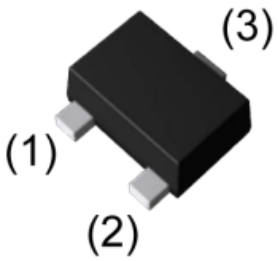
SSCU180N20GS9

N-Channel Enhancement Mode MOSFET with ESD Protection

➢ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
20V	±12V	180mΩ@4V5	1.2A
		230mΩ@2V5	
		330mΩ@1V8	

➢ Pin configuration

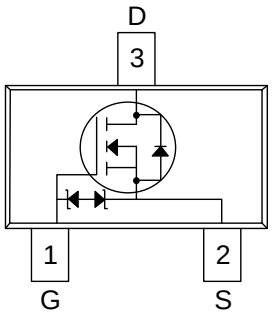


SOT-723

➢ Description

This device is a N-Channel enhancement mode MOSFET, which is produced with high cell density and DMOS trench technology. This device particularly suits low voltage applications, especially for battery powered circuits, the tiny and thin outline saves PCB consumption.

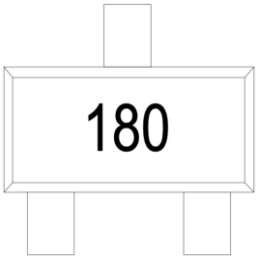
this device has ESD protection structure.



Pin Configuration (Top View)

➢ Applications

- Replace Digital Transistor
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching cell Phones



Marking

➢ Ordering Information

Device	Package	Shipping
SSCU180N20GS9	SOT-723	8000/Reel

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

Symbol	Parameter	Ratings	Unit
V_{DSS}	Drain-to-Source Voltage	20	V
V_{GSS}	Gate-to-Source Voltage	±12	V
I_D	Continuous Drain Current [a]	1.2	A
I_{DM}	Pulsed Drain Current [b]	4.8	A
P_D	Power Dissipation [c]	0.3	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	Typical	Maximum	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	320	416	℃/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.

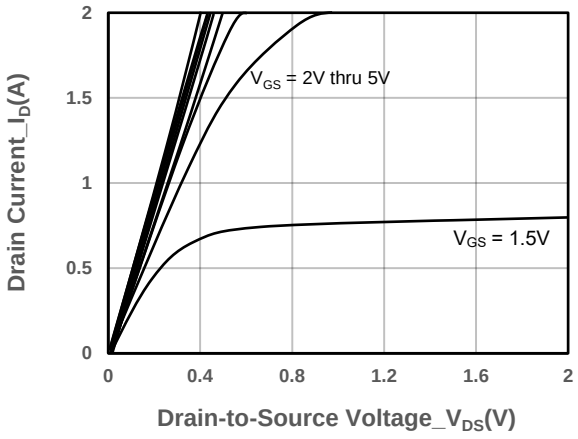
b. Repetitive rating, pulse width limited by junction temperature.

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.

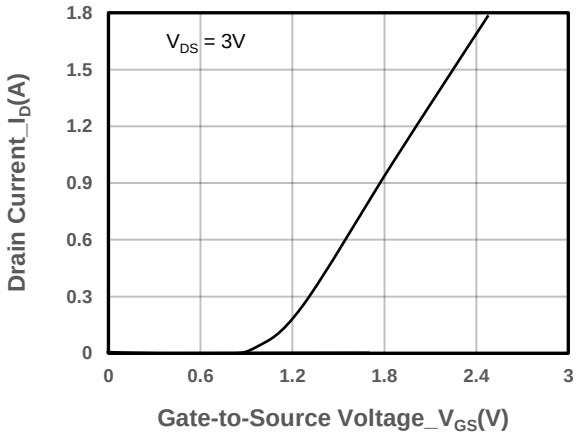
➢ Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250uA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	0.35	0.6	1	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.6A		180	450	mΩ
		V_{GS} = 2.5V, I_D = 0.5A		230	765	
		V_{GS} = 1.8V, I_D = 0.35A		330	1300	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			1	μA
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±10	μA
Transconductance	G_{FS}	V_{DS} = 5V, I_D = 0.5A		11		s
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 0.15A		0.7	1.3	V
Input Capacitance	C_{ISS}	V_{DS} = 16V, V_{GS} = 0V, f = 200KHz		53		pF
Output Capacitance	C_{OSS}			15		
Reverse Transfer Capacitance	C_{RSS}			12		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} =4.5V, V_{DS} = 10V, I_D = 0.5A		6.2		ns
Rise Time	T_r			4.9		
Turn-off Delay Time	$T_{D(OFF)}$			18.5		
Fall Time	T_f			7.7		
Total Gate Charge	Q_G	V_{GS} = 10V, V_{DS} = 15V I_D = 0.2A		1.2		nC
Gate to Source Charge	Q_{GS}			0.16		
Gate to Drain Charge	Q_{GD}			0.15		

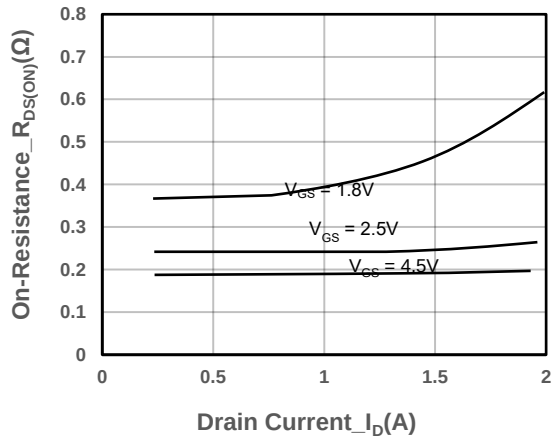
➢ Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



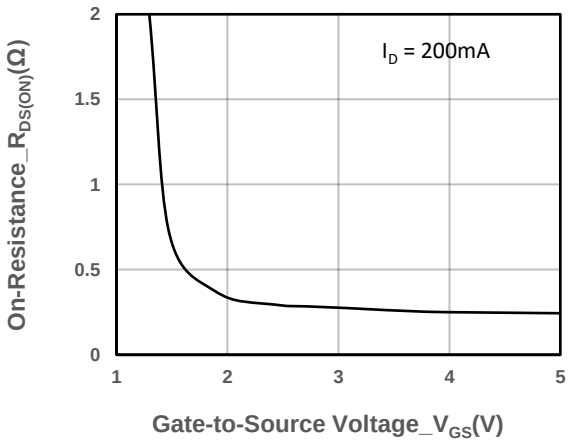
Output Characteristics



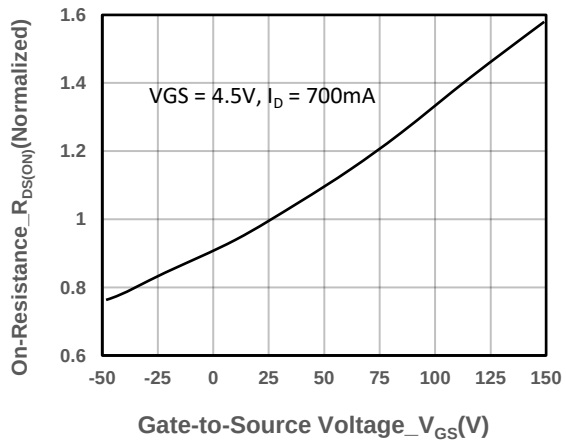
Transfer Characteristics



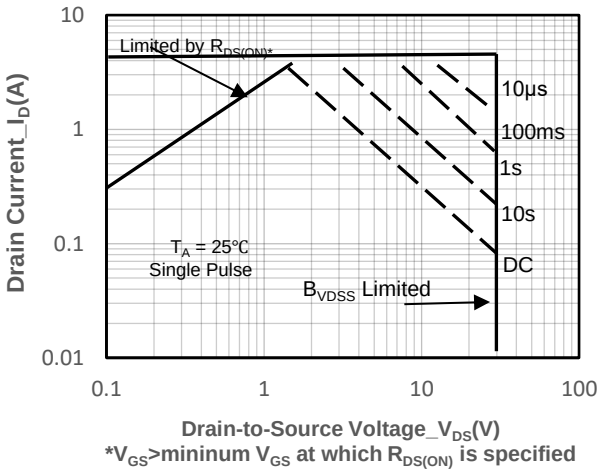
On-Resistance vs. Drain Current and Gate Voltag



On-Resistance vs. Gate-to-Source Voltage

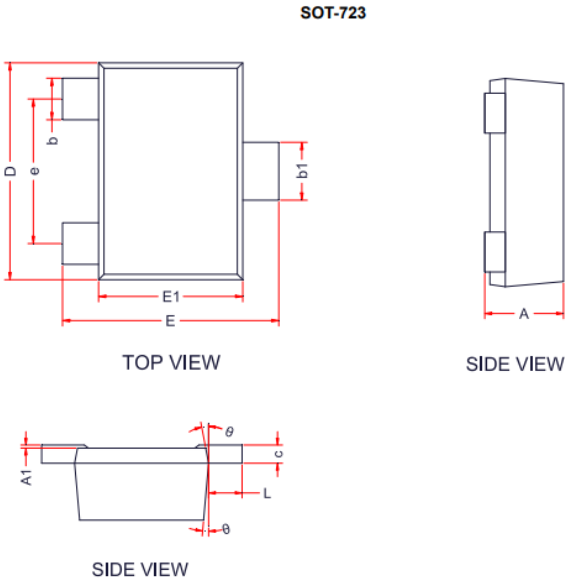


On-Resistance vs. Junction Temperature



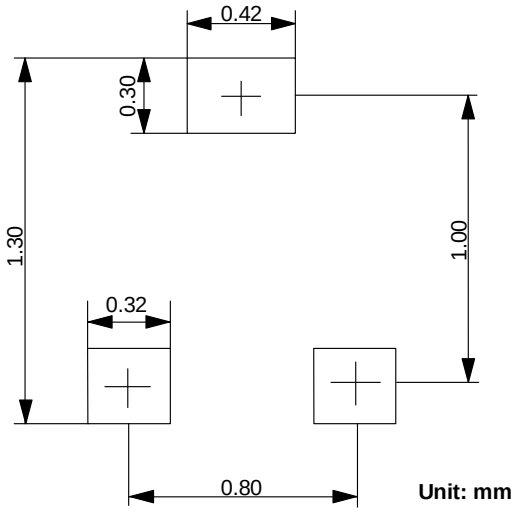
Safe Operating Area vs. Junction-to-Ambient

➢ Package Information



DIM	Millimeters		
	Min.	Typ.	Max.
A	0.43	-	0.55
A1	0.00	-	0.05
b1	0.27		0.37
b	0.17	-	0.27
c	0.08	0.13	0.18
D	1.15	1.20	1.25
E	1.15	1.20	1.25
E1	0.75	0.8	0.85
e	0.80Ref.		
L	0.15	0.2	0.25
θ	7°Ref.		

➢ Suggested Pad Layout



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