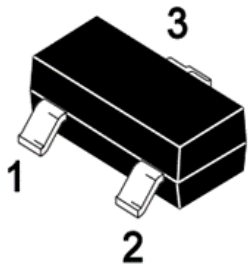
SSCU300N30GS7

N-Channel Small Switching MOSFET with ESD Protection

➢ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
30V	±10V	300mΩ@4.5V	1A
		390mΩ@2.5V	
		500mΩ@1.8V	

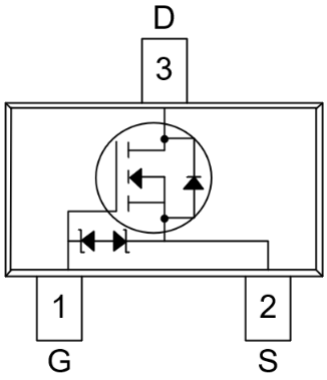
➢ Pin configuration



SOT-323

➢ Description

This device is an N-Channel enhancement mode MOSFET, with low on-resistance, fast switching speed and low threshold voltage, it is ideal for portable equipment.



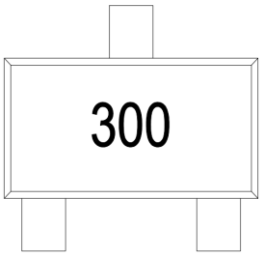
Pin Configuration (Top View)

➢ Applications

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers
- Display, Memories, Transistors, etc.
- Battery Operated System
- Solid-State Relays

➢ Ordering Information

Device	Package	Shipping
SSCU300N30GS7	SOT-323	3000/Reel



Marking

➢ 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	±10	V
I_D	Continuous Drain Current [a]	1	A
I_{DM}	Pulsed Drain Current [b]	4	A
P_D	Power Dissipation [c]	0.45	W
T_J	Operation junction temperature	-55~150	℃
T_{STG}	Storage temperature range	-55~150	℃

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

Symbol	Parameter	Maximum	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	370	℃/W

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 power dissipation is based on the t≤10s thermal resistance rating.

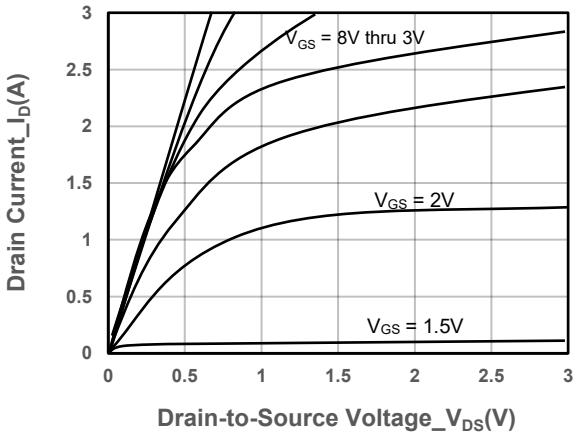
b. Repetitive rating, pulse width limited by junction temperature.

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.

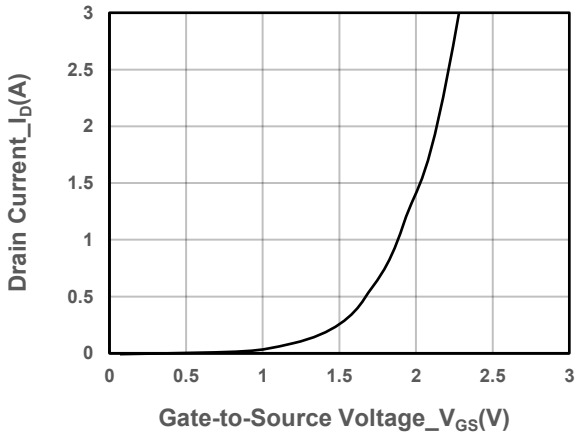
➢ Electrical Characteristics (T_A=25℃ unless otherwise noted)

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	0.4	0.7	1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.6A		300	500	mΩ
		V_{GS} = 2.5V, I_D = 0.3A		390	600	
		V_{GS} = 1.8V, I_D = 0.1A		500	780	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±10	μA
Transconductance	G_{FS}	V_{DS} = 5V, I_D = 0.5A	0.1			s
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 0.2A		0.7	1.3	V
Input Capacitance	C_{ISS}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		58		pF
Output Capacitance	C_{OSS}			19.4		
Reverse Transfer Capacitance	C_{RSS}			10.8		
Turn-on Delay Time	$T_{D(ON)}$	V_{DS} = 15V ,V_{GS} = 4.5V R_G = 3Ω, I_D = 0.5A		4.8		ns
Rise Time	T_r			8.2		
Turn-off Delay Time	$T_{D(OFF)}$			22		
Fall Time	T_f			36		
Total Gate Charge	Q_G	V_{GS} = 4.5V, V_{DS} = 15V, I_D = 0.5A		1.1		nC
Gate to Source Charge	Q_{GS}			0.26		
Gate to Drain Charge	Q_{GD}			0.3		

