



SSCU1009NP30GS1

N and P-Channel Enhancement Mode Power MOSFET

➤ Features

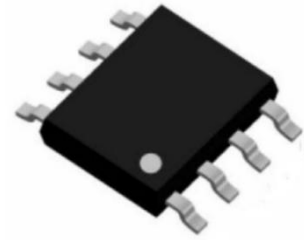
N-Channel

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	

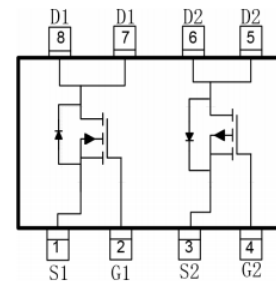
➤ Pin configuration



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.



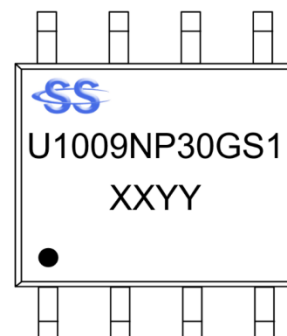
Pin Configuration (Top View)

➤ Applications

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

➤ Ordering Information

Device	Package	Shipping
SSCU1009NP30GS1	SOP-8	4000/Reel



Marking (Top View)



SSCU1009NP30GS1

➤ 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}	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	$^\circ\text{C}$
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	Channel	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	N-Channel	63	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	P-Channel	63	

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.



SSCU1009NP30GS1

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

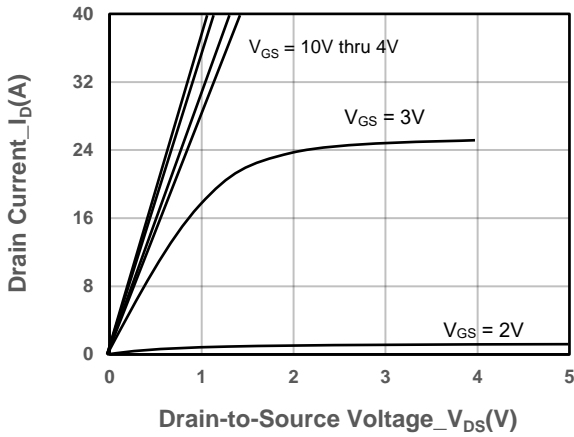
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.5	3	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 8A		14.5	21	mΩ
		V _{GS} = 4.5V, 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
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 1A		0.7	1.3	V
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		708		pF
Output Capacitance	C _{OSS}			85		
Reverse Transfer Capacitance	C _{RSS}			73		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 20V, I _D = 4A		14		nC
Gate to Source Charge	Q _{GS}			2.2		
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°C unless otherwise noted)

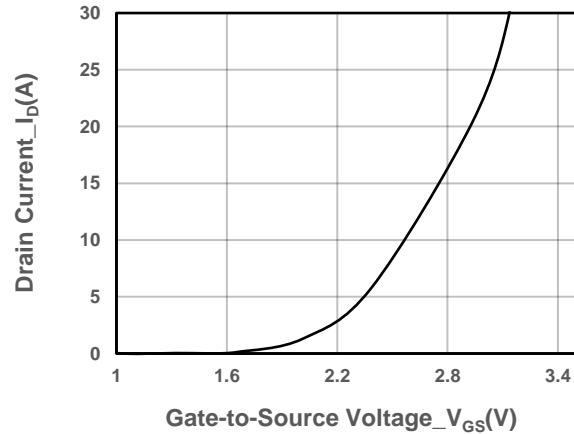
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250uA	-1	-1.5	-3	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -8A		19	26	mΩ
		V _{GS} = -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
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -1A		-0.7	-1.3	V
Input Capacitance	C _{ISS}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1087		pF
Output Capacitance	C _{OSS}			141		
Reverse Transfer Capacitance	C _{RSS}			109		
Total Gate Charge	Q _G	V _{GS} = -20V, V _{DS} = -10V, I _D = -5A		20.3		nC
Gate to Source Charge	Q _{GS}			3.5		
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		



