



SSCU78P100GT4

P-Channel Enhancement Mode MOSFET

➤ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
-100V	$\pm 20V$	78m Ω @-10V	-36A
		84m Ω @-4.5V	

➤ Description

This device is P-Channel enhancement 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.

100% UIS + ΔV_{DS} + R_g Tested!

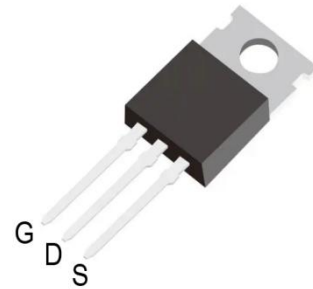
➤ Applications

- Load Switch
- PWM Application
- Power Management
- DC-DC Conversion

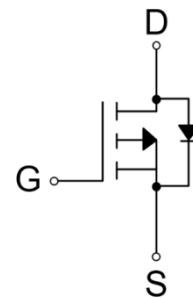
➤ Ordering Information

Device	Package	Shipping
SSCU78P100GT4	TO-220-3L	50/Tube

➤ Pin configuration



TO-220-3L (Top View)



Pin Configuration



Marking

(XXYY: Internal Traceability Code)

**➤ Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)**

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain-to-Source Voltage		-100	V
V_{GSS}	Gate-to-Source Voltage		± 20	V
I_D	Continuous Drain Current ^d	$T_C=25^{\circ}\text{C}$	-36	A
		$T_C=100^{\circ}\text{C}$	-18	
I_{DSM}	Continuous Drain Current ^a	$T_A=25^{\circ}\text{C}$	-4.5	A
		$T_A=70^{\circ}\text{C}$	-3.2	
I_{DM}	Pulsed Drain Current ^b		-145	A
P_D	Power Dissipation ^c	$T_C=25^{\circ}\text{C}$	148	W
		$T_C=100^{\circ}\text{C}$	60	
P_{DSM}	Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	2.5	W
		$T_A=70^{\circ}\text{C}$	1.6	
I_{AS}	Avalanche Current ^b $L=0.5\text{mH}$ Single Pulse		-20	A
E_{AS}	Avalanche Energy ^b $L=0.5\text{mH}$ Single Pulse		100	mJ
T_J	Operation junction temperature		-55~150	$^{\circ}\text{C}$
T_{STG}	Storage temperature range		-55~150	

➤ Thermal Resistance Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	50	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	0.85	

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 is specific board design. The power dissipation 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.
- The maximum current rating is package limited.

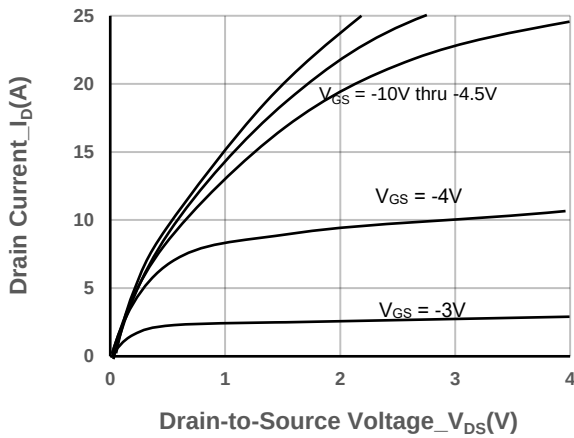


➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

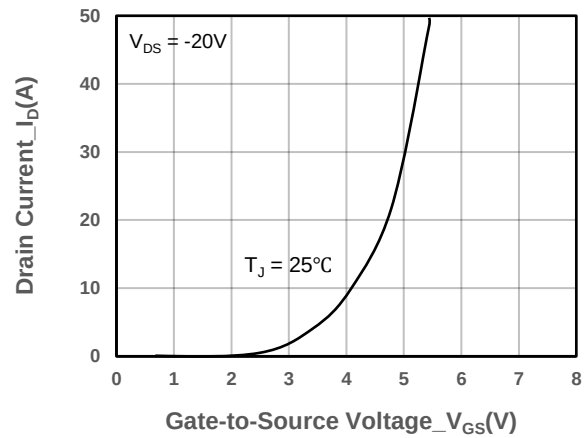
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250uA	-1.1	-1.6	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -20A		78	105	mΩ
		V _{GS} = -4.5V, I _D = -10A		84	135	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -100V, V _{GS} = 0V			-1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} = -10V, I _D = -10A		25		S
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -10A		-0.7	-1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		6.5		Ω
Input Capacitance	C _{ISS}	V _{DS} = -30V, V _{GS} = 0V, f = 1MHz		3210		pF
Output Capacitance	C _{OSS}			120		
Reverse Transfer Capacitance	C _{RSS}			116		
Total Gate Charge	Q _G	V _{GS} = -10V, V _{DS} = -50V, I _D = -20A		49		nC
Gate to Source Charge	Q _{GS}			8.5		
Gate to Drain Charge	Q _{GD}			6		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = -10V, V _{DS} = -30V, I _D = -10A, R _G = 30Ω,		12		ns
Rise Time	T _r			26		
Turn-off Delay Time	T _{D(OFF)}			78		
Fall Time	T _f			50		



