



SSC8166GN4

N-Channel Enhancement Mode MOSFET

➤ Features

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D
60V	±20V	31mΩ@10V	22A
		34mΩ@4V5	

➤ Description

This device is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount package.

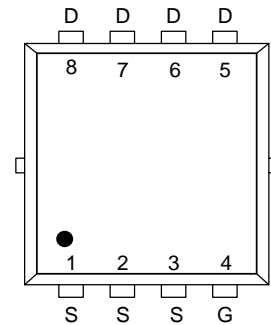
➤ Applications

- Load Switch
- Portable Devices
- DCDC Conversion
- Charging

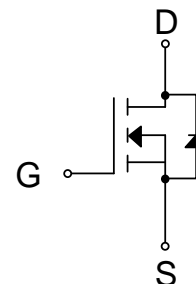
➤ Ordering Information

Device	Package	Shipping
SSC8166GN4	PDFN3.3X3.3-8L	5000/Reel

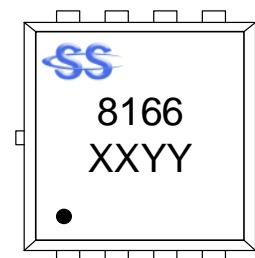
➤ Pin Configuration



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



Pin Configuration



Marking

(XXYY: Internal Traceability Code)



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

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DSS}	60	V
Gate-to-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current ^d	$T_C=25^\circ\text{C}$	I_D	22	A
	$T_C=100^\circ\text{C}$		12	
Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	I_{DSM}	7	A
	$T_A=70^\circ\text{C}$		5	
Pulsed Drain Current ^b		I_{DM}	80	A
Power Dissipation ^c	$T_C=25^\circ\text{C}$	P_D	25	W
	$T_C=100^\circ\text{C}$		10	
Power Dissipation ^a	$T_A=25^\circ\text{C}$	P_{DSM}	3.1	W
	$T_A=70^\circ\text{C}$		2	
Operation junction temperature		T_J	-55~150	°C
Storage temperature range		T_{STG}	-55~150	

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

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	40	52	°C/W
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	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 is specific board design. The power dissipation 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.
- The maximum current rating is package limited.

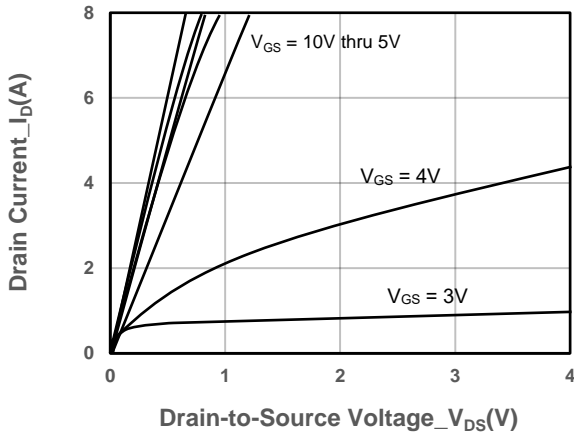


➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

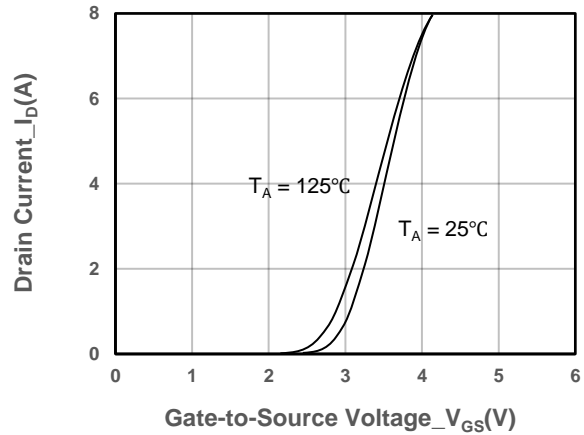
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250uA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.6	3	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 7A		31	37	mΩ
		V _{GS} = 4.5V, I _D = 5A		34	43	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, 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 = 2A		0.75	1.3	V
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		1210		pF
Output Capacitance	C _{OSS}			65		
Reverse Transfer Capacitance	C _{RSS}			53		
Total Gate Charge	Q _G	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 5A		9		nC
Gate to Source Charge	Q _{GS}			3.1		
Gate to Drain Charge	Q _{GD}			3		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 4.5V, V _{DS} = 10V, R _L = 1.4Ω, R _G = 6Ω, I _D = 5A		6		ns
Rise Time	T _r			6		
Turn-off Delay Time	T _{D(OFF)}			32		
Fall Time	T _f			11		



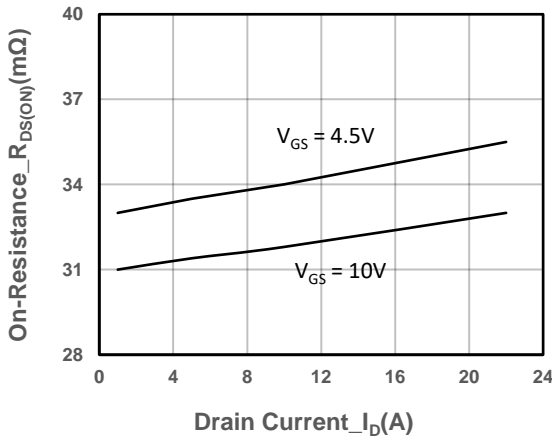
➤ **Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)**



