

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

FEATURES

- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed

MARKING

39K

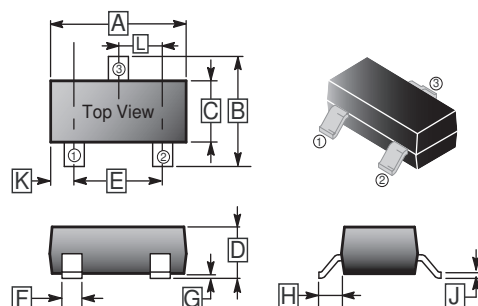
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch

ORDER INFORMATION

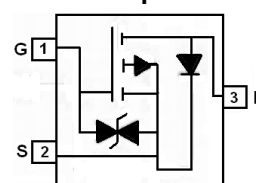
Part Number	Type
SSF3139KW	Lead (Pb)-free
SSF3139KW-C	Lead (Pb)-free and Halogen-free

SOT-323



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.100 REF.	
B	1.80	2.45	H	0.525 REF.	
C	1.15	1.35	J	0.08	0.25
D	0.80	1.10	K	0.8TYP	
E	1.20	1.40	L	0.650 TYP.	
F	0.20	0.40			

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
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	200	mW
Operating Junction and Storage Temperature	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	625	$^\circ\text{C} / \text{W}$

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

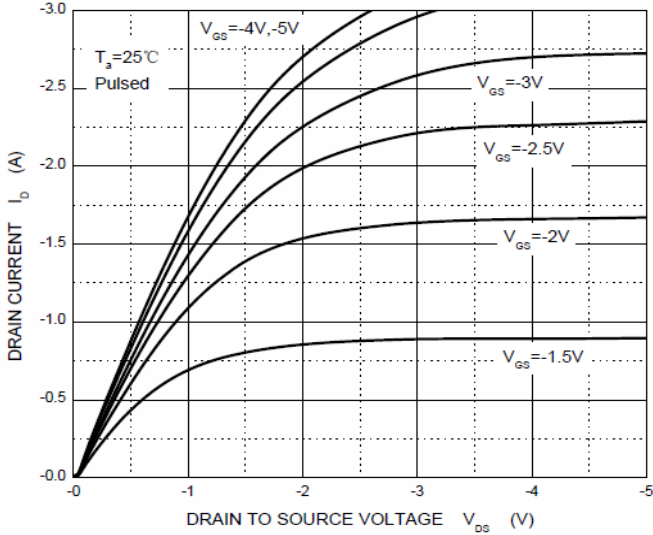
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	-20	-	-	V	$V_{GS}=0V, I_D=-250\mu A$
Gate-Threshold Voltage ³	$V_{GS(th)}$	-0.35	-	-1.1	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Gate-Source Leakage Current	I_{GSS}	-	-	± 20	μA	$V_{DS}=0V, V_{GS}=\pm 10V$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	$V_{DS}=-20V, V_{GS}=0V$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	430	520	m Ω	$V_{GS}=-4.5V, I_D=-1A$
		-	624	700		$V_{GS}=-2.5V, I_D=-0.8A$
		-	950	-		$V_{GS}=-1.8V, I_D=-0.5A$
Forward Transconductance	g_{fs}	0.8	-	-	S	$V_{DS}=-10V, I_D=-0.54A$
Turn-on Delay Time	$T_{d(on)}$	-	9	-	nS	$V_{DD}=-10V$ $V_{GS}=-4.5V$ $I_D=-0.2A$ $R_G=10\Omega$
Rise Time	T_r	-	5.8	-		
Turn-off Delay Time	$T_{d(off)}$	-	32.7	-		
Fall Time	T_f	-	20.3	-		
Input Capacitance	C_{iss}	-	170	-	pF	$V_{DS}=-16V$ $V_{GS}=0V$ $f=1MHz$
Output Capacitance	C_{oss}	-	25	-		
Reverse Transfer Capacitance	C_{rss}	-	15	-		
Drain-Source Diode						
Diode Forward Voltage ³	V_{SD}	-	-	1.2	V	$I_S=-0.5A, V_{GS}=0V$

Notes:

