Elektronische Bauelemente

SSQF42N15SV-C

42A, 150V, $R_{DS(ON)}$ 11.5mΩ

N-Channel Shielded Gate Trench Power MOSFET

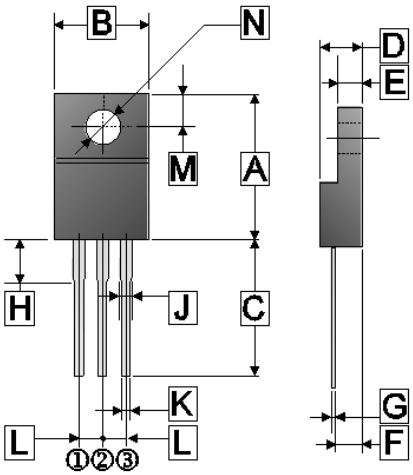
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSQF42N15SV-C is the Shielded Gate Technology 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.

The SSQF42N15SV-C meet the RoHS and Green Product requirement with full function reliability approved.

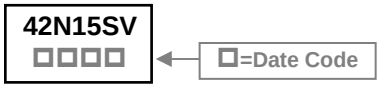
ITO-220J

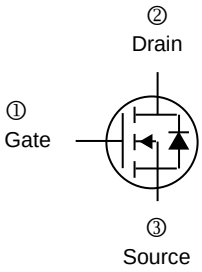


FEATURES

- Shielded Gate Trench Technology
- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.50	15.50	H	3.80 TYP.	
B	9.50	10.50	J	1.30 REF.	
C	13.20 REF.		K	0.30	0.90
D	4.24	4.84	L	2.54 REF.	
E	2.52	3.20	M	2.70 REF.	
F	2.50	2.90	N	ϕ 3.50 REF.	
G	0.47	0.75			

ORDER INFORMATION

Part Number	Type
SSQF42N15SV-C	Lead (Pb)-free and Halogen-free

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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	42	A
	T_C=100℃		30	
Pulsed Drain Current [2]		I_{DM}	300	A
Total Power Dissipation	T_C=25℃	P_D	39	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	60	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3.2	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage		BV_{DSS}	150	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance [2]		g_{fs}	-	65	-	S	V_{DS}=5V, I_D=20A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=120V, V_{GS}=0
	T_J=100℃		-	-	100		V_{DS}=120V, V_{GS}=0
Static Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	9.7	11.5	mΩ	V_{GS}=10V, I_D=20A
Gate Resistance		R_g	-	2.8	-	Ω	V_{GS}=0V, V_{DS} Open, f=1MHz
Total Gate Charge		Q_g	-	42	-	nC	I_D=20A V_{DD}=75V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	14	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	7	-		
Turn-on Delay Time		$T_{d(on)}$	-	17	-	nS	V_{DD}=75V I_D=20A V_{GS}=10V R_G=10Ω
Rise Time		T_r	-	8	-		
Turn-off Delay Time		$T_{d(off)}$	-	26	-		
Fall Time		T_f	-	10	-		
Input Capacitance		C_{iss}	-	3365	-	pF	V_{GS}=0V V_{DS}=75V f=1MHz
Output Capacitance		C_{oss}	-	239	-		
Reverse Transfer Capacitance		C_{rss}	-	6.5	-		
Source-Drain Diode							
Diode Forward Voltage [3]		V_{SD}	-	0.9	1.2	V	I_F=20A, V_{GS}=0V
Reverse Recovery Time		T_{rr}	-	80	-	nS	V_R=75V, I_F=20A, dI/dt=100A/μs
Reverse Recovery Charge		Q_{rr}	-	160	-	nC	

Notes:
1. The data tested by surface mounted on a 1inch^2 FR4 Board with 2OZ copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width≤10μs, Duty Cycle≤2%.
3. The Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

