

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

## DESCRIPTION

The SSF2102Y-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent  $R_{DS(ON)}$  and gate charge for most of the small power switching and load switch applications.

The SSF2102Y-C meet the RoHS and Green Product requirement with full function reliability approved.

## FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

## MARKING

TS2

## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch

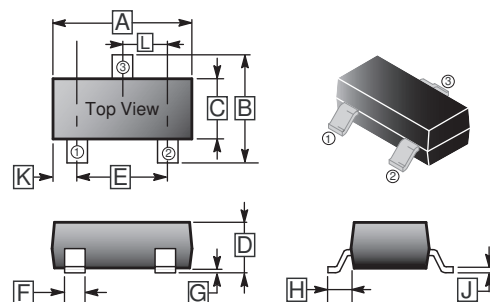
## ORDER INFORMATION

Part Number	Type
SSF2102Y-C	Lead (Pb)-free and Halogen-free

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

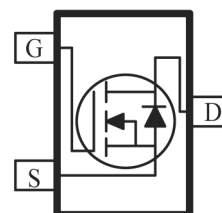
Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current @ $V_{GS}=4.5\text{V}$	$T_A=25^\circ\text{C}$	3	A
	$T_A=70^\circ\text{C}$	2.4	
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	14	A
Maximum Power Dissipation	$P_D$	0.25	W
Operating Junction & Storage Temperature	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$
<b>Thermal Resistance Rating</b>			
Thermal Resistance Junction-Ambient <sup>2</sup>	$R_{\theta JA}$	500	$^\circ\text{C/W}$

## SOT-323



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.10	REF.
B	1.80	2.55	H	0.525	REF.
C	1.10	1.40	J	0.05	0.25
D	0.80	1.15	K	0.35	REF.
E	1.20	2.00	L	0.65	TYP.
F	0.15	0.50			

## Top View



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate-Threshold Voltage	$V_{GS(th)}$	0.55	-	1.1	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 10\text{V}, V_{DS}=0$
Drain-Source Leakage Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=20\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance <sup>4</sup>	$R_{DS(ON)}$	-	-	70	m $\Omega$	$V_{GS}=4.5\text{V}, I_D=2.5\text{A}$
		-	-	98		$V_{GS}=2.5\text{V}, I_D=2\text{A}$
Total Gate Charge	$Q_g$	-	3.61	-	nC	$I_D=2.5\text{A}$ $V_{DS}=10\text{V}$ $V_{GS}=4.5\text{V}$
Gate-Source Charge	$Q_{gs}$	-	0.88	-		
Gate-Drain Charge	$Q_{gd}$	-	0.77	-		
Turn-on Delay Time	$T_{d(on)}$	-	6.8	-	nS	$V_{DD}=10\text{V}$ $V_{GS}=4.5\text{V}$ $R_{GEN}=3\Omega$ $R_L=1.5\Omega$
Rise Time	$T_r$	-	57	-		
Turn-off Delay Time	$T_{d(off)}$	-	14	-		
Fall Time	$T_f$	-	53	-		
Input Capacitance	$C_{iss}$	-	220	-	pF	$V_{GS}=0$ $V_{DS}=10\text{V}$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	34	-		
Reverse Transfer Capacitance	$C_{rss}$	-	26	-		
<b>Source-Drain Diode</b>						
Diode Forward Voltage	$V_{SD}$	-	-	1.2	V	$V_{GS}=0, I_S=2.5\text{A}$
Continuous Source Current	$I_S$	-	-	3	A	

Notes:

- Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$
- Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

