

RoHS Compliant Product  
A Suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

SSI3139J-C is a Dual P-Channel MOS which has been designed to be used as a Power Trench process to optimize  $R_{DS(ON)}$ .

## FEATURES

- High side switching
- Low on-resistance
- Low threshold
- Fast switching speed

## APPLICATIONS

- Load/power switching
- Power supply converter circuits
- Battery-operated system

## MARKING

39K

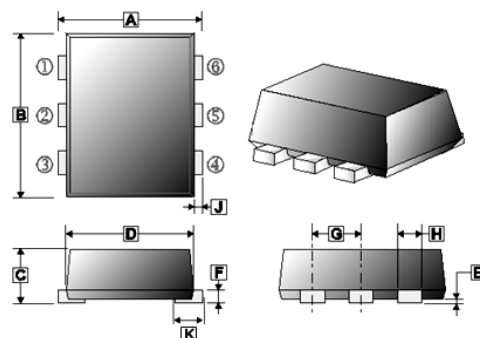
## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7 inch

## ORDER INFORMATION

Part Number	Type
SSI3139J-C	Lead (Pb)-free and Halogen-free

## SOT-563

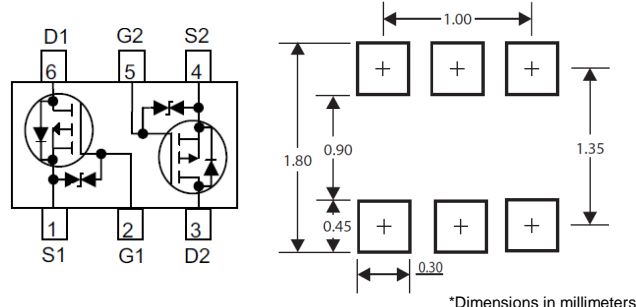


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	F	0.09	0.16
B	1.50	1.70	G	0.45	0.55
C	0.525	0.60	H	0.17	0.27
D	1.10	1.30	J	0.10	0.30
E	-	0.05	K	0.20	0.40

## MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Typical Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	-0.66	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-2.64	A
Power Dissipation <sup>2</sup>	$P_D$	150	mW
Thermal Resistance from Junction-Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^{\circ}\text{C}$

## Mounting Pad Layout



**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

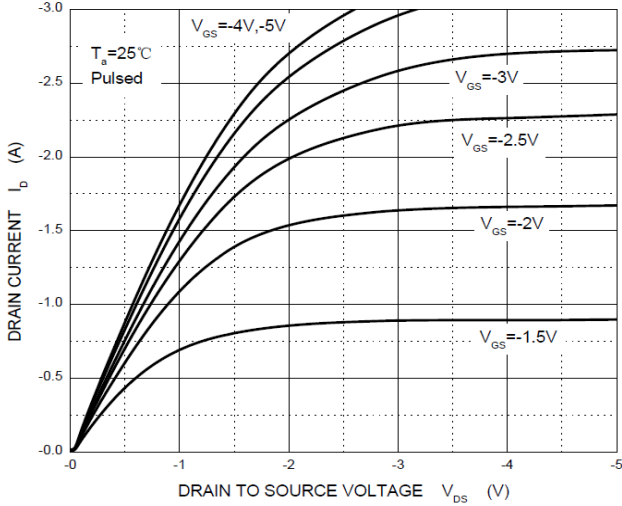
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu\text{A}$	$V_{DS} = -20\text{V}, V_{GS}=0$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 20$	$\mu\text{A}$	$V_{DS}=0\text{V}, V_{GS}= \pm 10\text{V}$
Gate-Threshold Voltage <sup>3</sup>	$V_{GS(th)}$	-0.35	-	-1.1	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Drain-Source On Resistance <sup>3</sup>	$R_{DS(ON)}$	-	-	520	m $\Omega$	$V_{GS} = -4.5\text{V}, I_D = -1\text{A}$
		-	-	700		$V_{GS} = -2.5\text{V}, I_D = -0.8\text{A}$
		-	950	-		$V_{GS} = -1.8\text{V}, I_D = -0.5\text{A}$
Forward Transconductance	$g_{fs}$	-	0.8	-	S	$V_{DS} = -10\text{V}, I_D = -0.54\text{A}$
Input Capacitance	$C_{iss}$	-	170	-	pF	$V_{DS} = -16\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	25	-		
Reverse Transfer Capacitance	$C_{rss}$	-	15	-		
Turn-on Delay Time	$T_{d(on)}$	-	9	-	nS	$V_{DS} = -10\text{V}$ $V_{GS} = -4.5\text{V}$ $R_G=10\Omega$ $I_D = -0.2\text{A}$
Rise Time	$T_r$	-	5.8	-		
Turn-off Delay Time	$T_{d(off)}$	-	32.7	-		
Fall Time	$T_f$	-	20.3	-		
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	-	-	-1.2	V	$I_S = -0.5\text{A}, V_{GS}=0$