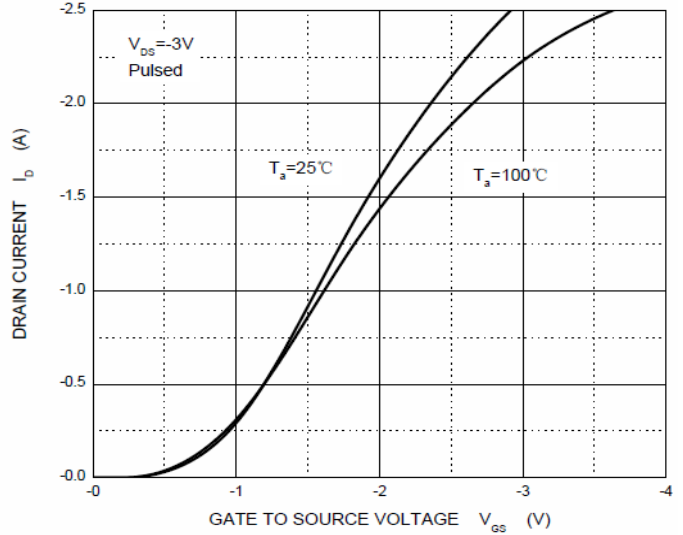
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at $T_A=25^\circ\text{C}$.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.

CHARACTERISTIC CURVES

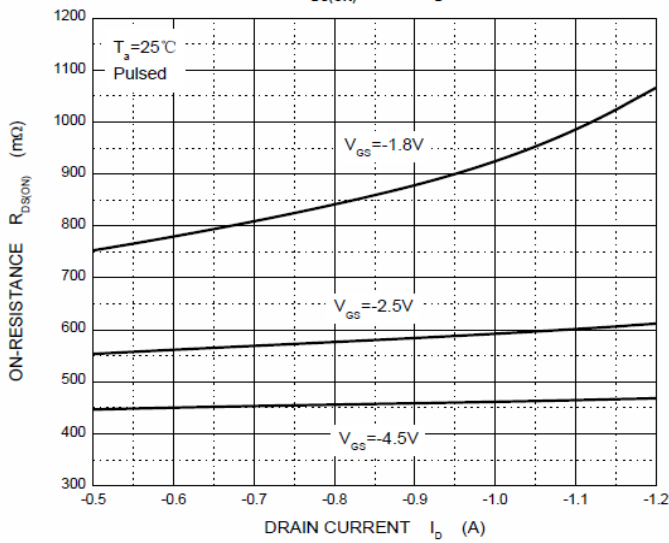
Output Characteristics



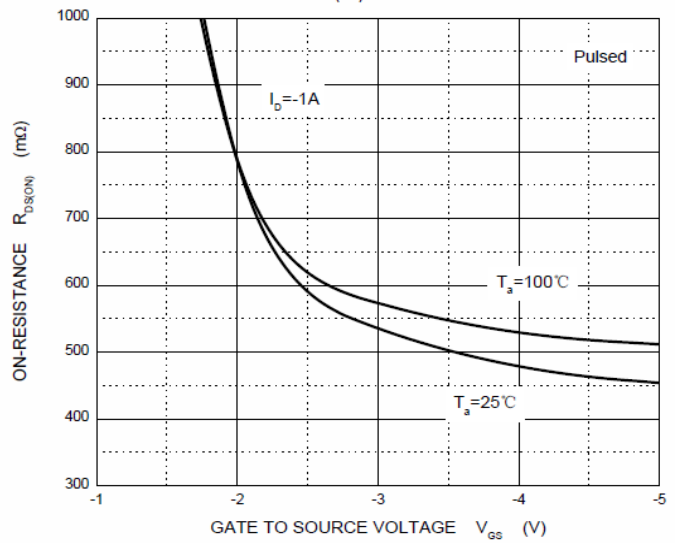
Transfer Characteristics



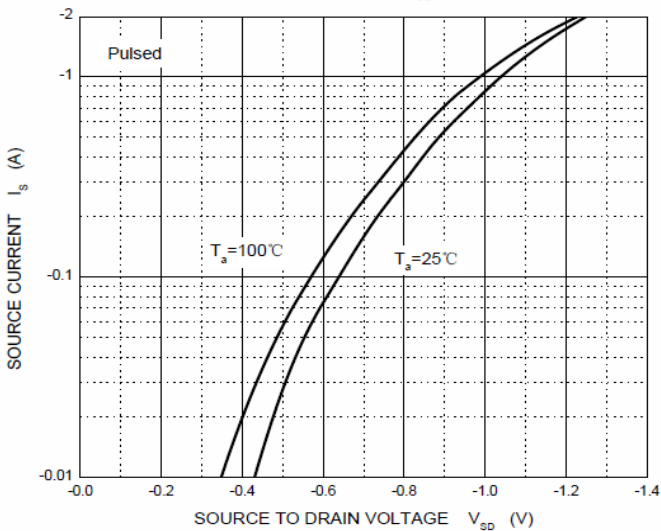
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

