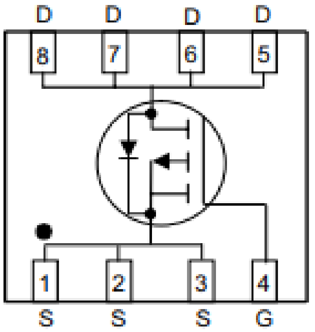
SSCU13P30GQ4

P-Channel Enhancement Mode MOSFET

➢ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-30V	±25V	13mΩ@-10V	-42A
		18mΩ@-4.5V	

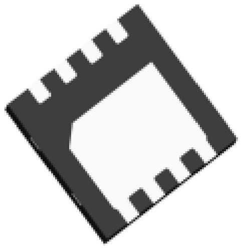
➢ Pin configuration



DFN3x3(Top View)

➢ Description

The SSCU13P30GQ4 is P-Channel enhancement mode MOSFET. Uses trench Technology and design to provide excellent RDSON with low gate charge. This device is suitable for use in DC - DC conversion, power switch and charging circuit.



Bottom View

➢ Applications

- Load Switch
- NB battery
- DC-DC Converter

Marking

(YW: Internal Traceability Code)

➢ Ordering Information

Device	Package	Shipping
SSCU13P30GQ4	DFN3X3	5000/Reel

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

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain-to-Source Voltage		-30	V
V_{GSS}	Gate-to-Source Voltage		±25	V
I_D	Continuous Drain Current [b]	T_C = 25℃	-42	A
		T_C = 100℃	-22	A
I_{DM}	Pulsed Drain Current [b]		-168	A
I_{DSM}	Continuous Drain Current [a]	T_A = 25℃	-12	A
		T_A = 70℃	-8.5	A
P_D	Power Dissipation [c]	T_C = 25℃	40	W
		T_C = 100℃	16	W
P_{DSM}	Power Dissipation [a]	T_A = 25℃	3.2	W
		T_A = 70℃	2.1	W
I_{AS}	Avalanche Current [b] L = 0.5mH		-21	A
E_{AS}	Avalanche Energy [b] L = 0.5mH		110	mJ
T_J	Operation junction temperature		-55 to 150	℃
T_{STG}	Storage temperature range		-55 to 150	℃

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

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	38.8	℃/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	3.1	

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.

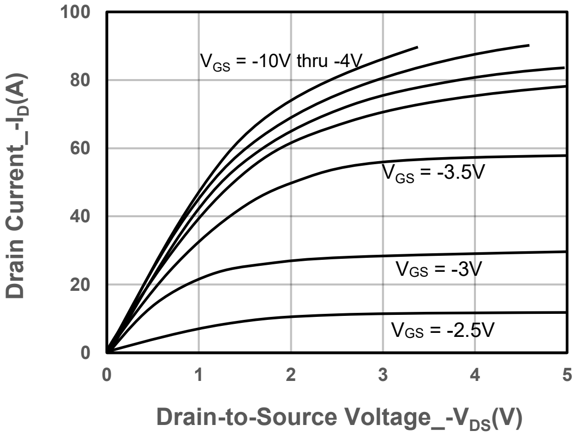
c. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

d. The maximum current rating is package limited.

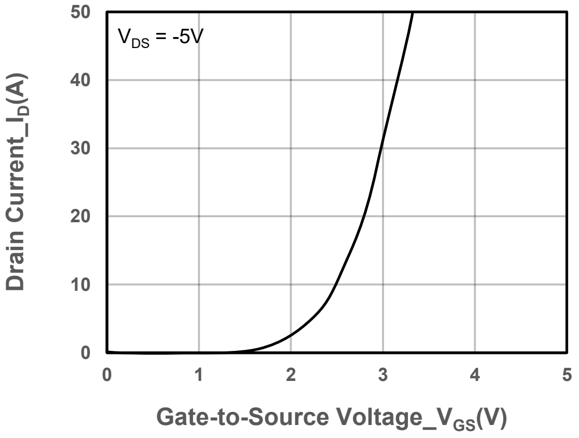
➢ Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250uA	-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 = -10A		13	19	mΩ
		V_{GS} = -4.5V, I_D = -8A		18	26	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V			-1	uA
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V			±100	nA
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = -5A		-0.85	-1.3	V
Input Capacitance	C_{ISS}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		1476		pF
Output Capacitance	C_{OSS}			180		
Reverse Transfer Capacitance	C_{RSS}			165		
Total Gate Charge	Q_G	V_{GS} = -10V, V_{DS} = -15V, I_D = -10A		24		nC
Gate to Source Charge	Q_{GS}			4.8		
Gate to Drain Charge	Q_{GD}			6		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = -10V, V_{DS} = -15V, RL=3Ω, R_G = 1Ω		8		ns
Rise Time	T_r			35		
Turn-off Delay Time	$T_{D(OFF)}$			46		
Fall Time	T_f			11.5		
Diode Recovery Time	T_{rr}	I_F=-10A, di/dt=200A/us		22		ns
Diode Recovery Charge	Q_{rr}	I_F=-10A, di/dt=200A/us		8		nC

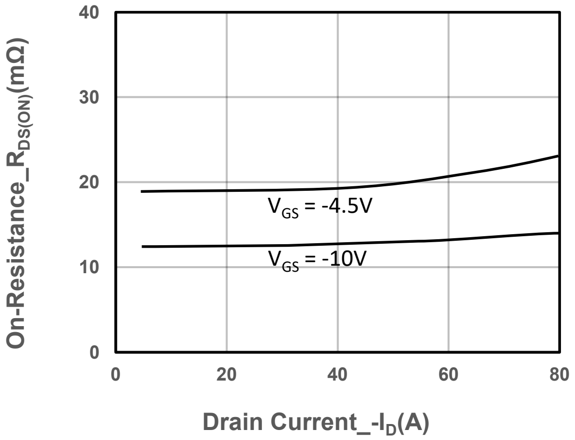
➢ Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



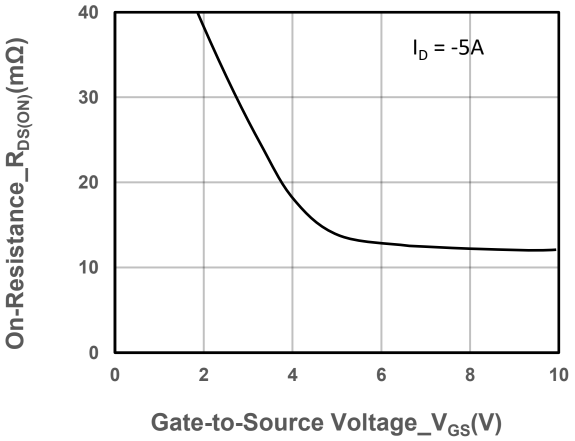
Output Characteristics



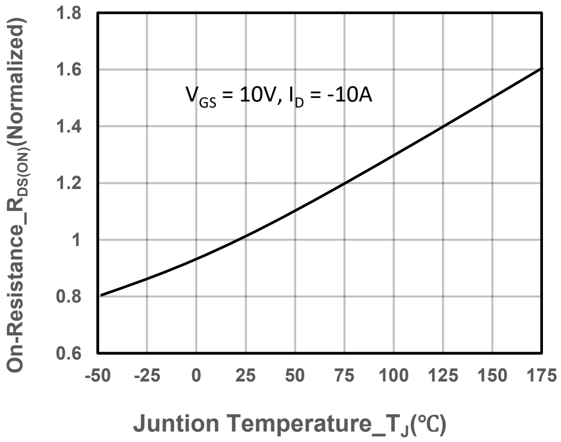
Transfer Characteristics



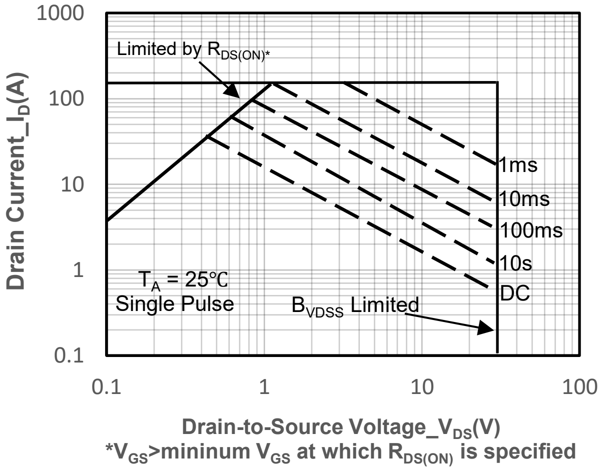
On-Resistance vs. Drain Current and Gate Voltag



On-Resistance vs. Gate-to-Source Voltage

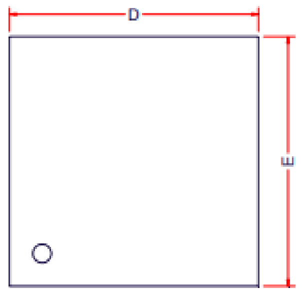


On-Resistance vs. Junction Temperature

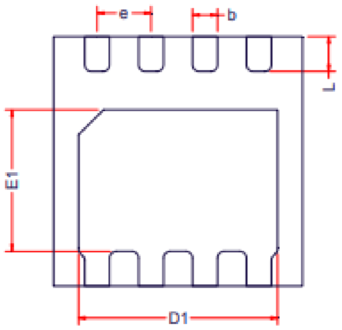


Safe Operating Area vs. Junction-to-Ambient

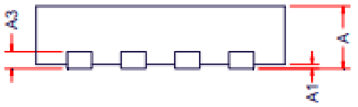
➢ Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

DFN3X3-8L

Symbol	Dimensions in Millimeters		
	Min.	**Typ.**	**Max.**
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.20Ref		
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	2.35	2.40	2.45
E1	1.65	1.70	1.75
b	0.25	0.30	0.35
e	0.65BSC		
L	0.37	0.42	0.47

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