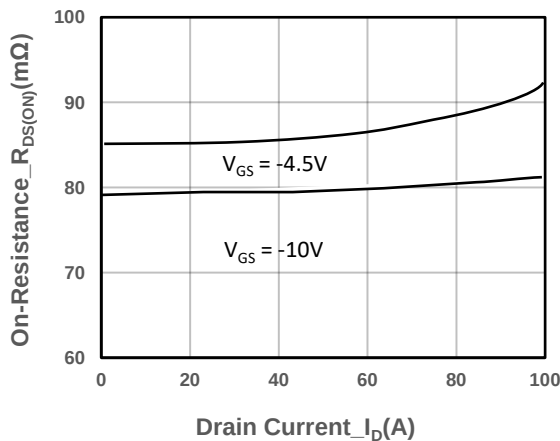
➤ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



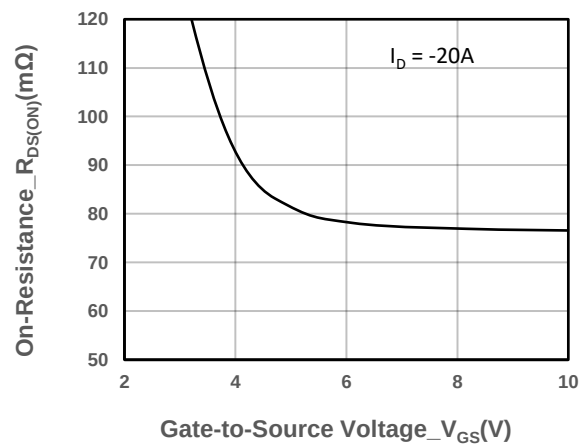
Output Characteristics



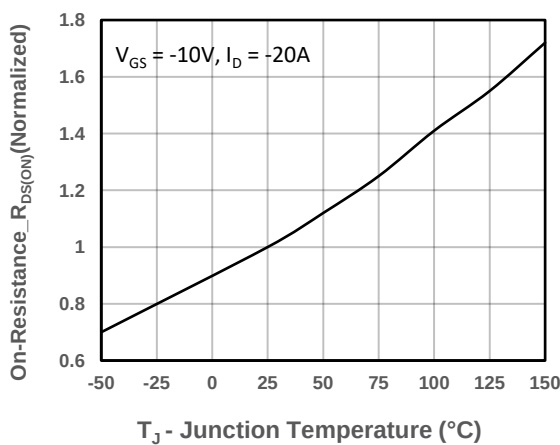
Transfer Characteristics



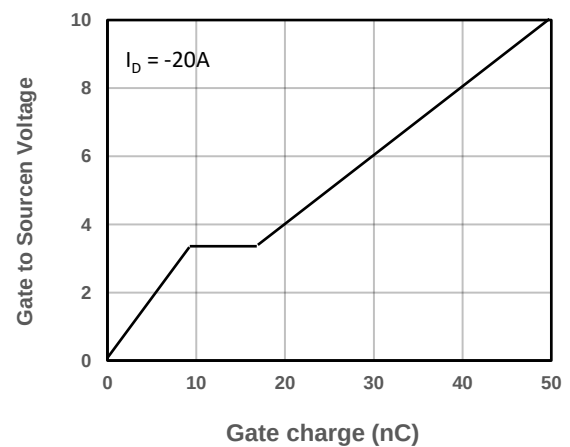
On-Resistance vs. Drain Current and Gate Voltage