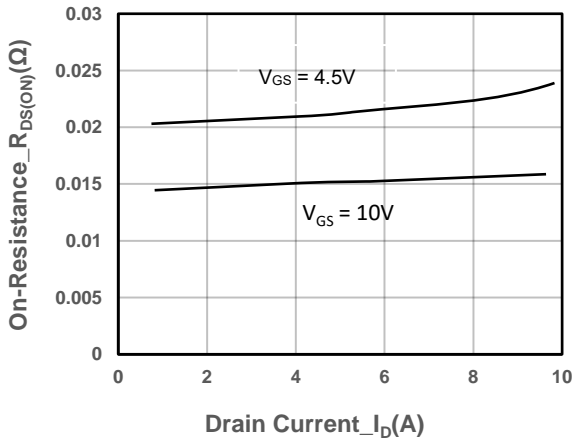
N-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



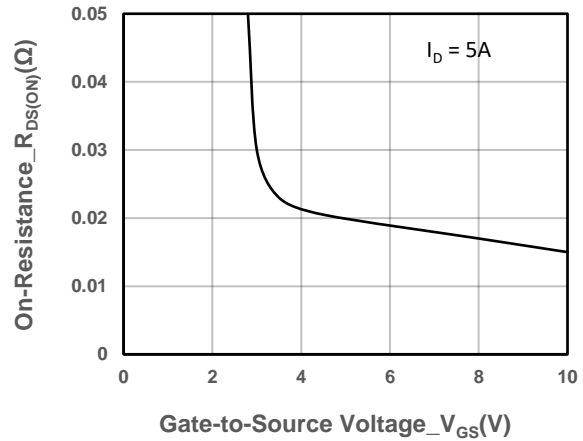
Output Characteristics



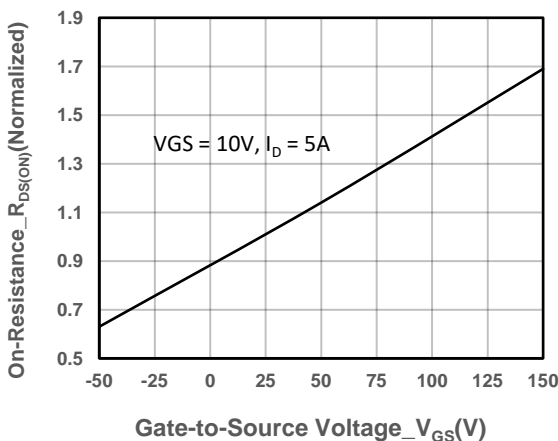
Transfer Characteristics



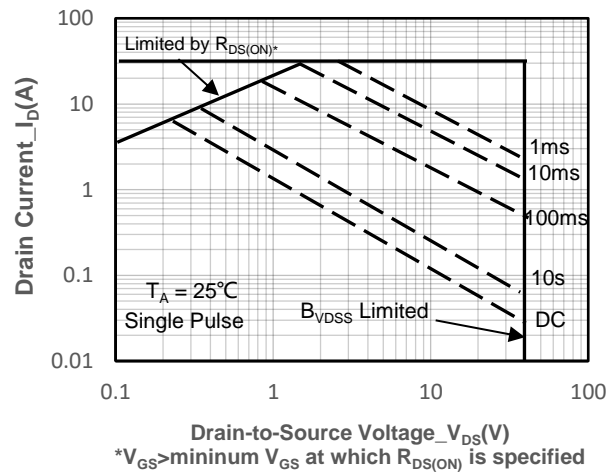
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