TYPICAL CHARACTERISTICS CURVE

Fig 1. Typical Output Characteristics

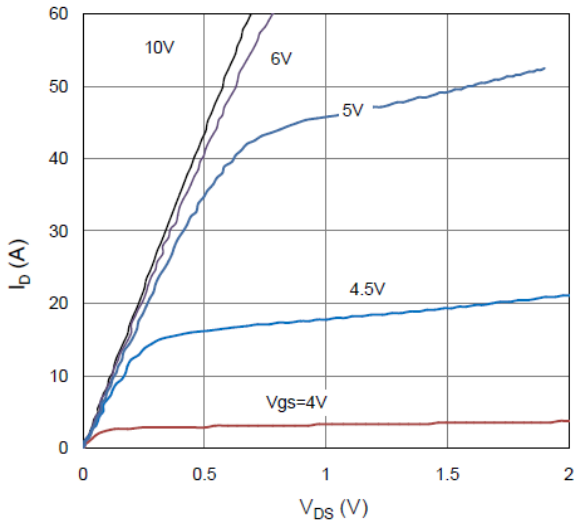


Figure 2. On-Resistance vs. Gate-Source Voltage

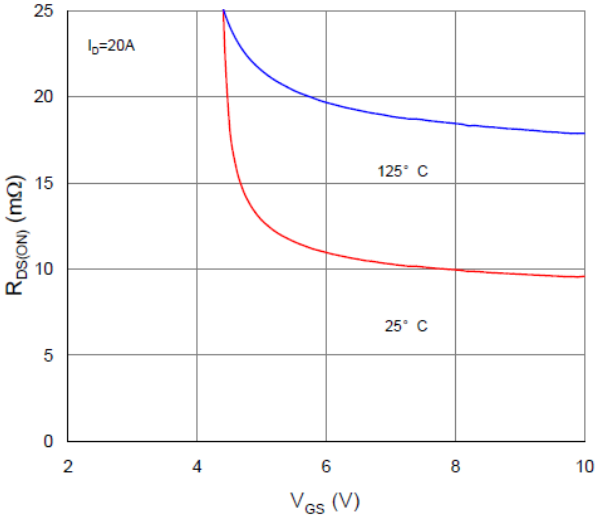


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

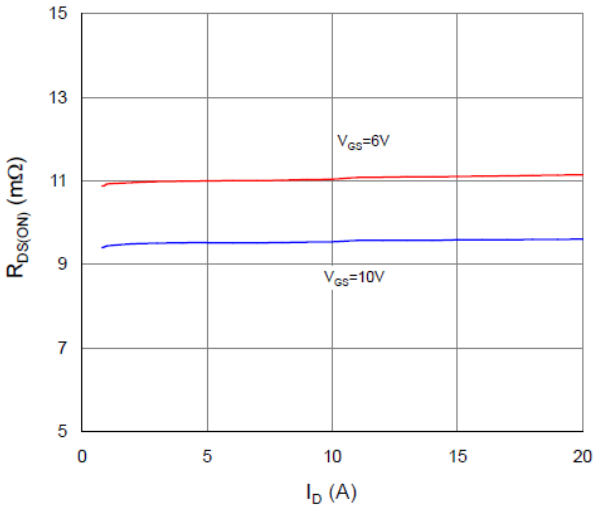


Figure 4. Normalized On-Resistance vs. Junction Temperature

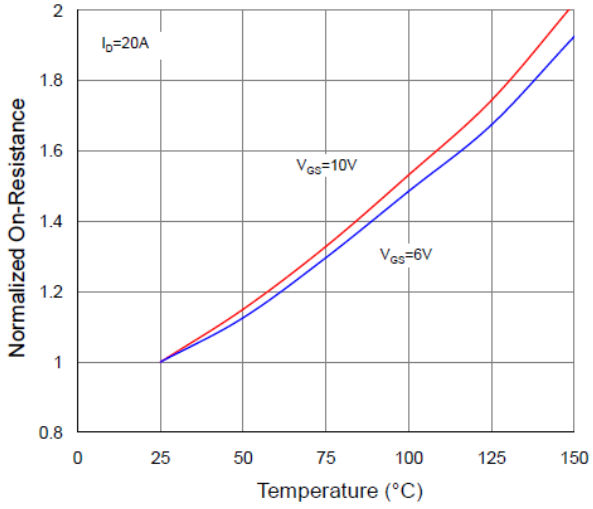


Figure 5. Typical Transfer Characteristics

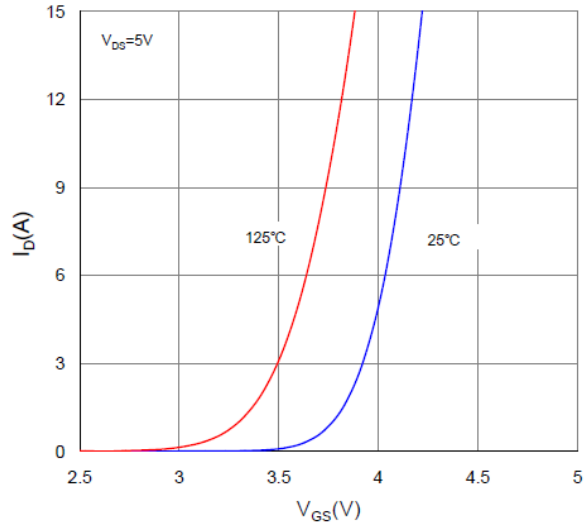
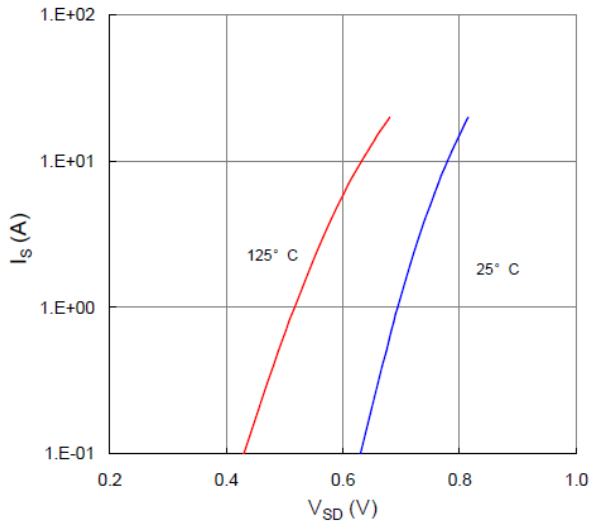


