

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

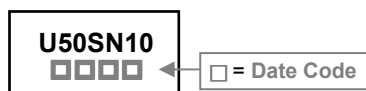
DESCRIPTION

SSD50SN10J 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 synchronous buck converter applications.

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge

MARKING



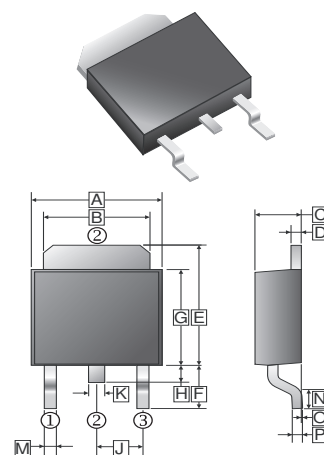
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

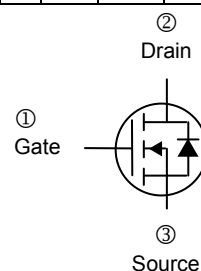
ORDER INFORMATION

Part Number	Type
SSD50SN10J	Lead (Pb)-free
SSD50SN10J-C	Lead (Pb)-free and Halogen-free

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.80	J	2.30	REF.
B	5.20	5.50	K	0.64	0.90
C	2.15	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.7
E	6.8	7.6	O	0	0.15
F	2.9	REF.	P	0.43	0.58
G	5.40	6.25			
H	0.64	1.20			



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current ²	I_{DM}	170	A
Single Pulse Avalanche Energy ¹	E_{AS}	80	mJ
Total Power Dissipation	P_D	50	W
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	2.5	$^\circ\text{C} / \text{W}$
Maximum Thermal Resistance Junction-Ambient ³	$R_{\theta JA}$	62	$^\circ\text{C} / \text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ unless otherwise specified)

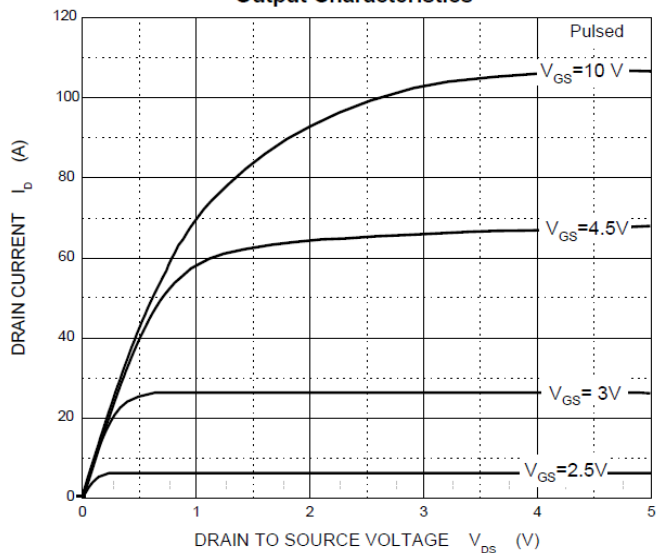
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	$V_{GS}=0, I_D=250\mu A$
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	$V_{DS}=80V, V_{GS}=0$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}= \pm 20V$
On Characteristics²						
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	22	m Ω	$V_{GS}=10V, I_D=10A$
Forward Transconductance	g_{fs}	-	51	-	S	$V_{DS}=5V, I_D=20A$
Dynamic Characteristics						
Total Gate Charge	Q_g	-	15.7	-	nC	$I_D=5A$ $V_{DS}=50V$ $V_{GS}=10V$
Gate-Source Charge	Q_{gs}	-	2.6	-		
Gate-Drain ("Miller") Charge	Q_{gd}	-	4	-		
Turn-on Delay Time	$T_{d(on)}$	-	16.5	-	nS	$V_{DD}=10V$ $I_D=5A$ $V_{DS}=50V$ $R_G=10\Omega$
Rise Time	T_r	-	3.7	-		
Turn-off Delay Time	$T_{d(off)}$	-	64.7	-		
Fall Time	T_f	-	44	-		
Switching Characteristics						
Input Capacitance	C_{iss}	-	975.3	-	pF	$V_{GS}=0$ $V_{DS}=50V$ $f=100KHz$
Output Capacitance	C_{oss}	-	175	-		
Reverse Transfer Capacitance	C_{rss}	-	9.4	-		
Source-Drain Diode Characteristics						
Diode Forward Voltage ²	V_{SD}	-	-	1.3	V	$I_S=20A, V_{GS}=0$

Notes:

