Elektronische Bauelemente

SSQ07N60J

7 A, 600 V, $R_{DS(ON)}$ 1.3 Ω

N-Channel Enhancement Mode Power MOSFET

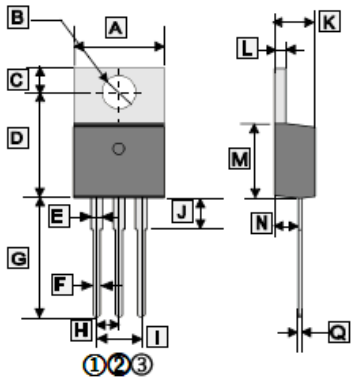
RoHS Compliant Product

A suffix of "-C" specifies halogen free

DESCRIPTION

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition, this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes. The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls, these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

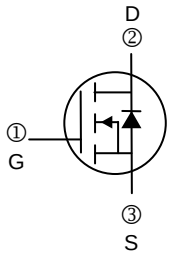
TO-220J



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	10.010	10.350	I	4.980	5.180
B	3.735	3.935	J	3.560	3.960
C	2.590	2.890	K	4.470	4.670
D	12.060	12.460	L	1.200	1.400
E	1.170	1.370	M	8.500	8.900
F	0.710	0.910	N	2.520	2.820
G	13.400	13.800	Q	0.330	0.650
H	2.540 TYP.				

FEATURES

- Robust High Voltage Termination
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- Diode is characterized for The Use in Bridging Circuits
- I_{DSS} and $V_{DS(ON)}$ Specified at Elevated Temperature



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	7	A
Continuous Drain-Source Diode Forward Current	I_{DM}	20	A
Power Dissipation	P_D	2	W
Single Pulsed Avalanche Energy [1]	E_{AS}	530	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	℃
Thermal Resistance Rating			
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-Source Breakdown Voltage	BV_{DSS}	600	-	-	V	V_{GS}=0, I_D=250μA
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=600V, V_{GS}=0
		-	-	100		V_{DS}=480V, V_{GS}=0, T_J=125℃
Gate-Source Leakage Forward Current	I_{GSSF}	-	-	100	nA	V_{GSF}=30V, V_{DS}=0V
Gate-Source Leakage Reverse Current	I_{GSSR}	-	-	100	nA	V_{GSR}=30V, V_{DS}=0V
Gate Threshold Voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	-	1.3	Ω	V_{GS}=10V, I_D=3.5A
Forward Transconductance [2]	g_{fs}	5	-	-	S	V_{DS}=50V, I_D=3.9A
Input Capacitance	C_{iss}	-	1380	-	pF	V_{DS}=25V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	115	-		
Reverse Transfer Capacitance	C_{rss}	-	23	-		
Turn-on Delay Time [2]	$T_{d(on)}$	-	30	-	nS	V_{DD}=300V V_{GS}=10V R_G=9.1Ω I_D=7A
Rise Time [2]	T_r	-	80	-		
Turn-off Delay Time [2]	$T_{d(off)}$	-	125	-		
Fall Time [2]	T_f	-	85	-		
Total Gate Charge [2]	Q_g	-	38	-	nC	V_{DS}=480V V_{GS}=10V I_D=7A
Gate-Source Charge [2]	Q_{gs}	-	6.4	-		
Gate-Drain (“Miller”) Change [2]	Q_{gd}	-	15	-		
Internal Drain Inductance @measured from the drain lead 0.25’’ from the package to the center of die	L_D	-	4.5	-	nH	
Internal Drain Inductance @measured from the source lead 0.25’’ from the package to the source bond pad	L_S	-	7.5	-	nH	
Source-Drain Diode Characteristics						
Drain-Source Diode Forward Voltage [2]	V_{SD}	-	-	1.4	V	I_S=7A, d_{IS}/d_t=100A/μS
Forward Turn-On Time [3]	T_{on}	-	-	-	nS	I_S=7A, d_{IS}/d_t=100A/μS
Reverse Recovery Time	T_{RR}	-	415	-	nS	

Notes:
1. E_{AS} condition: L=19.5mH, I_L=7A, V_{DD}=50V, V_{GS}=10V, R_G=0Ω, T_J=25℃.
2. Pulse Test : Pulse width≦300μs, duty cycle≦2%.
3. The typical parameter of T_{on} is negligible and is dominated by circuit inductance.

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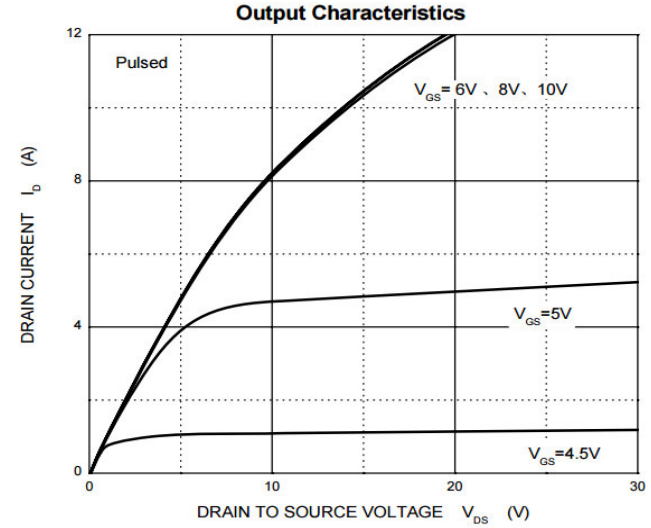
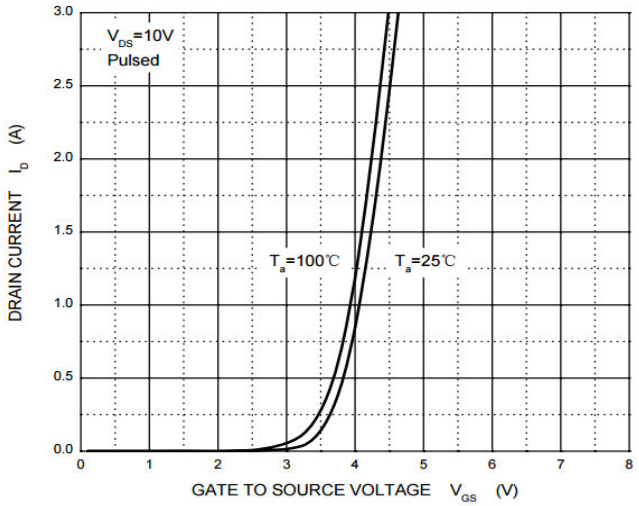
CHARACTERISTICS CURVE