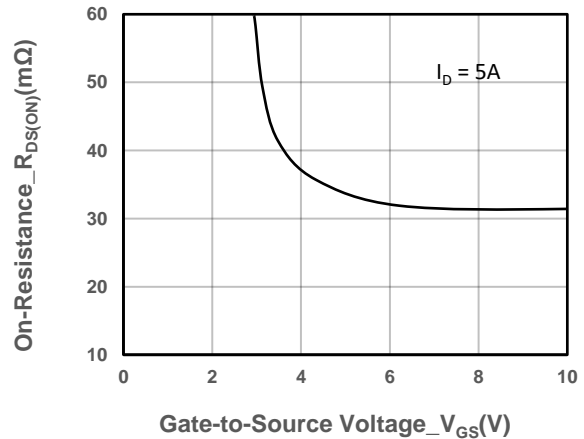
Output Characteristics



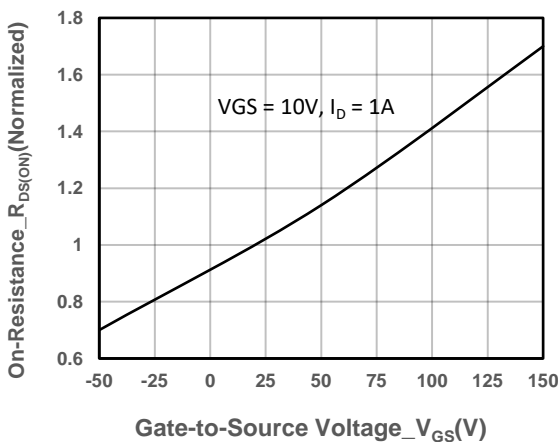
Transfer Characteristics



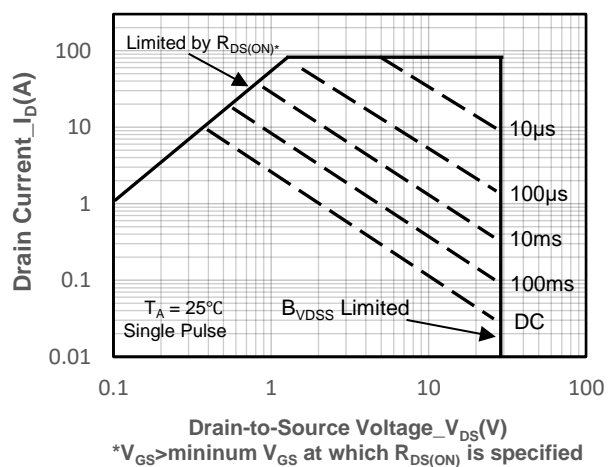
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

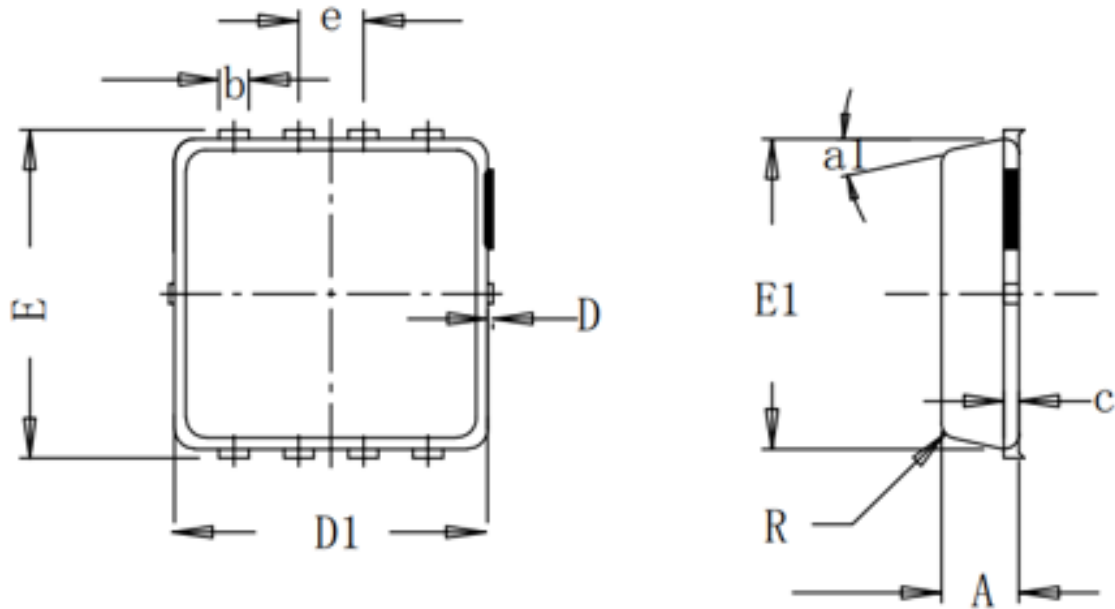


On-Resistance vs. Junction Temperature



Safe Operating Area vs. Junction-to-Ambient

➤ Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.75	0.78	0.81
b	0.297	0.3	0.35
c	-	0.152	-
D	0	0.05	0.1
D1	3.12	3.15	3.18
D2	-	2.35	-
E	3.2	3.3	3.4
E1	3.09	3.12	3.15
E2	-	1.75	-
E3	-	0.575	-
E4	-	0.4	-
R	-	0.15	-
e	0.65BSC		
a1°	-	12°	-



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