=25℃	34	34	W
		T_C=100℃	13.5	13.6	
P_{DSM}	Power Dissipation [a]	T_A=25℃	3	3.1	W
		T_A=70℃	1.9	2	
I_{AS}	Avalanche Current [b] L=0.5mH Single Pulse		17	-28	A
E_{AS}	Avalanche Energy [b] L=0.5mH Single Pulse		72	196	mJ
T_J	Operation junction temperature		-55~150		℃
T_{STG}	Storage temperature range		-55~150		

➢ Thermal Resistance Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	41	53	℃/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	3.7	4.8	

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz.copper,in a still air environment with T_A=25℃.The value in any given application depends on the user is specific board design. The current rating is based on the t≤10s thermal resistance rating.

b. Repetitive rating, pulse width limited by junction temperature.

c. The power dissipation P_D is based on $T_{J(MAX)}$=150°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.

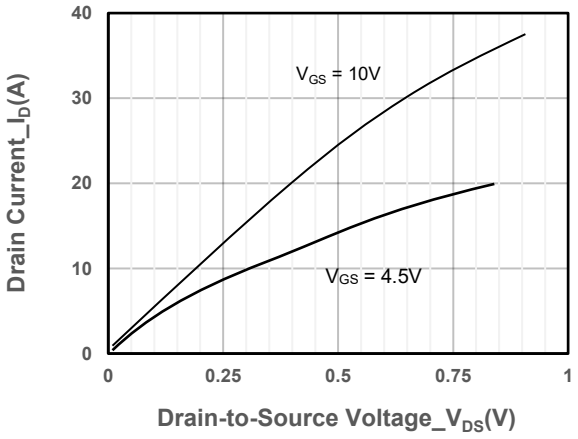
➢ N-Channel Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250uA	40			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	1.2		2.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		9.5	14	mΩ
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 10A		12.5	18	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40V, V_{GS} = 0V			1	uA
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 5A			1.2	V
Gate Resistance	R_G	V_{DS} = 0V, f = 1MHz		2.7		Ω
Input Capacitance	C_{ISS}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		1168		pF
Output Capacitance	C_{OSS}			80		
Reverse Transfer Capacitance	C_{RSS}			76		
Total Gate Charge	Q_G	V_{GS} = 10V, V_{DS} = 25V, I_D = 5A		16		nC
Gate to Source Charge	Q_{GS}			8.5		
Gate to Drain Charge	Q_{GD}			10		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = 10V, V_{DS} = 25V, R_L = 0.75Ω, R_{GEN} = 6Ω		6.5		ns
Rise Time	T_r			13		
Turn-off Delay Time	$T_{D(OFF)}$			8		
Fall Time	T_f			7		
Diode Recovery Time	T_{rr}	I_F=5A, di/dt=100A/us		53		ns
Diode Recovery Charge	Q_{rr}	I_F=5A, di/dt=100A/us		39		nC

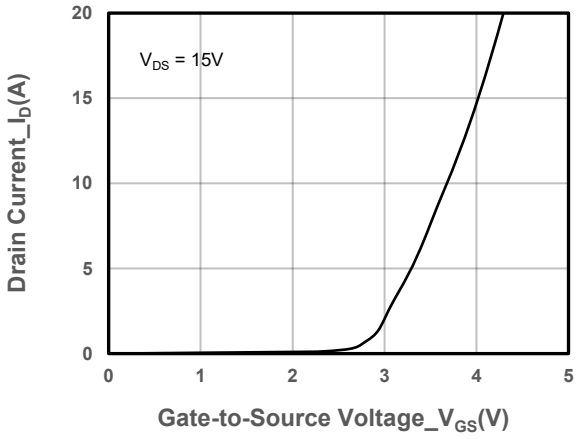
➢ P-Channel Electrical Characteristics (T_A=25℃ unless otherwise noted)

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	-1.2		-2.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A		11.5	16	mΩ
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D =- 10A		16.5	22	mΩ
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
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = -15A			-1.28	V
Gate Resistance	R_G	V_{DS} = 0V, f = 1MHz		5.9		Ω
Input Capacitance	C_{ISS}	V_{DS} = -20V, V_{GS} = 0V, f = 1MHz		2328		pF
Output Capacitance	C_{OSS}			179		
Reverse Transfer Capacitance	C_{RSS}			166		
Total Gate Charge	Q_G	V_{GS} = -4.5V, V_{DS} = -15V, I_D = -10A		30		nC
Gate to Source Charge	Q_{GS}			8.5		
Gate to Drain Charge	Q_{GD}			16		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = -10V, V_{DS} = -15V, I_D = -15A, R_{GEN} = 3.3Ω		18		ns
Rise Time	T_r			32		
Turn-off Delay Time	$T_{D(OFF)}$			66		
Fall Time	T_f			40		
Diode Recovery Time	T_{rr}	I_F=-15A, di/dt=100A/us		57		ns
Diode Recovery Charge	Q_{rr}	I_F=-15A, di/dt=100A/us		32		nC

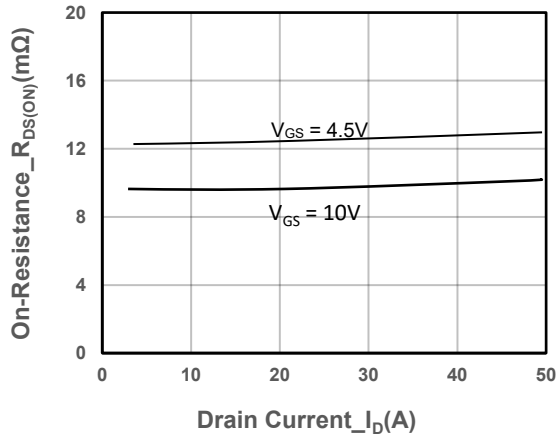
➢ N-Channel Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



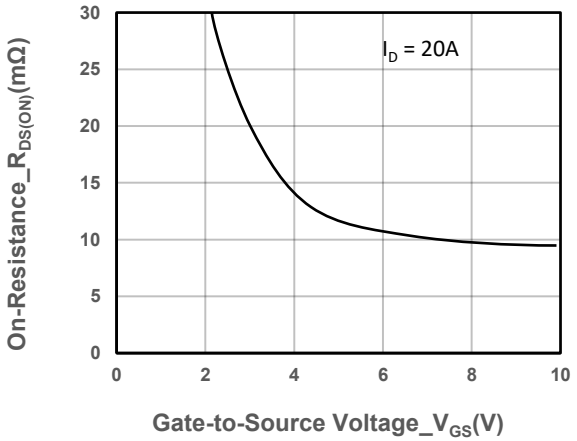
Output Characteristics



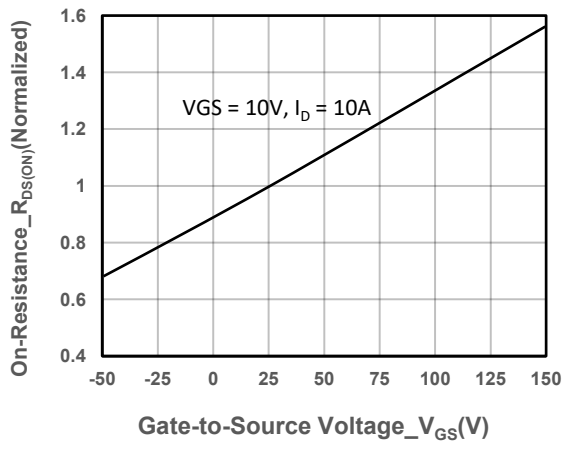
Transfer Characteristics



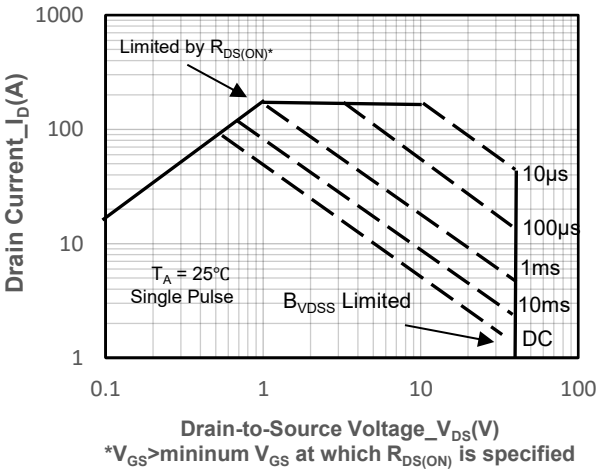
On-Resistance vs. Drain Current and Gate Voltag