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS CURVE

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

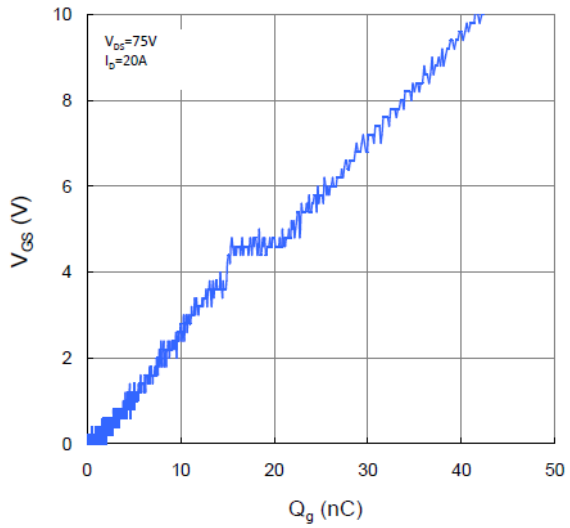


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

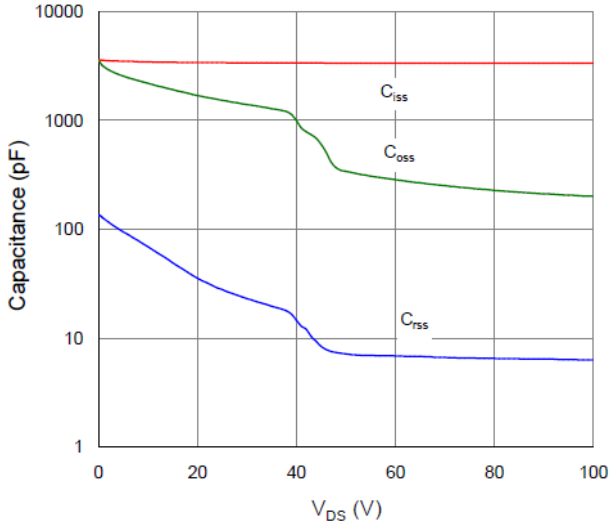


Figure 9. Maximum Safe Operating Area

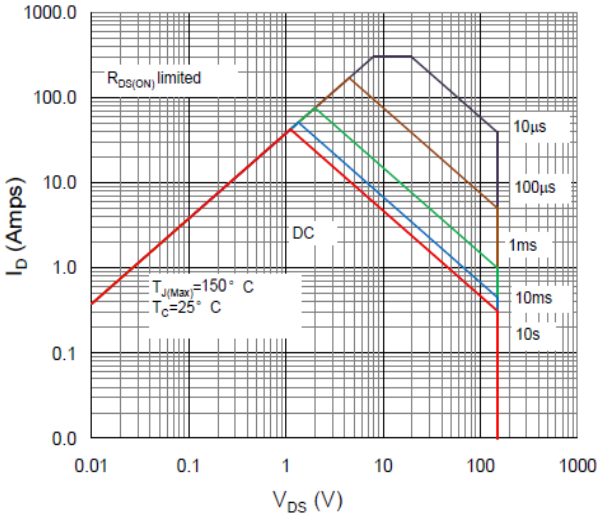


Figure 10. Maximun Drain Current vs. Case Temperature

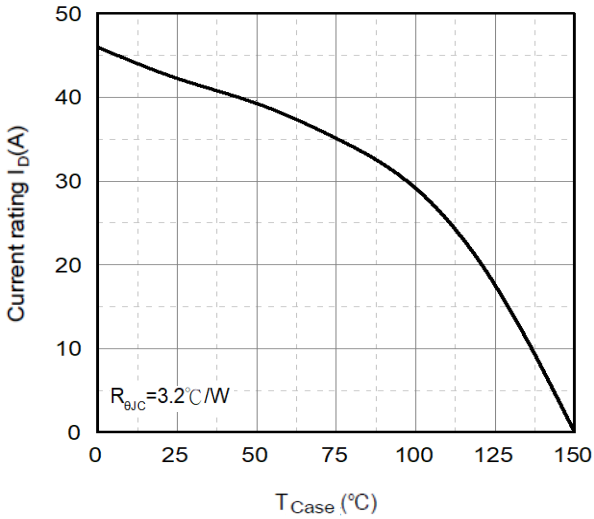


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient