

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

DESCRIPTION

This advanced high voltage MOSFET is designed to withstand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain to source diode with a fast recovery time. Designed for high voltage, high speed switching applications such as power suppliers, converters, power motor control, and bridge circuits.

FEATURES

- High Current Rating
- Lower $R_{DS(ON)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter VSD Specifications
- Avalanche Energy Specified

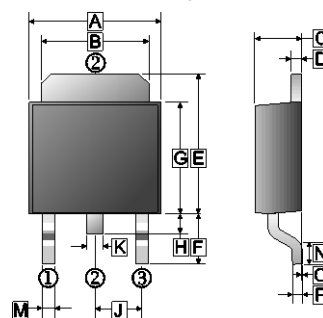
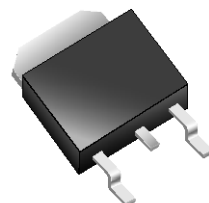
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ORDER INFORMATION

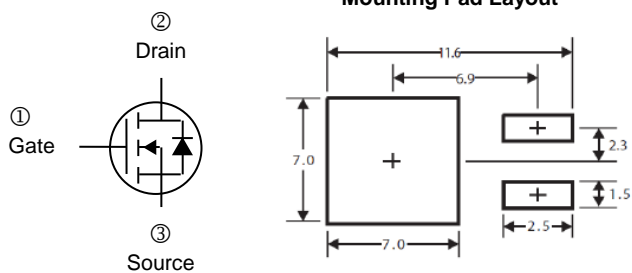
Part Number	Type
SSD04N60J-C	Lead (Pb)-free and Halogen-free

TO-252



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.50	6.70	J	2.186	2.386
B	5.10	5.46	K	0.67	1.00
C	2.20	2.40	M	0.6	0.77
D	0.46	0.58	N	1.4	1.7
E	6.50	7.50	O	0	0.13
F	2.90	REF	P	0.58	REF
G	6.00	6.20			
H	0.60	1.00			

Mounting Pad Layout



*Dimensions in millimeters

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	4	A
Continuous Drain-Source Diode Forward Current	I_S	4	A
Maximum Lead Temperature for Soldering Purposes @ 1/8" from case for 5 seconds	T_L	260	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Maximum Thermal Resistance from Junction-Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$

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

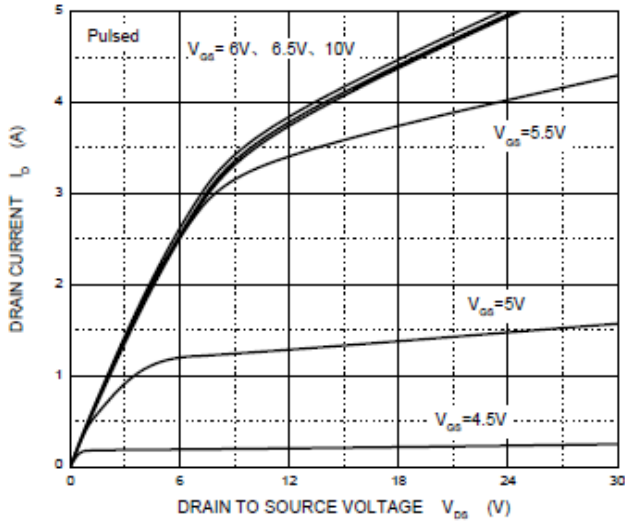
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-Source Breakdown Voltage	BV_{DSS}	600	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate Threshold Voltage ¹	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Forward Transconductance ¹	g_{fs}	-	2.6	-	S	$V_{DS}=50\text{V}, I_D=2\text{A}$
Gate-Source Leakage Forward Current ¹	I_{GSSF}	-	-	100	nA	$V_{DS}=0\text{V}, V_{GS}=30\text{V}$
Gate-Source Leakage Reverse Current ¹	I_{GSSR}	-	-	-100	nA	$V_{DS}=0\text{V}, V_{GS}=-30\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	25	μA	$V_{DS}=600\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	2	3	Ω	$V_{GS}=10\text{V}, I_D=2\text{A}$
Gate Resistance	R_g	-	2.3	-	Ω	$f=1\text{MHz}$
Total Gate Charge	Q_g	-	5	-	nC	$V_{DS}=480\text{V}$ $V_{GS}=10\text{V}$ $I_D=4\text{A}$
Gate-Source Charge	Q_{gs}	-	2.7	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	2	-		
Turn-on Delay Time	$T_{d(on)}$	-	12	-	nS	$V_{DD}=300\text{V}$ $V_{GS}=10\text{V}$ $R_G=9.1\Omega$ $I_D=4\text{A}$
Rise Time	T_r	-	7	-		
Turn-off Delay Time	$T_{d(off)}$	-	19	-		
Fall Time	T_f	-	10	-		
Input Capacitance	C_{iss}	-	540	-	pF	$V_{DS}=25\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	125	-		
Reverse Transfer Capacitance	C_{rss}	-	8	-		
Drain-Source Diode Forward Voltage ¹	V_{SD}	-	-	1.5	V	$V_{GS}=0, I_S=4\text{A}$