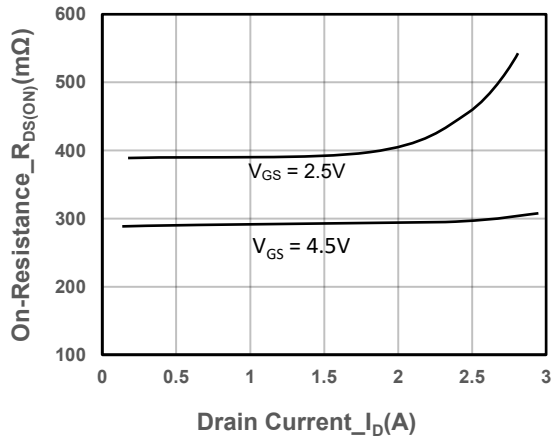
➢ Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



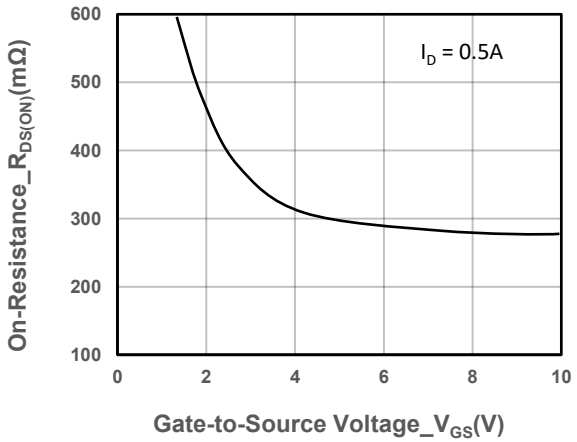
Output Characteristics



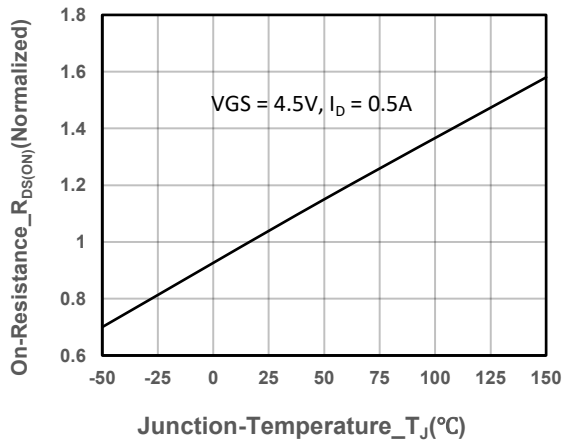
Transfer Characteristics



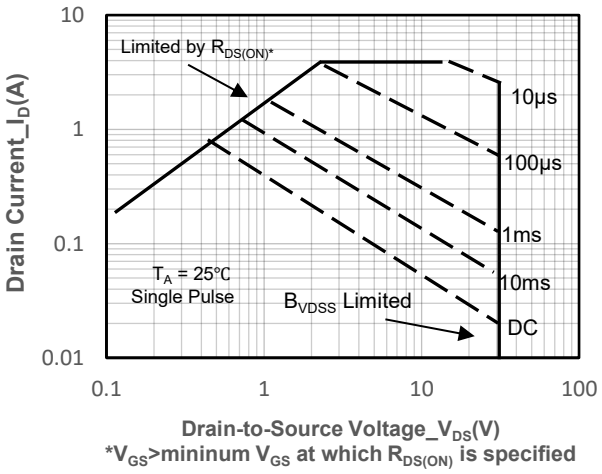
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

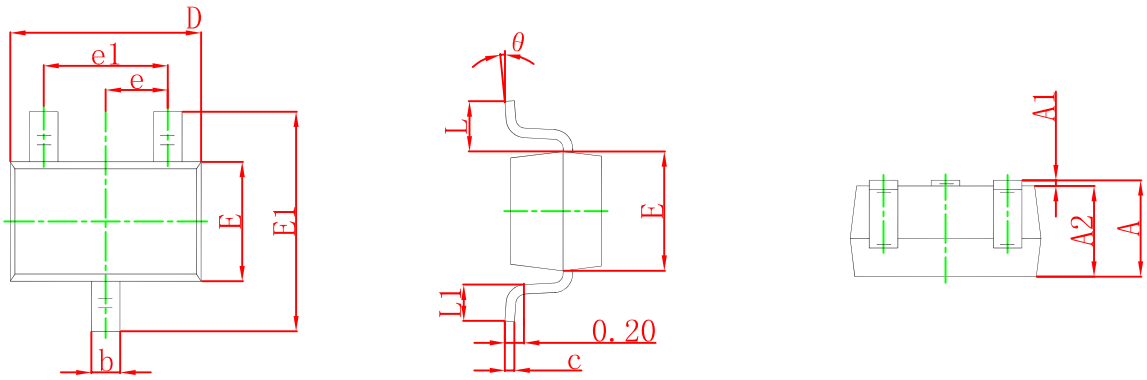


On-Resistance vs. Junction Temperature



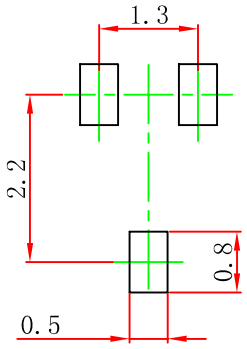
Safe Operating Area vs. Junction-to-Ambient

➢ Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

➢ Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters.

2.General tolerance: ±0.05mm.

3.The pad layout is for reference purposes only.

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