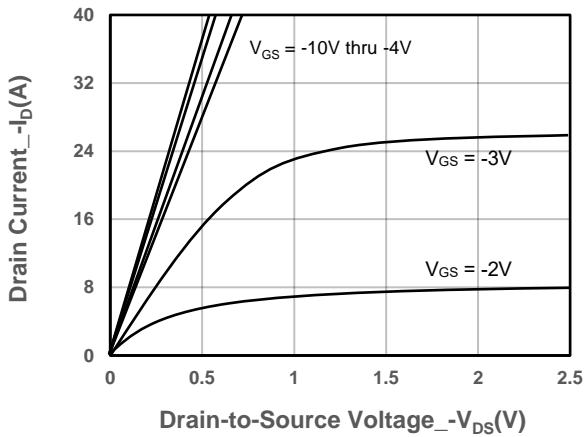


Safe Operating Area vs. Junction-to-Ambient

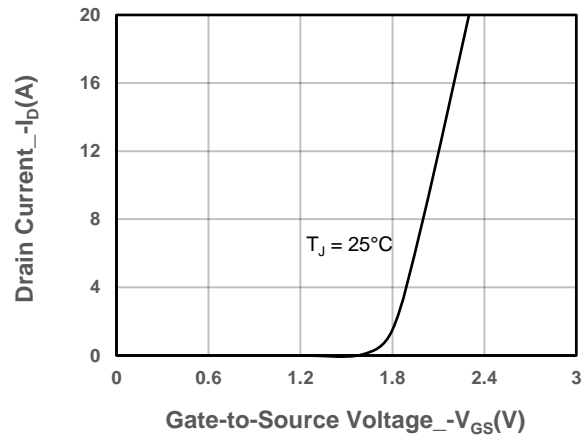


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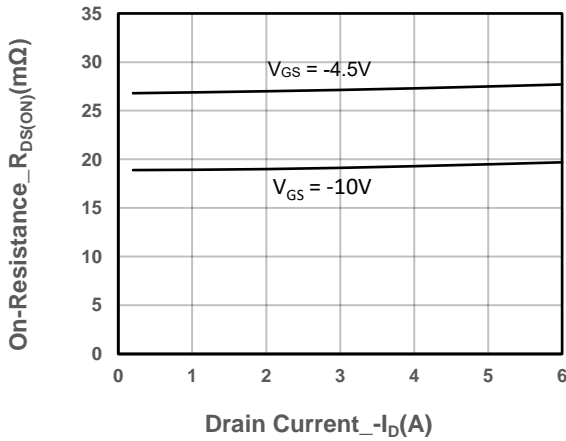
➤ P-Channel Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