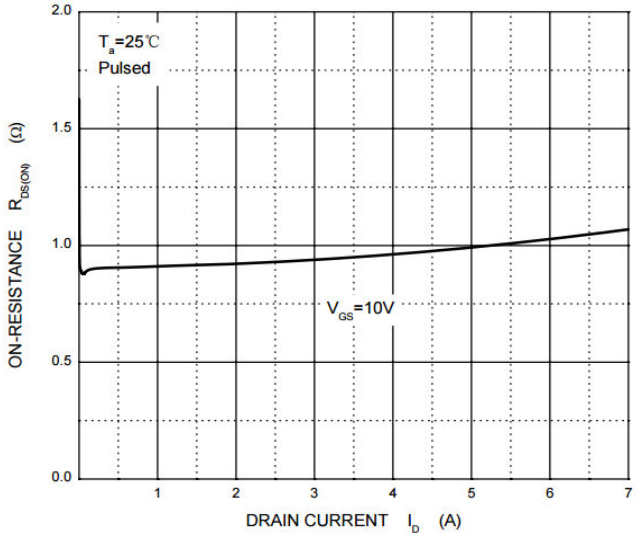
Output Characteristics



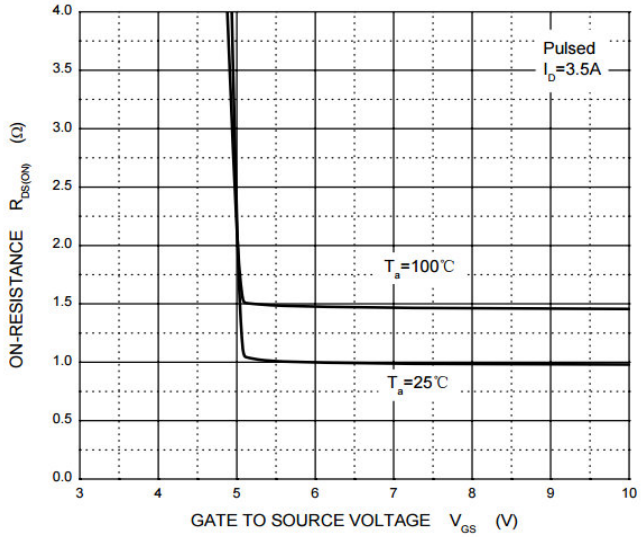
Transfer Characteristics



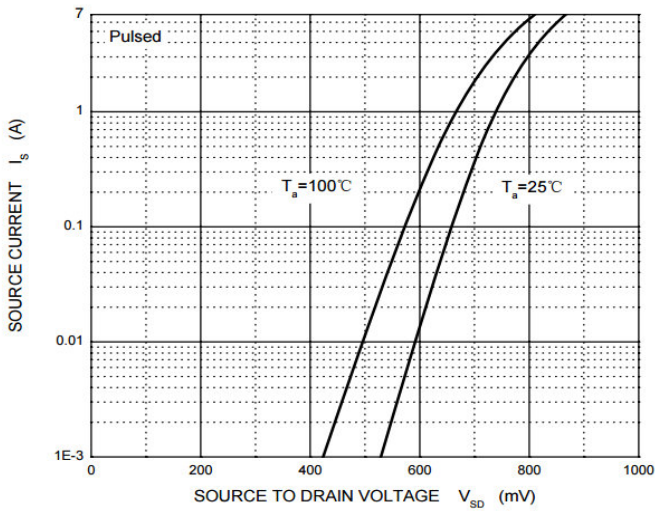
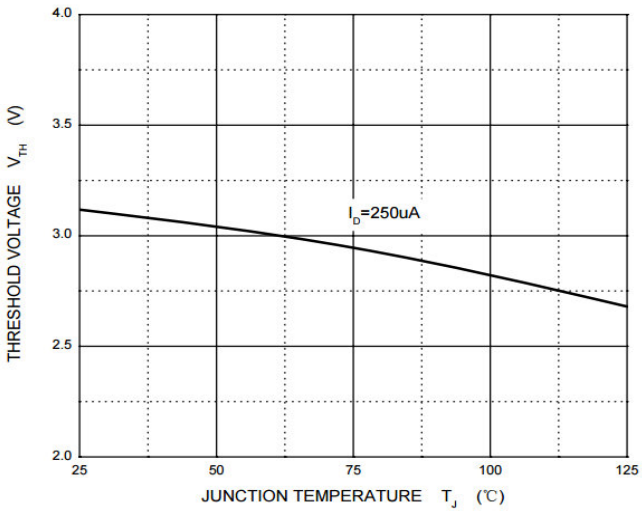
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage