



SSC8635GN6

N and P-Channel Enhancement Mode Power MOSFET

➤ Features

N-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
30V	$\pm 20V$	6.2m Ω @10V	53A
		9m Ω @4V5	

P-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-30V	$\pm 20V$	8m Ω @-10V	-50A
		10m Ω @-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 + ΔV_{DS} + R_g Tested!

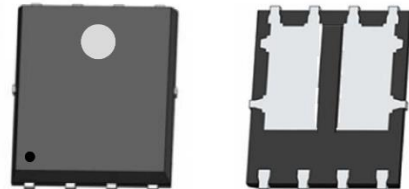
➤ Applications

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

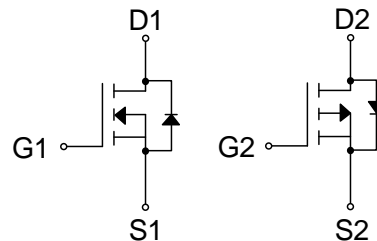
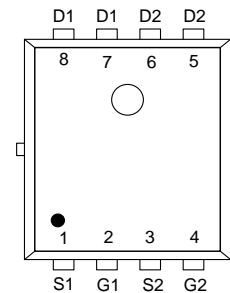
➤ Ordering Information

Device	Package	Shipping
SSC8635GN6	PDFN5X6-8L	5000/Reel

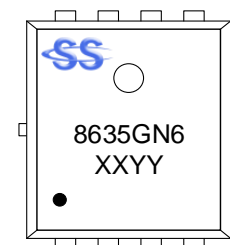
➤ Pin configuration



PDFN5X6-8L



Pin Configuration (Top View)



Marking

(XXYY: Internal Traceability Code)



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

Symbol	Parameter	N-Channel	P-Channel	Unit	
V_{DSS}	Drain-to-Source Voltage	30	-30	V	
V_{GSS}	Gate-to-Source Voltage	± 20	± 20	V	
I_D	Continuous Drain Current ^d	$T_C=25^\circ\text{C}$	53	-50	A
		$T_C=100^\circ\text{C}$	29	-27	
I_{DSM}	Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	16	-15	A
		$T_A=70^\circ\text{C}$	12	-11	
I_{DM}	Pulsed Drain Current ^b	212	-200	A	
P_D	Power Dissipation ^c	$T_C=25^\circ\text{C}$	33	33	W
		$T_C=100^\circ\text{C}$	13	13	
P_{DSM}	Power Dissipation ^a	$T_A=25^\circ\text{C}$	3	3	W
		$T_A=70^\circ\text{C}$	1.9	1.9	
I_{AS}	Avalanche Current ^b $L=0.5\text{mH}$ Single Pulse	17	-25	A	
E_{AS}	Avalanche Energy ^b $L=0.5\text{mH}$ Single Pulse	72	156	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	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	41	53	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	3.7	4.8	

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 $T_{J(\text{MAX})}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.



➤ **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	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.0	1.5	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 15A		6.2	8.5	mΩ
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 10A		9	13	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, 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 = 10A		0.8	1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		2.0		Ω
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		1910		pF
Output Capacitance	C _{OSS}			242		
Reverse Transfer Capacitance	C _{RSS}			209		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 15V, I _D = 20A		17		nC
Gate to Source Charge	Q _{GS}			5		
Gate to Drain Charge	Q _{GD}			7.5		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 15V, R _L = 1Ω, R _G = 3Ω		8.4		ns
Rise Time	T _r			8.7		
Turn-off Delay Time	T _{D(OFF)}			26		
Fall Time	T _f			9		
Diode Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us		53		ns
Diode Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		39		nC

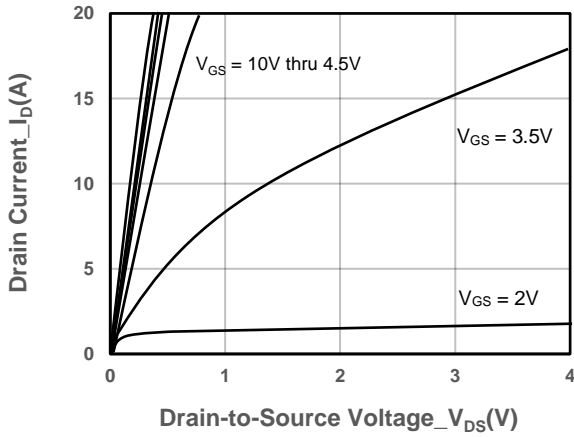


➤ **P-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)**

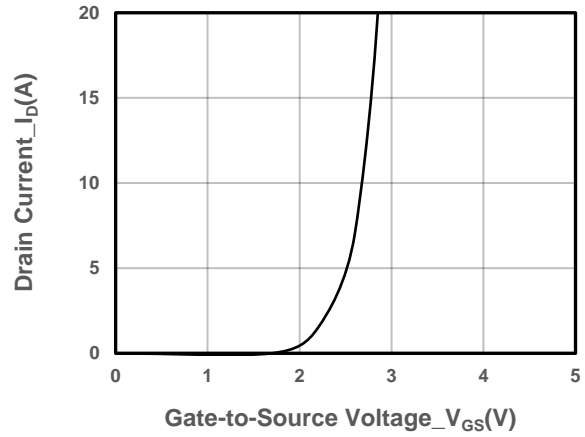
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.8	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -15A		8	13	mΩ
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -10A		10	20	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, 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 = -10A		-0.8	-1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		2.8		Ω
Input Capacitance	C _{ISS}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		3400		pF
Output Capacitance	C _{OSS}			490		
Reverse Transfer Capacitance	C _{RSS}			360		
Total Gate Charge	Q _G	V _{GS} = -10V, V _{DS} = -15V, I _D = -20A		17		nC
Gate to Source Charge	Q _{GS}			2.3		
Gate to Drain Charge	Q _{GD}			3.1		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = -10V, V _{DS} = -15V, R _L = 1Ω, R _G = 3Ω		8.2		ns
Rise Time	T _r			9.7		
Turn-off Delay Time	T _{D(OFF)}			51		
Fall Time	T _f			24		
Diode Recovery Time	T _{rr}	I _F = -20A, di/dt = 100A/us		57		ns
Diode Recovery Charge	Q _{rr}	I _F = -20A, di/dt = 100A/us		32		nC



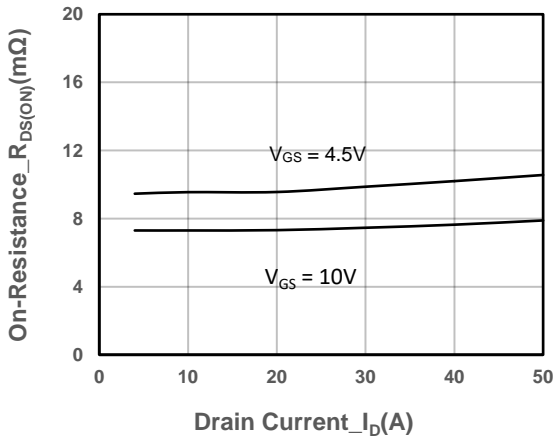
➤ N-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



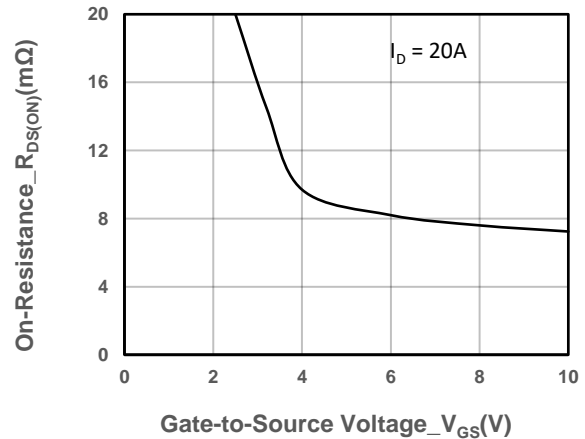
Output Characteristics



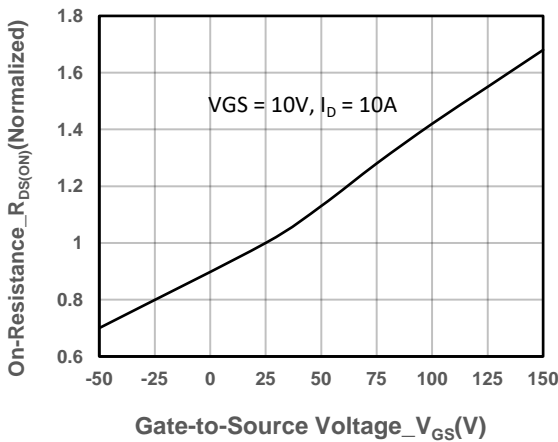
Transfer Characteristics



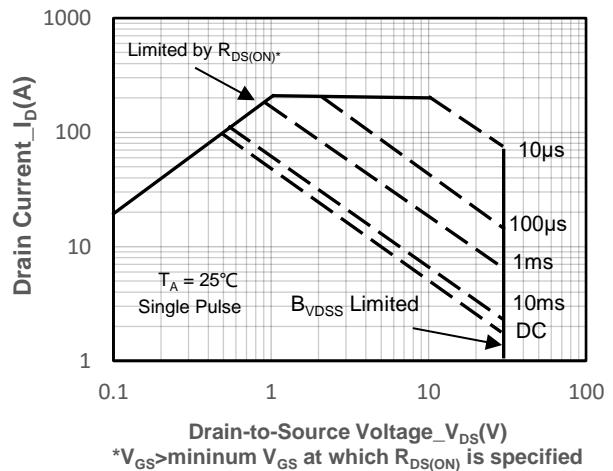
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage



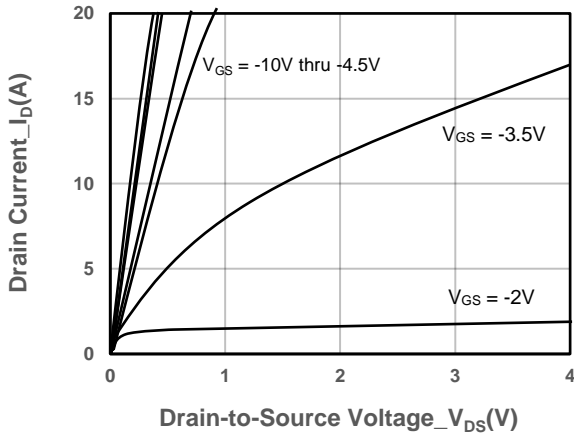
On-Resistance vs. Junction Temperature



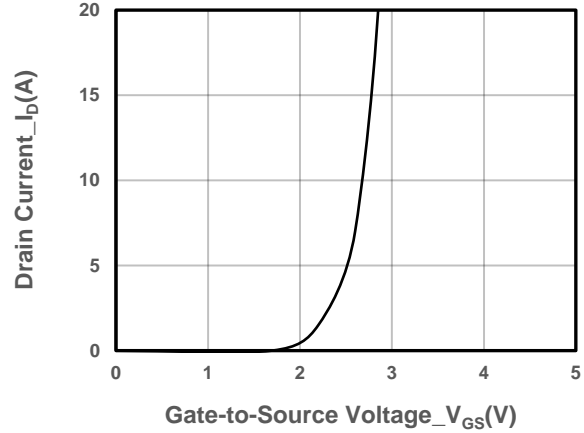
Safe Operating Area vs. Junction-to-Ambient



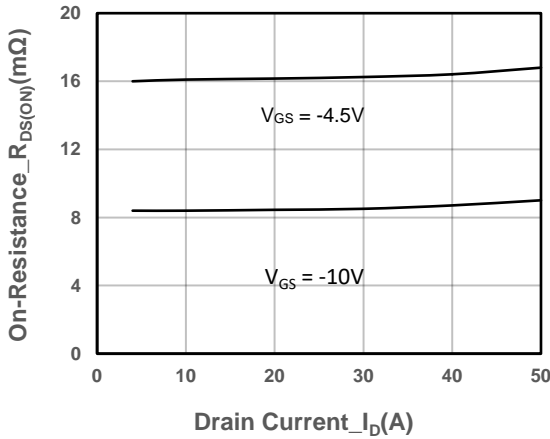
➤ P-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



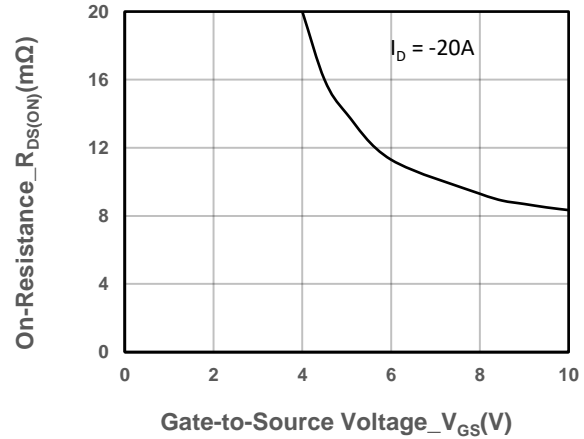
Output Characteristics



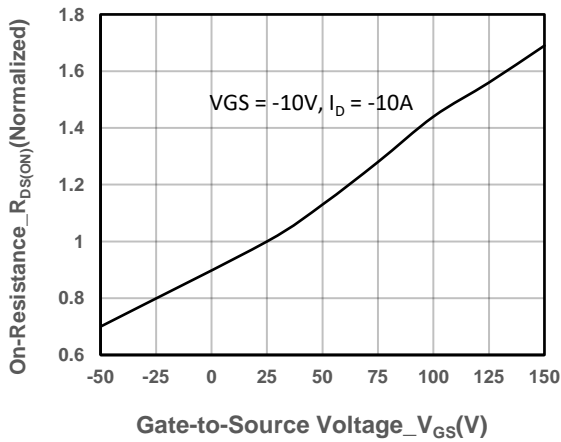
Transfer Characteristics



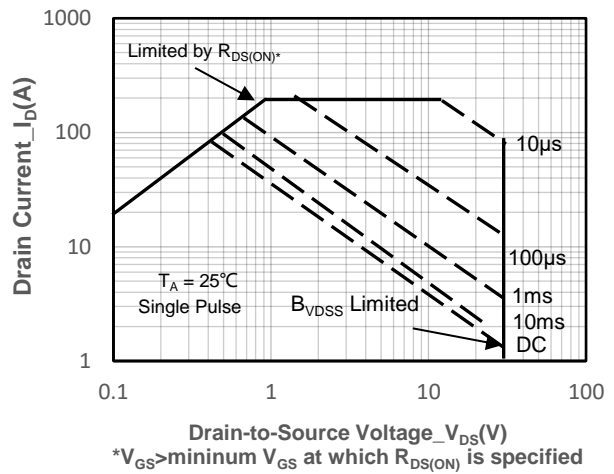
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

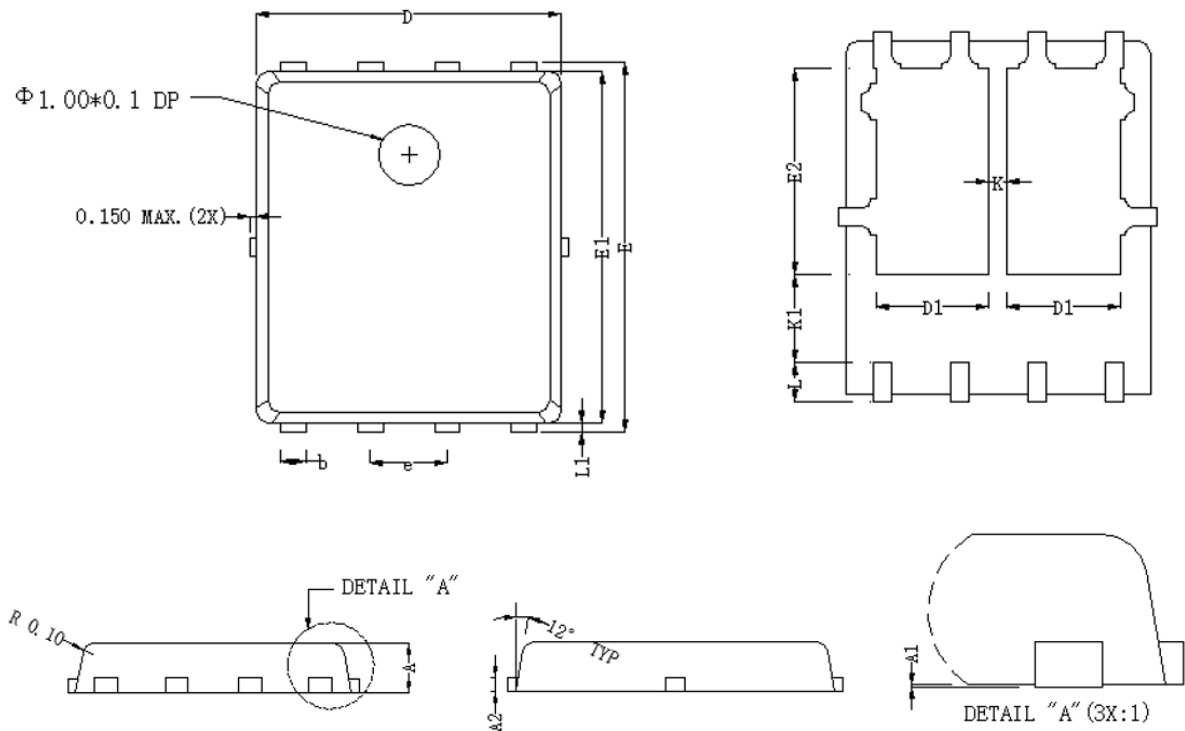


On-Resistance vs. Junction Temperature



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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