SSCU1009NP30GS1

N and P-Channel Enhancement Mode Power MOSFET

➢ Features

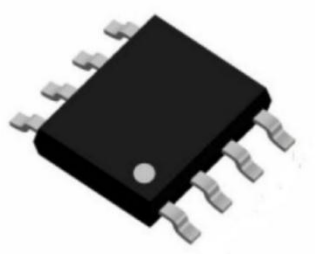
N-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
30V	±20V	14.5mΩ@10V	10A
		21mΩ@4.5V	

P-Channel

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-30V	±20V	19mΩ@-10V	-9A
		27mΩ@-4.5V	

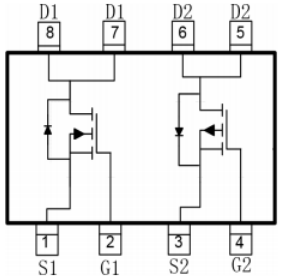
➢ Pin configuration



SOP-8

➢ Description

The SSCU1009NP30GS1 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.



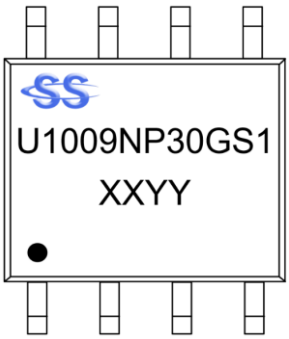
Pin Configuration (Top View)

➢ Applications

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

➢ Ordering Information

Device	Package	Shipping
SSCU1009NP30GS1	SOP-8	4000/Reel



Marking (Top View)

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

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-to-Source Voltage	V_{DSS}	30	-30	V
Gate-to-Source Voltage	V_{GSS}	±20	±20	V
Continuous Drain Current [c]	I_D	10	-9	A
Pulsed Drain Current [b]	I_{DM}	40	-36	A
Power Dissipation [c]	P_D	2	2	W
Operation junction temperature	T_J	-55 to 150	-55 to 150	℃
Storage temperature range	T_{STG}	-55 to 150	-55 to 150	℃

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

Symbol	Parameter	Channel	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	N-Channel	63	℃/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	P-Channel	63	

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.

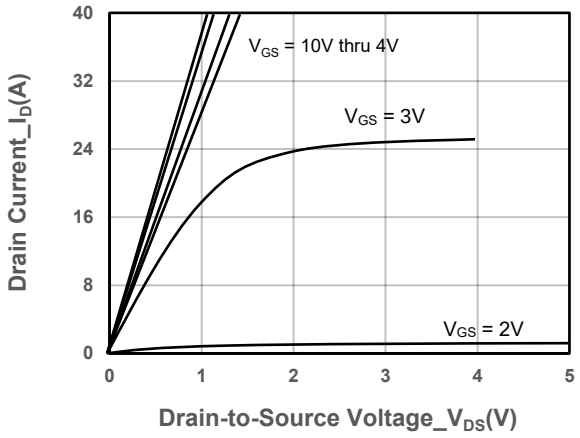
➢ N-Channel Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	1	1.5	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 8A		14.5	19	mΩ
		V_{GS} = 4.5V, I_D = 6A		21	28	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, 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		18		s
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 1A		0.7	1.3	V
Input Capacitance	C_{ISS}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		600		pF
Output Capacitance	C_{OSS}			128		
Reverse Transfer Capacitance	C_{RSS}			102		
Total Gate Charge	Q_G	V_{GS} = 10V, V_{DS} = 20V, I_D = 4A		14		nC
Gate to Source Charge	Q_{GS}			8		
Gate to Drain Charge	Q_{GD}			4.8		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = 10V, V_{DS} = 20V, R_L = 2.5Ω, R_{GEN} = 3Ω,		10.5		ns
Rise Time	T_r			18		
Turn-off Delay Time	$T_{D(OFF)}$			36		
Fall Time	T_f			19		

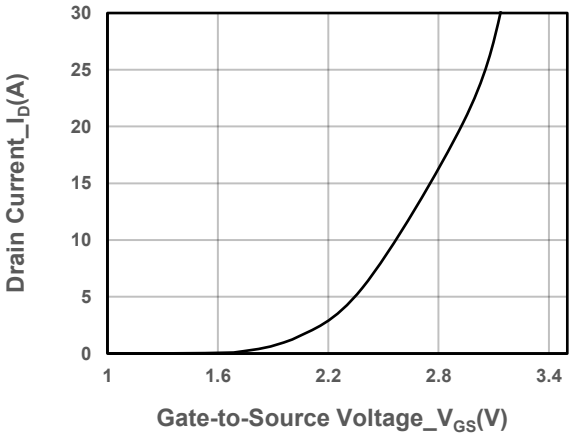
➢ P-Channel Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250uA	-1	-1.5	-3	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -8A		19	26	mΩ
		V_{GS} = -4.5V, I_D = -6A		27	38	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, 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		24		s
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = -1A		-0.7	-1.3	V
Input Capacitance	C_{ISS}	V_{DS} = -20V, V_{GS} = 0V, f = 1MHz		1220		pF
Output Capacitance	C_{OSS}			155		
Reverse Transfer Capacitance	C_{RSS}			142		
Total Gate Charge	Q_G	V_{GS} = -20V, V_{DS} = -10V, I_D = -5A		50.3		nC
Gate to Source Charge	Q_{GS}			10.5		
Gate to Drain Charge	Q_{GD}			5		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = -10V, V_{DS} = -20V, R_L = 2Ω, R_G = 3Ω		9		ns
Rise Time	T_r			8		
Turn-off Delay Time	$T_{D(OFF)}$			26		
Fall Time	T_f			9		

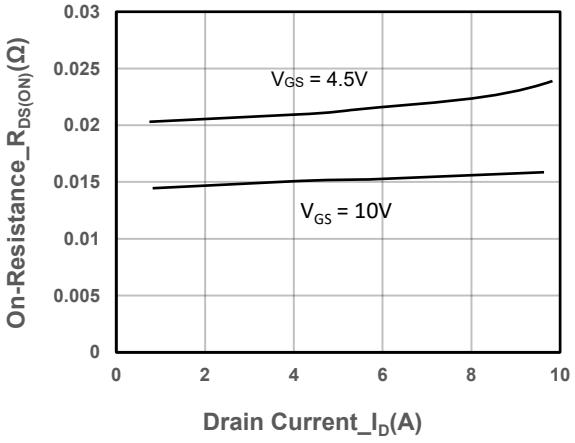
➢ N-Channel Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



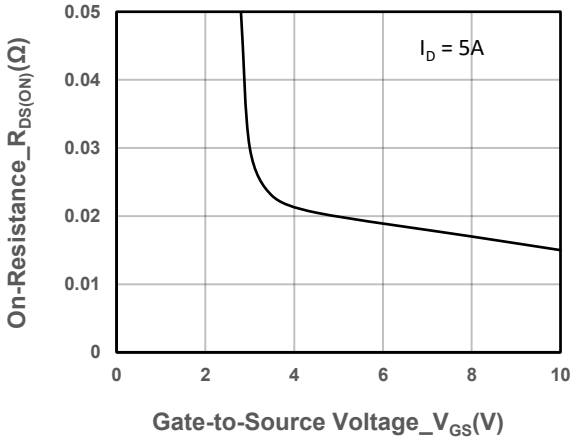
Output Characteristics



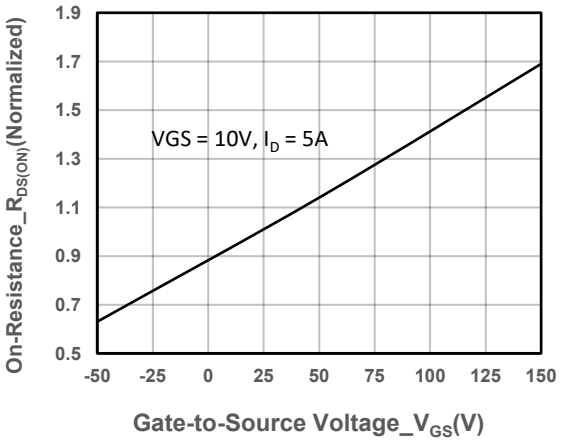
Transfer Characteristics



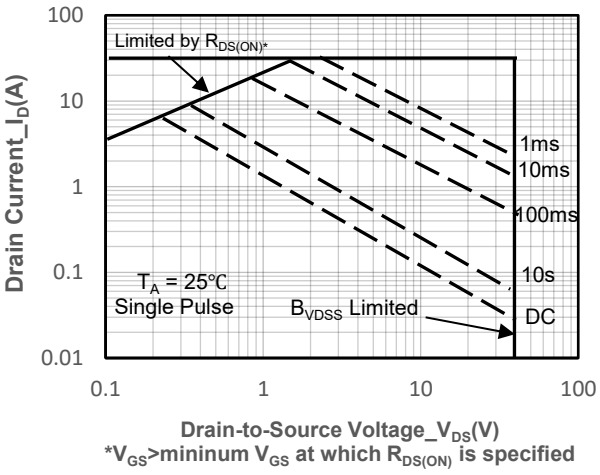
On-Resistance vs. Drain Current and Gate Voltag



On-Resistance vs. Gate-to-Source Voltage

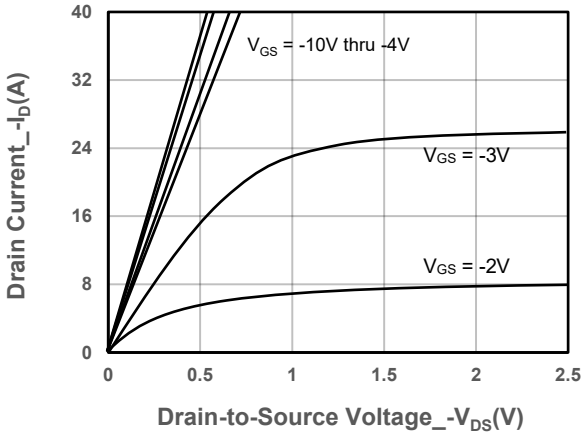


On-Resistance vs. Junction Temperature

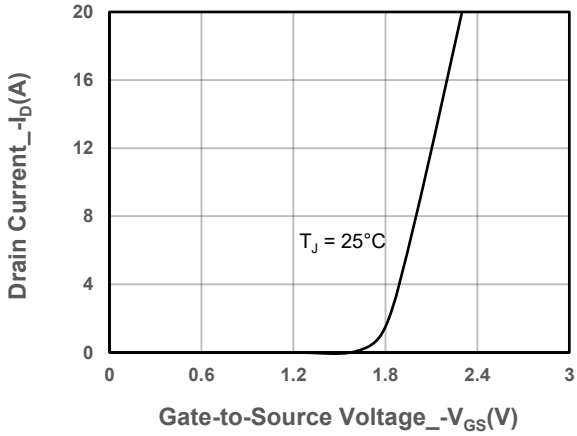


Safe Operating Area vs. Junction-to-Ambient

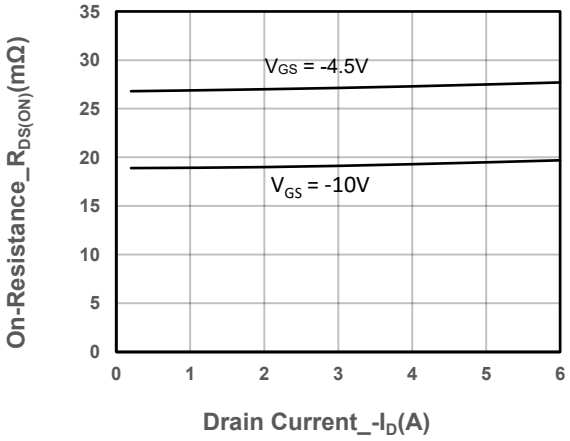
➢ P-Channel Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



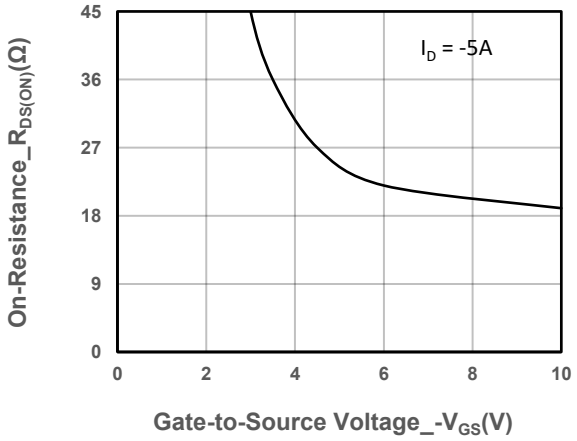
Output Characteristics



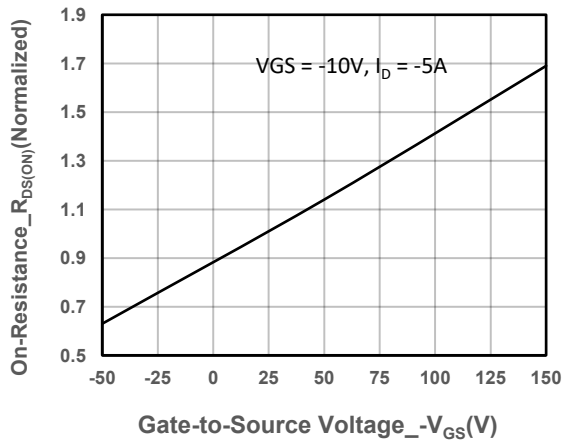
Transfer Characteristics



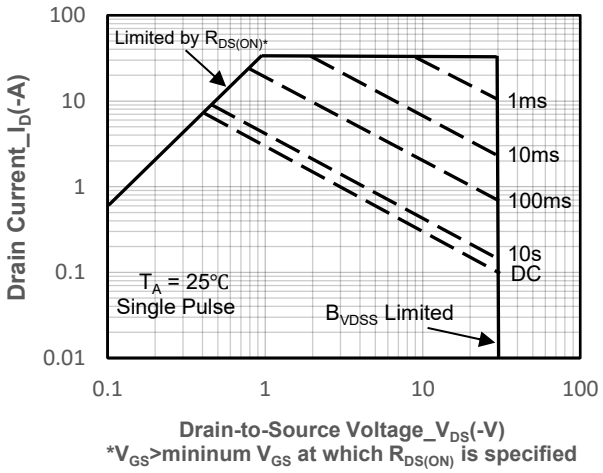
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

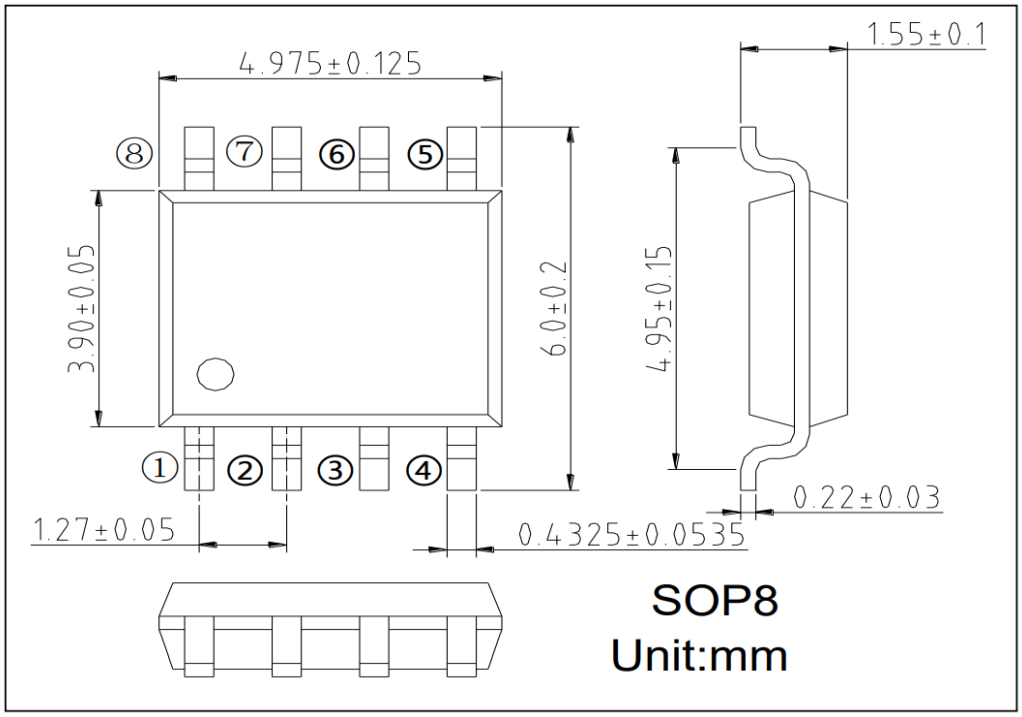


On-Resistance vs. Junction Temperature



Safe Operating Area vs. Junction-to-Ambient

➢ Package Information



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