

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

## DESCRIPTION

SSD50N03J uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

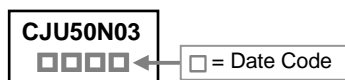
## FEATURES

- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized Avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation

## APPLICATIONS

- Power switching applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

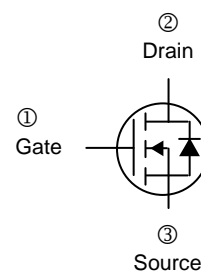
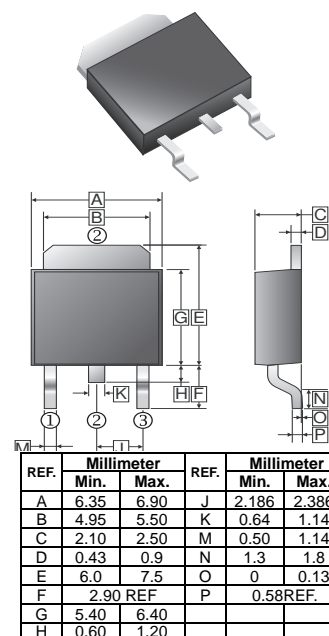
## MARKING



## PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

## TO-252(D-Pack)



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	50	A
Pulsed Drain Current	$I_{DM}$	200	A
Single Pulsed Avalanche Energy <sup>1</sup>	$E_{AS}$	70	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C} / \text{W}$
Lead Temperature for Soldering Purposes @ 1/8" from case for 10s	$T_L$	260	$^\circ\text{C}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

Notes:

1.  $E_{AS}$  condition:  $V_{DD}=20\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Drain-Source Leakage Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=30\text{V}, V_{GS}=0$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0\text{V}, V_{GS}= \pm 20\text{V}$
<b>On Characteristics</b> <sup>1</sup>						
Gate-Threshold Voltage	$V_{GS(th)}$	1	1.5	3	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	7	11	m $\Omega$	$V_{GS}=10\text{V}, I_D=25\text{A}$
		-	9	16		$V_{GS}=5\text{V}, I_D=20\text{A}$
Forward Transfer conductance	$g_{fs}$	15	-	-	S	$V_{DS}=5\text{V}, I_D=20\text{A}$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	-	2000	-	pF	$V_{DS}=15\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	280	-		
Reverse Transfer Capacitance	$C_{riss}$	-	160	-		
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	-	23	-	nC	$V_{DS}=10\text{V}$ $V_{GS}=10\text{V}$ $I_D=25\text{A}$
Gate-Source Charge	$Q_{gs}$	-	7	-		
Gate-Drain ("Miller") Charge	$Q_{gd}$	-	4.5	-		
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	$V_{DD}=15\text{V}$ $V_{GS}=10\text{V}$ $R_G=1.8\Omega$ $I_D=20\text{A}$
Rise Time	$T_r$	-	8	-		
Turn-off Delay Time	$T_{d(off)}$	-	30	-		
Fall Time	$T_f$	-	5	-		
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	-	-	1.2	V	$I_S=25\text{A}, V_{GS}=0$
Continuous Source Current	$I_S$	-	-	50	A	
Pulsed Source Current	$I_{SM}$	-	-	200	A	

Notes:

1. Pulse Test : Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

**CHARACTERISTIC CURVE**