**CHARACTERISTIC CURVE**

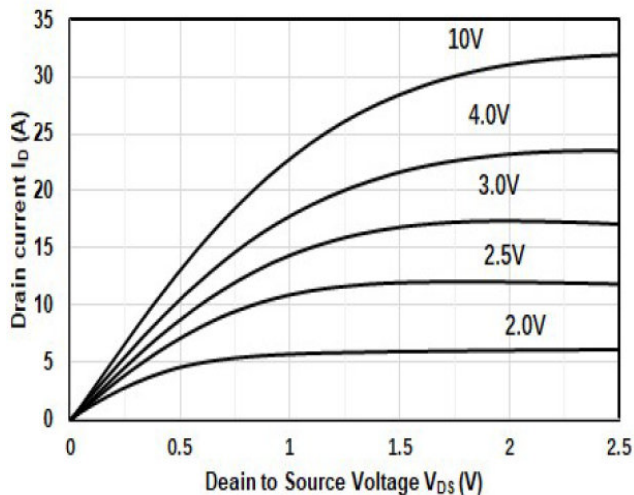


Figure1. Output Characteristics

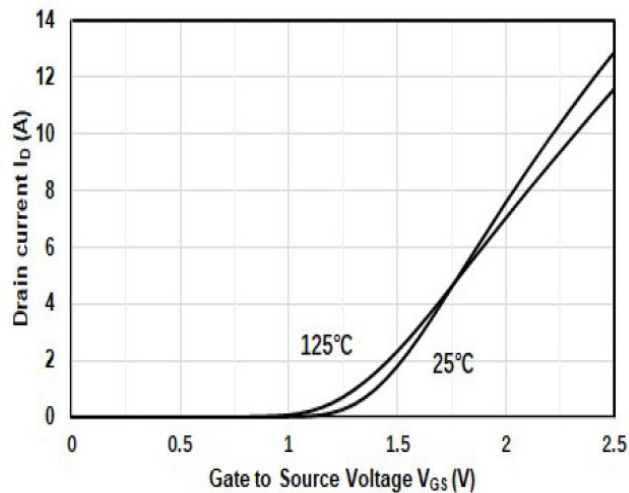


Figure2. Transfer Characteristics

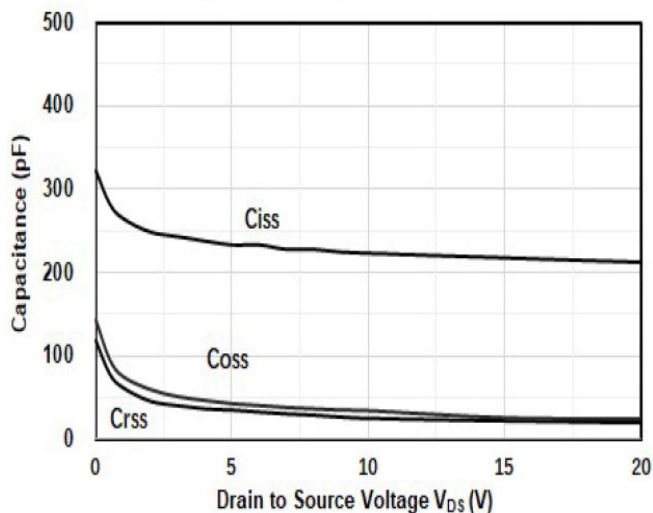


Figure3. Capacitance Characteristics

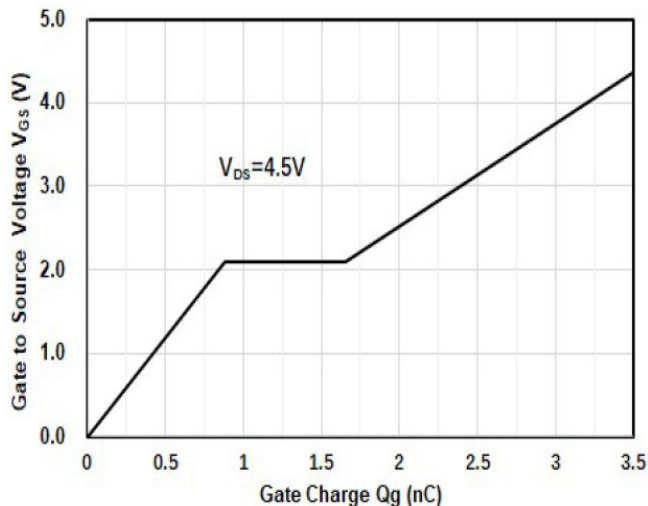


Figure4. Gate Charge

