

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

DESCRIPTION

SSI3139J 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

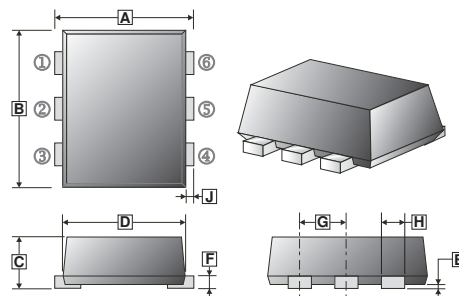
MARKING

39K

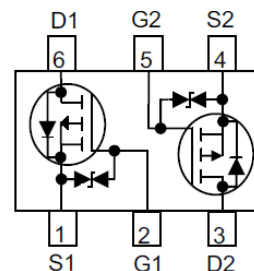
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7 inch

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			



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}	± 12	V
Continuous Drain Current	I_D	-0.66	A
Pulsed Drain Current ¹	I_{DM}	-2.64	A
Power Dissipation ²	P_D	150	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^{\circ}\text{C}$

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

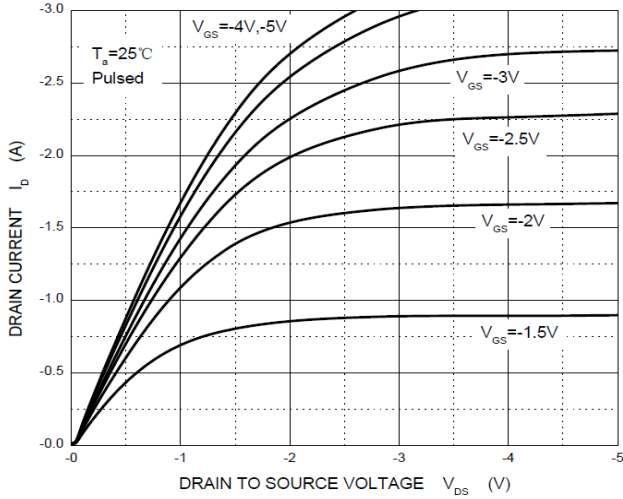
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -20\text{V}, V_{GS}=0$
Gate-Source Leakage Current	I_{GSS}	-	-	± 20	μA	$V_{DS}=0\text{V}, V_{GS} = \pm 10\text{V}$
Gate-Threshold Voltage ³	$V_{GS(th)}$	-0.35	-	-1.1	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Drain-Source On Resistance ³	$R_{DS(ON)}$	-	-	520	m Ω	$V_{GS} = -4.5\text{V}, I_D = -1\text{A}$
		-	-	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	$V_{DS} = -10\text{V}, I_D = -0.54\text{A}$
Dynamic Characteristics						
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	-		
Switching Characteristics						
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	-		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	-	-	-1.2	V	$I_S = -0.5\text{A}, V_{GS}=0$

Notes:

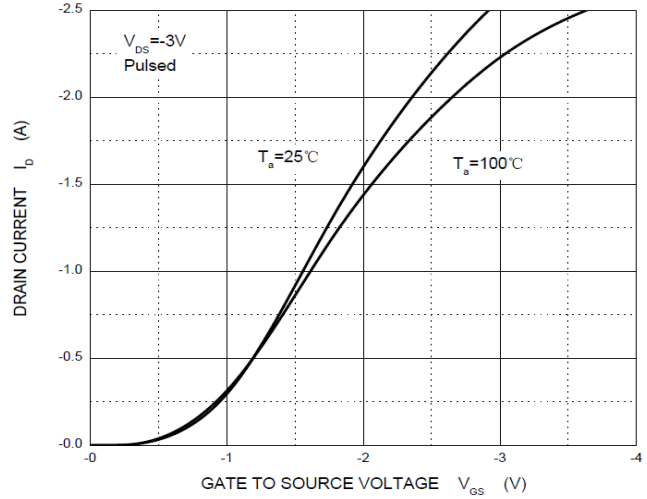
1. Repetitive Rating: The pulse width is limited by the maximum junction temperature.
2. This test is performed without heat sink at $T_A=25^\circ\text{C}$.
3. Pulse Test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$.

CHARACTERISTIC CURVES

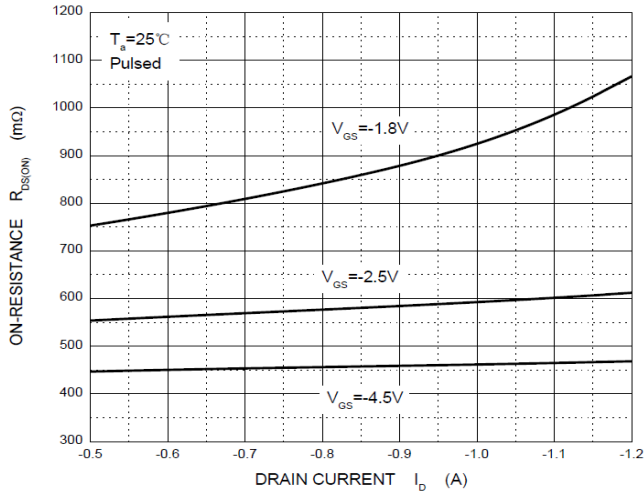
Output Characteristics



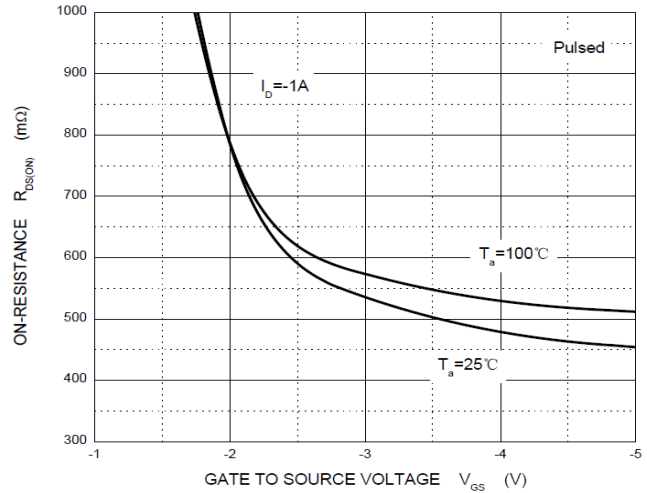
Transfer Characteristics



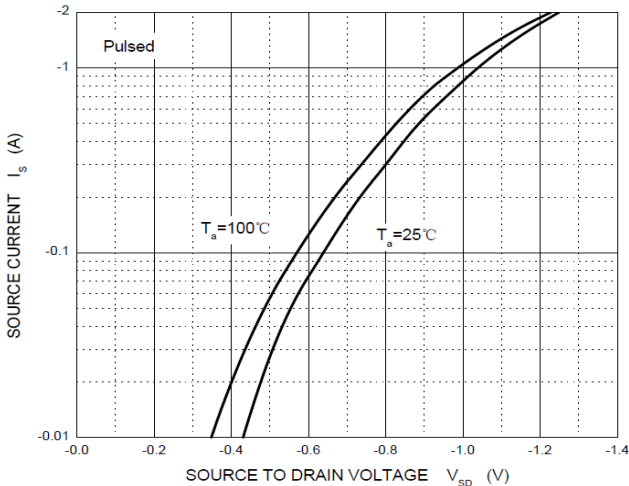
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