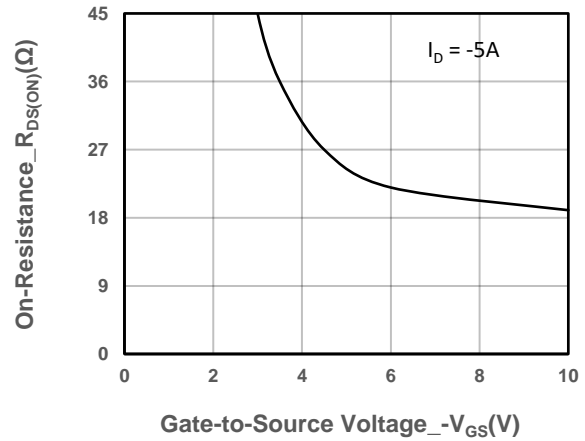
Output Characteristics



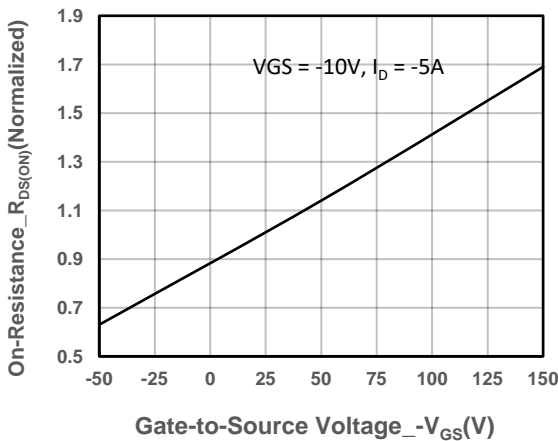
Transfer Characteristics



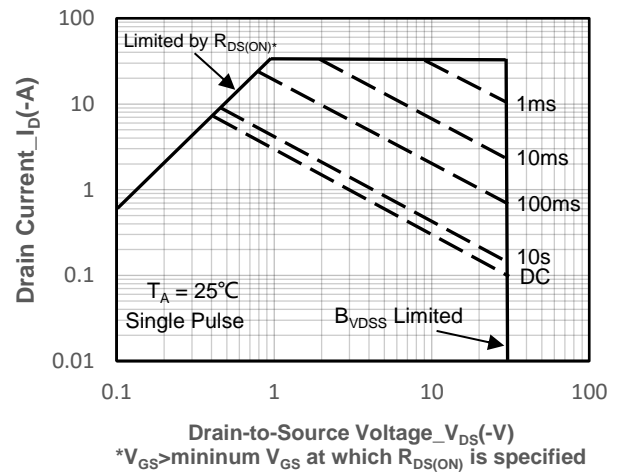
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

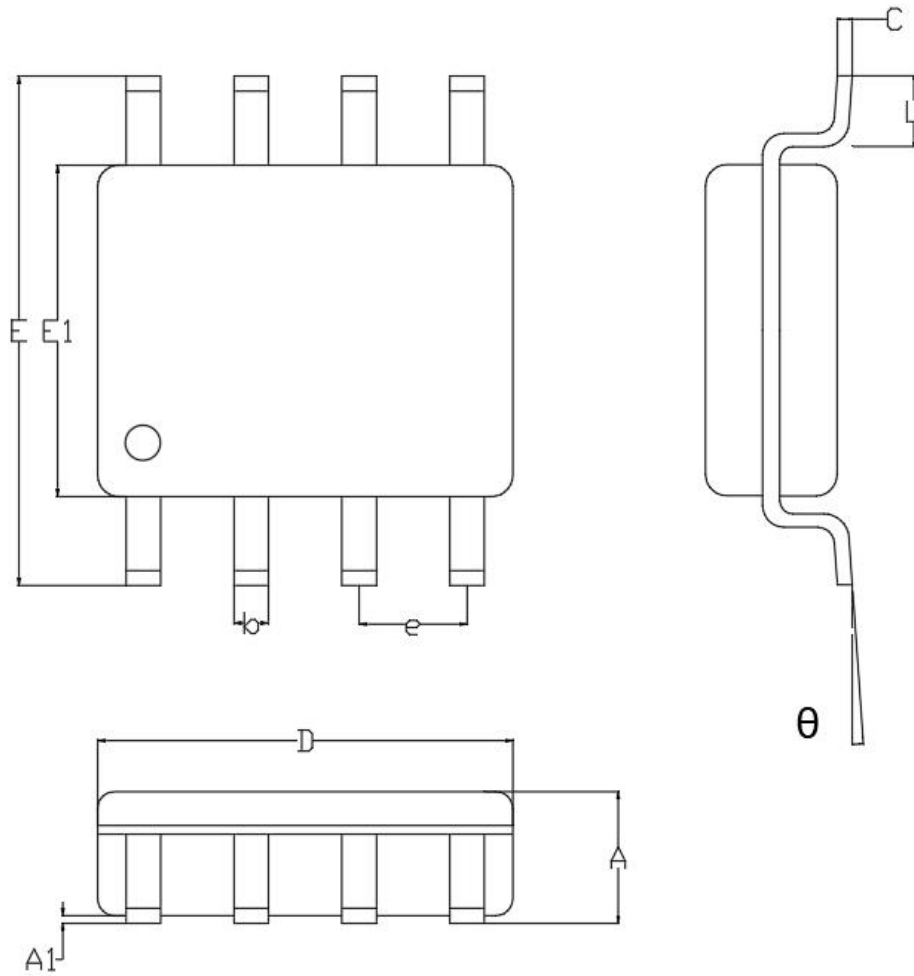


On-Resistance vs. Junction Temperature



Safe Operating Area vs. Junction-to-Ambient

➤ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	1.35	1.50	1.75
A1	0.05	0.10	0.25
b	0.33	-	0.51
c	0.15	-	0.30
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.70	3.90	4.10
e	1.27 (BSC)		
L	0.40	-	1.30
θ	0°	-	8°



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