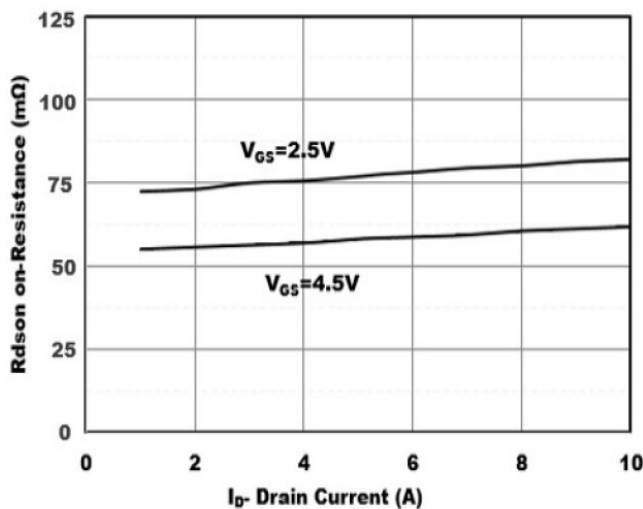


Figure5. Drain-Source on Resistance

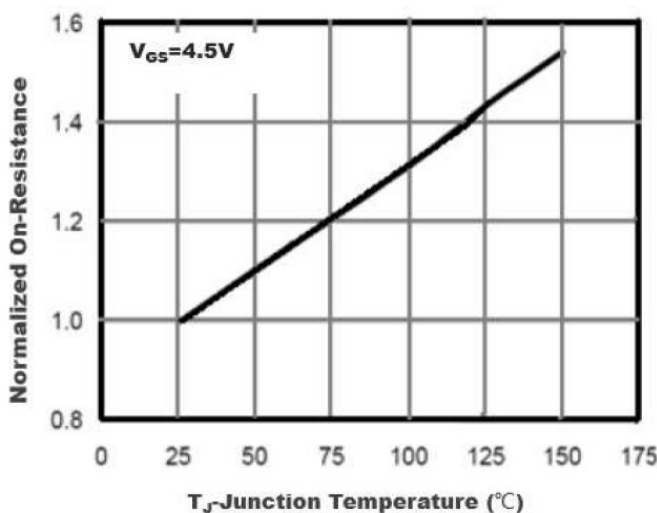


Figure6. Drain-Source on Resistance

**CHARACTERISTIC CURVE**

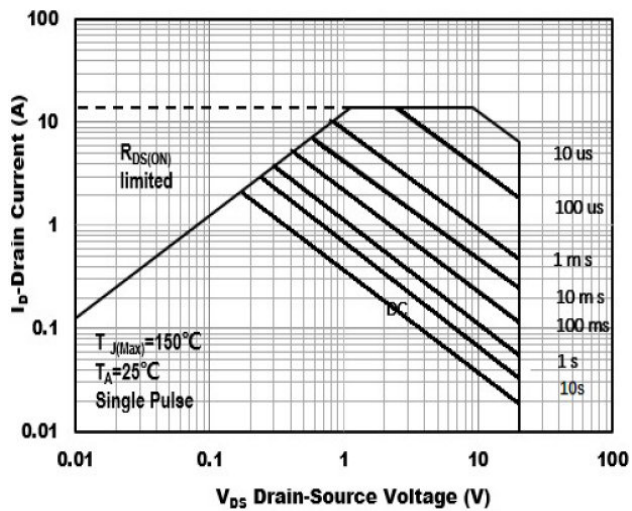


Figure7. Safe Operation Area

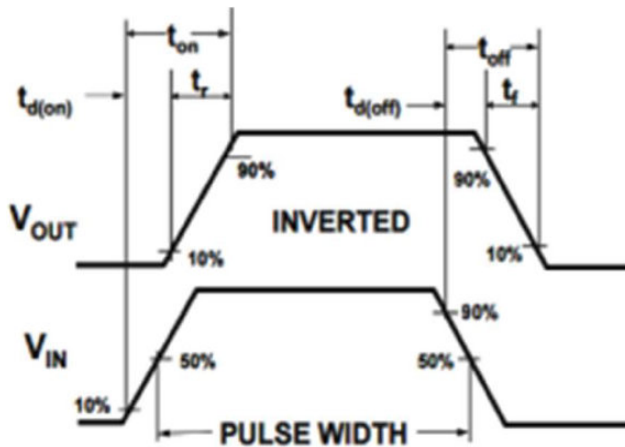


Figure8. Switching wave