On-Resistance vs. Gate-to-Source Voltage

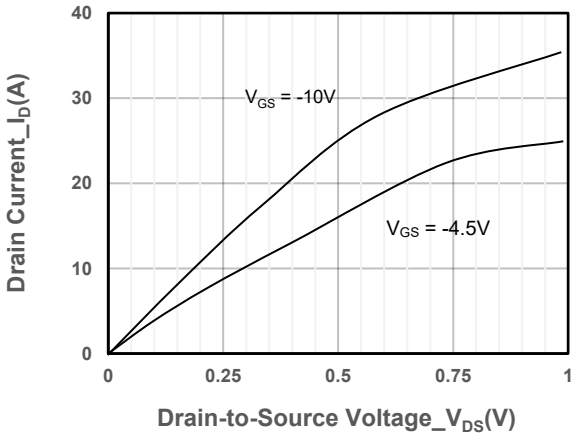


On-Resistance vs. Junction Temperature

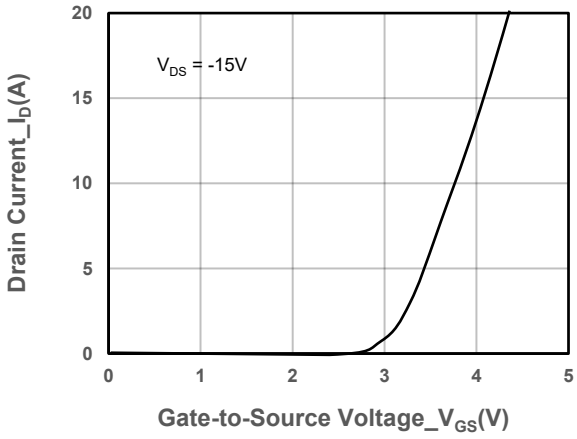


Safe Operating Area vs. Junction-to-Ambient

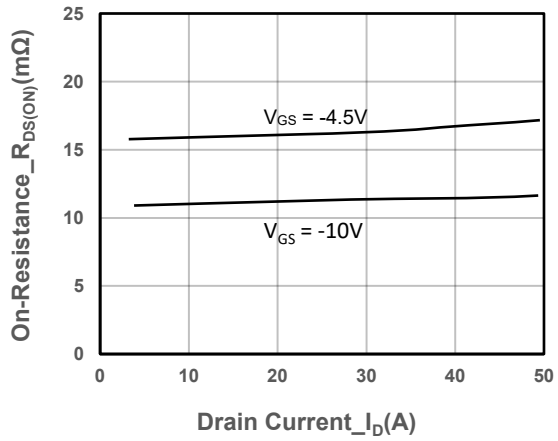
➢ P-Channel Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