Notes:

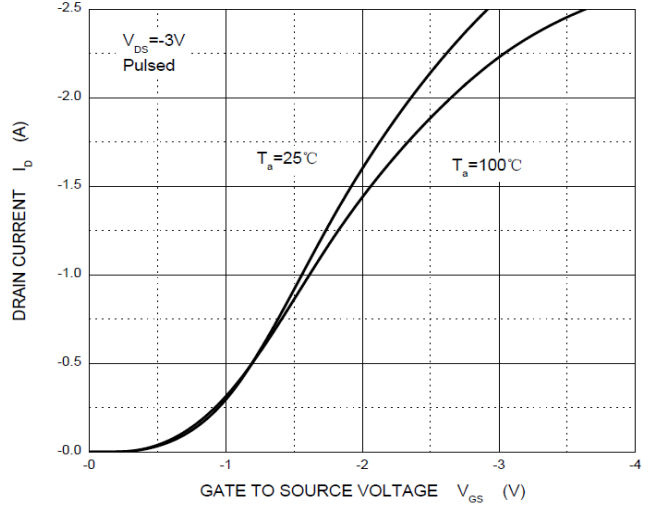
1. Repetitive Rating: The pulse width is limited by the maximum junction temperature.
2. This test is performed without heat sink at  $T_A=25^\circ\text{C}$ .
3. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 0.5\%$ .

**CHARACTERISTIC CURVES**

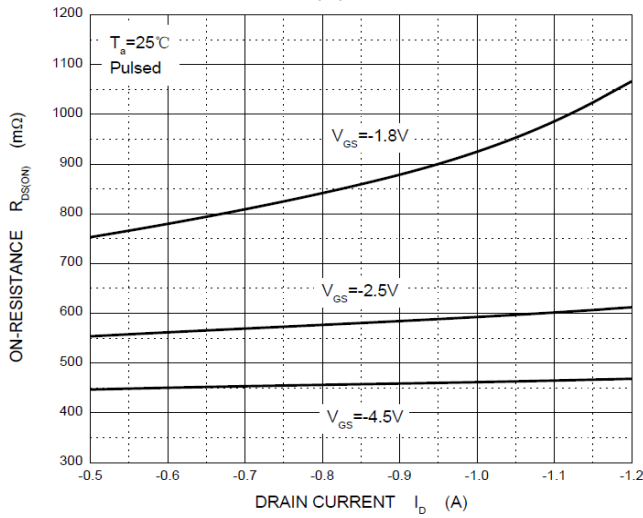
**Output Characteristics**



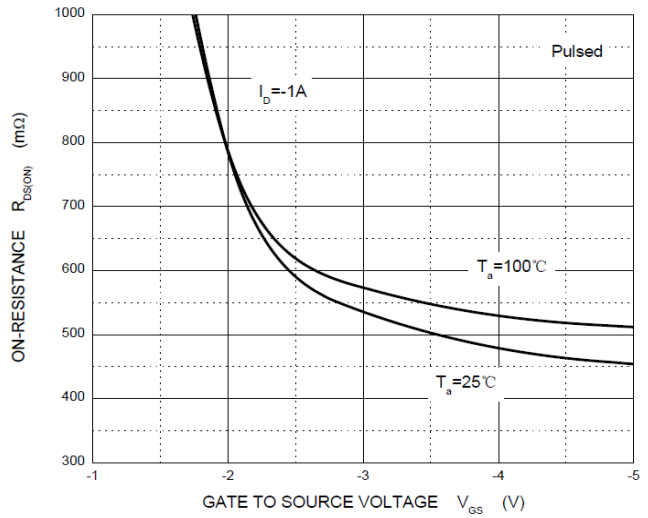
**Transfer Characteristics**



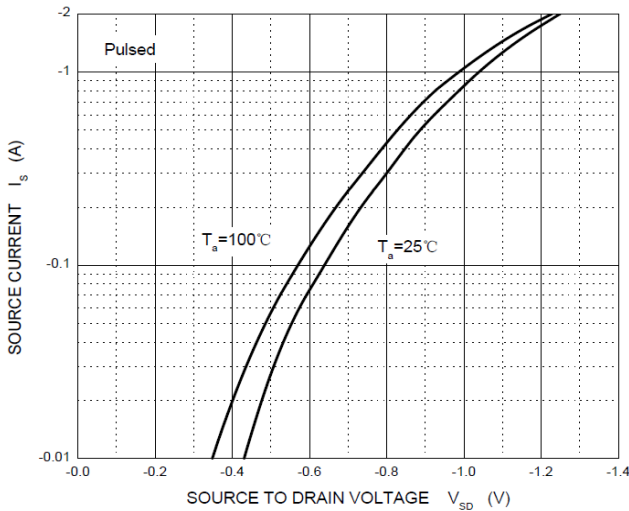
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



**Threshold Voltage**