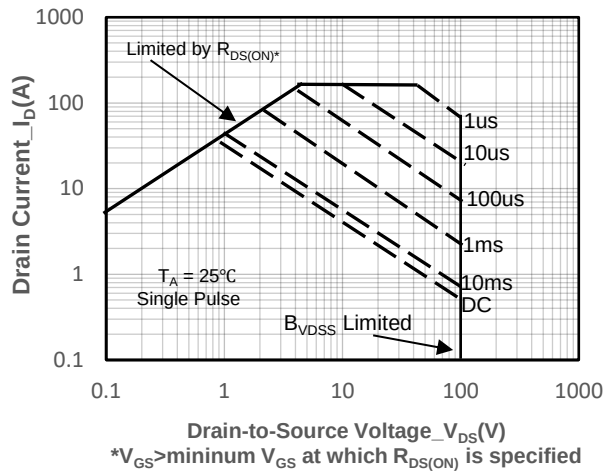
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

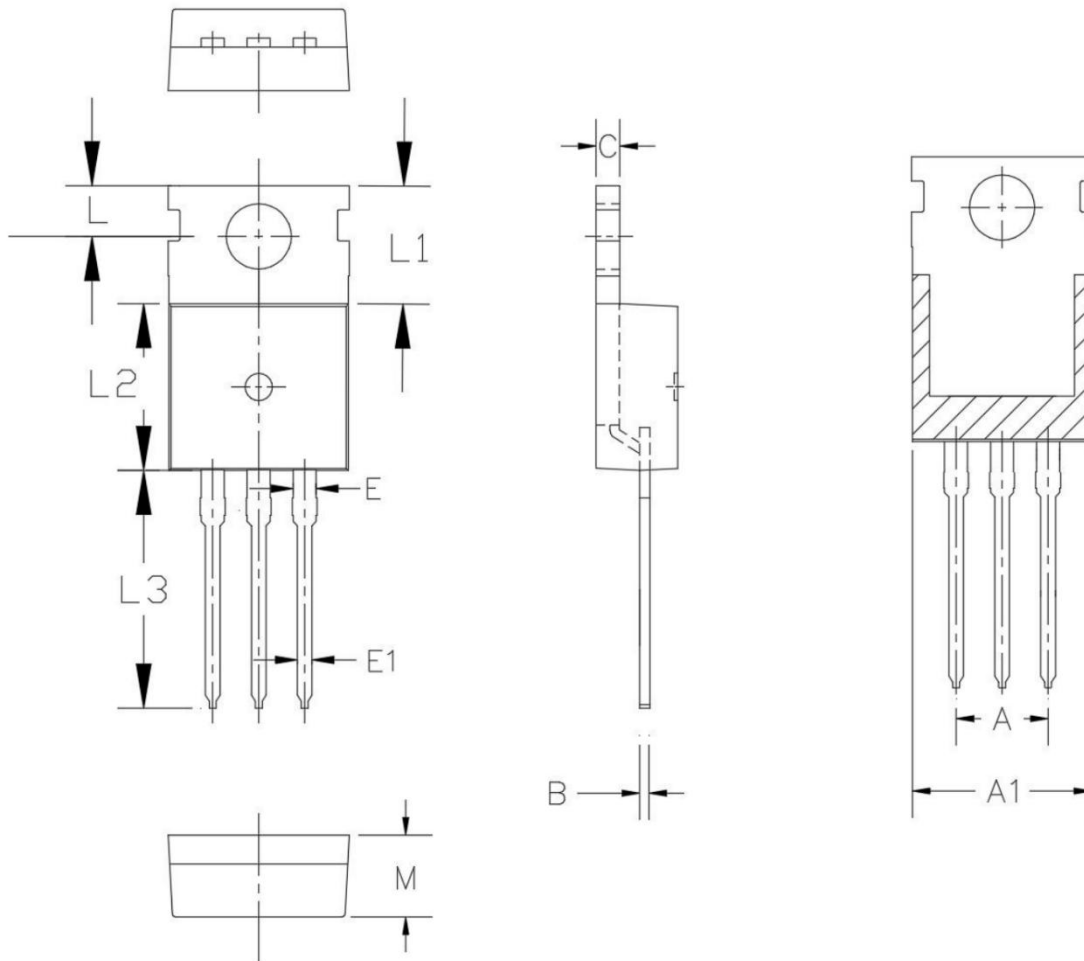


Gate-Source Voltage vs. Gate charge



Safe Operating Area vs. Junction-to-Ambient

➤ Package Information



Symbol	MILL IMETER		
	Min	Nom	Max
A	5.08 BSC		
A1	9.00	10.00	11.00
B	0.33	--	0.65
C	1.20	--	1.40
E	1.17	--	1.37
E1	0.60	--	1.10
L	2.50	--	3.00
L1	6.3	6.5	6.7
L2	8.95	--	9.75
L3	12.88	--	13.40
M	4.30	--	4.70



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