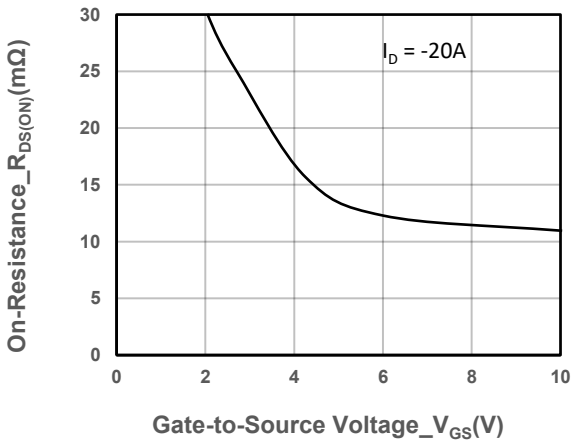
Output Characteristics



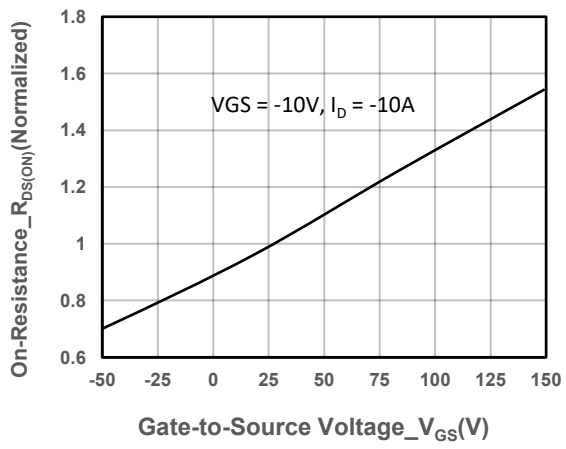
Transfer Characteristics



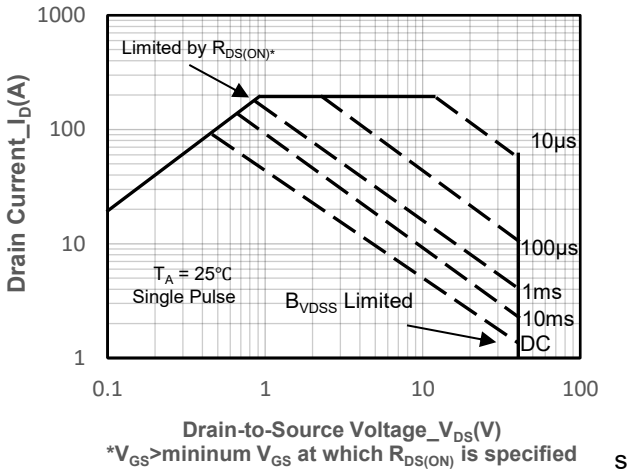
On-Resistance vs. Drain Current and Gate Voltag



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



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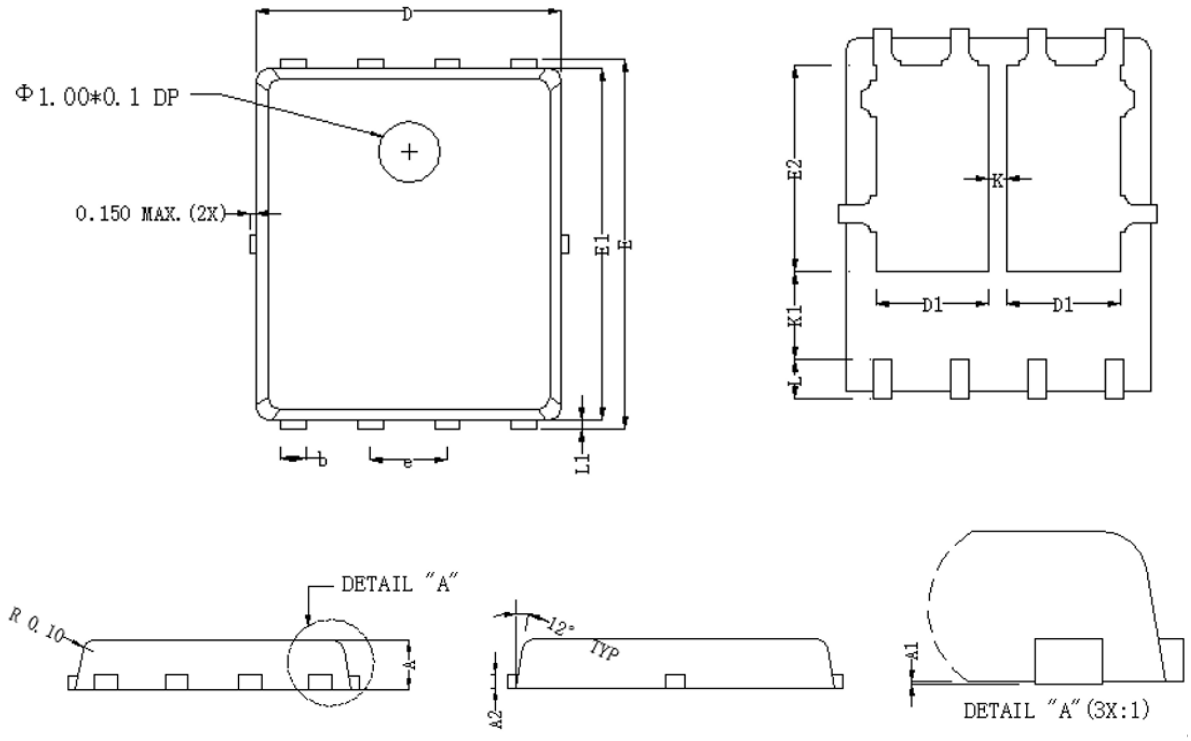
Safe Operating Area vs. Junction-to-Ambient

➢ 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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