Note:

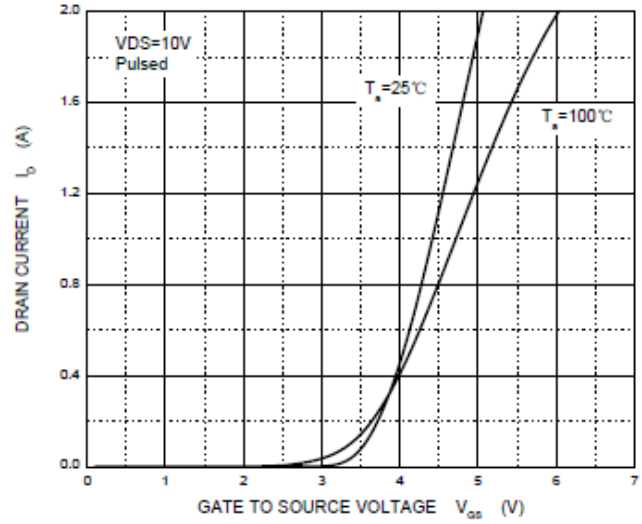
1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

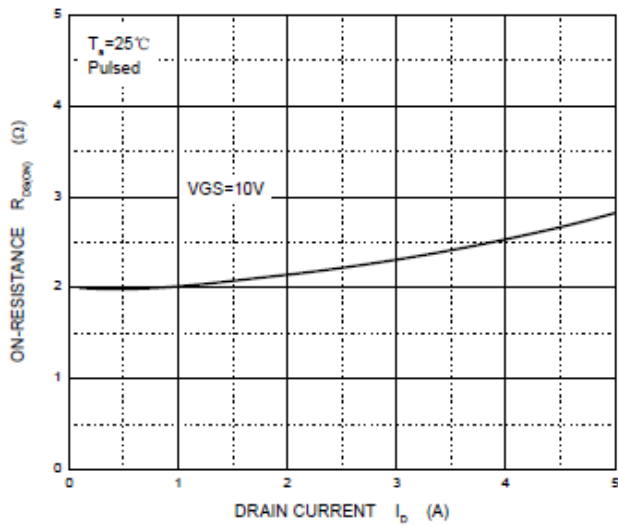
Output Characteristics



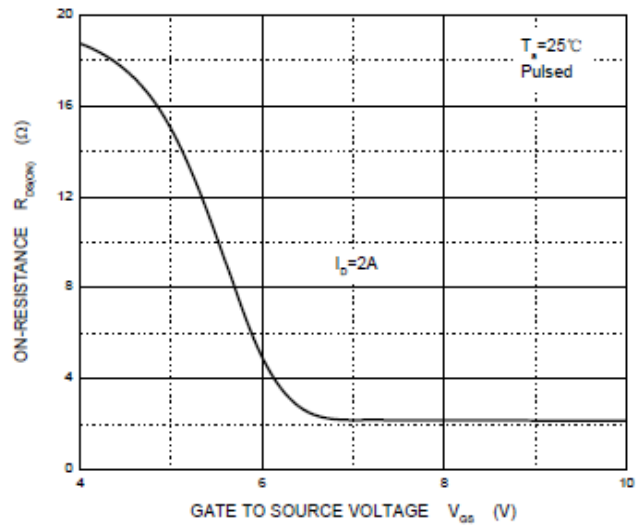
Transfer Characteristics



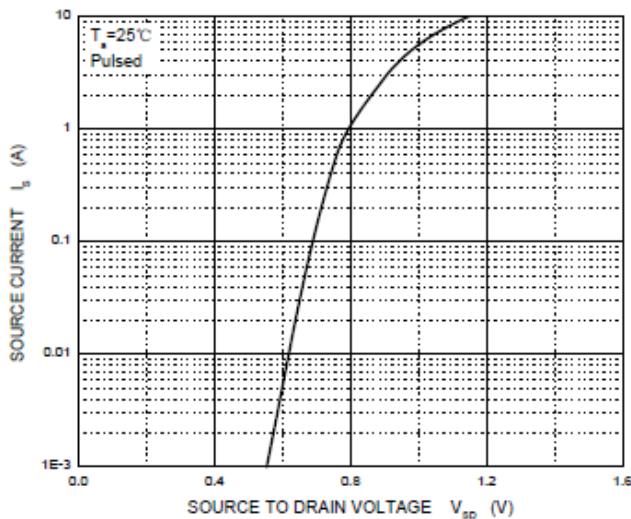
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