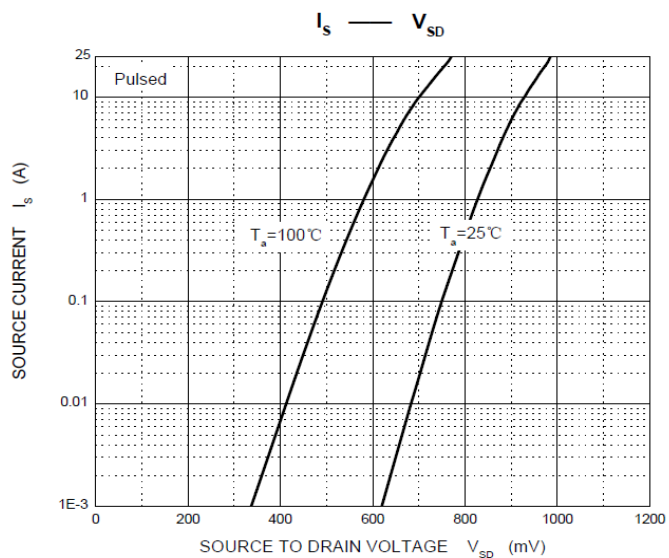
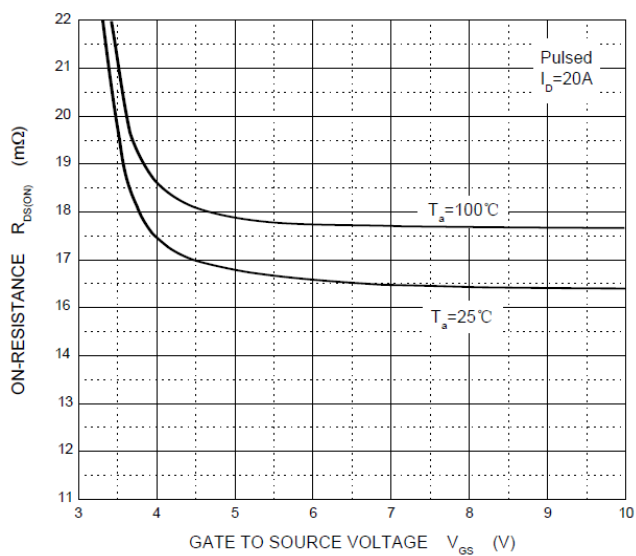
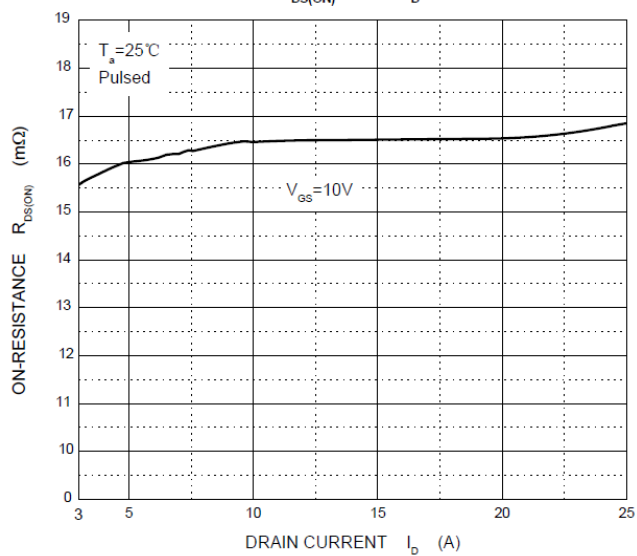
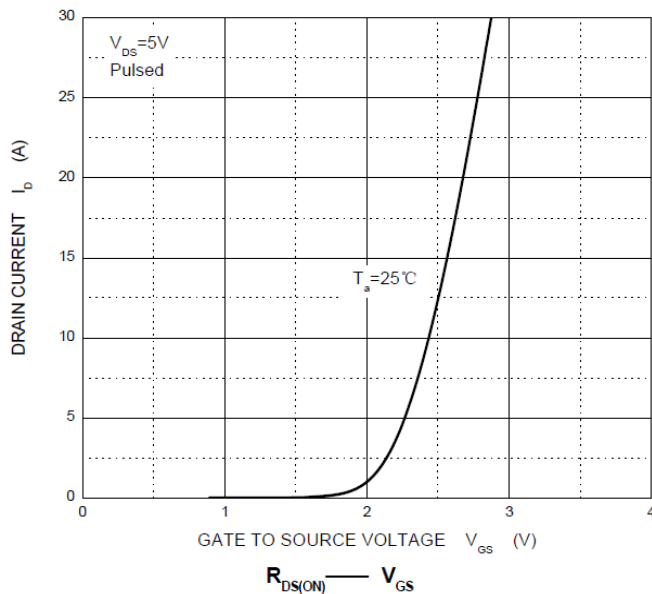
- EAS condition: $V_{DD}=50V, L=0.3mH, R_G=25\Omega$, Starting $T_J=25^\circ C$
- Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
- The value of $R_{\theta JA}$ is measured with the device mounted on 1 inch² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$

TYPICAL CHARACTERISTICS CURVE

Output Characteristics



Transfer Characteristics



Threshold Voltage

