Elektronische Bauelemente

SSU38N03-C

38A, 30V, $R_{DS(ON)}$ 18mΩ

N-Ch Enhancement Mode Power MOSFET

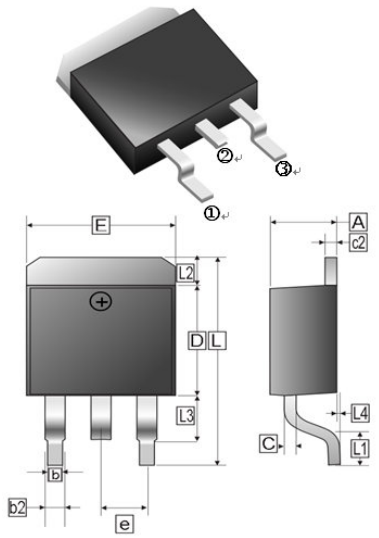
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSU38N03-C is the highest performance 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 SSU38N03-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-263

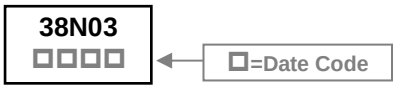


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.00	4.87	c2	1.07	1.65
b	0.51	1.01	b2	1.34 REF	
L4	0.00	0.30	D	8.0	9.65
C	0.30	0.74	e	2.54 REF	
L3	1.50 REF		L	14.6	16.1
L1	2.5 REF		L2	1.27 REF	
E	9.60	10.67			

FEATURES

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

MARKING

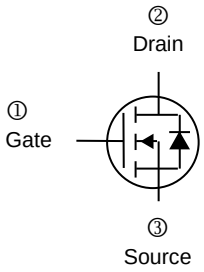


PACKAGE INFORMATION

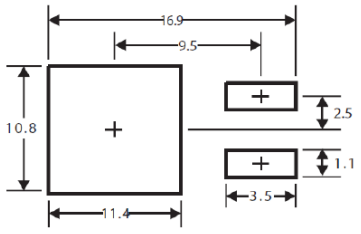
Package	MPQ	Leader Size
TO-263	0.8K	13 inch

ORDER INFORMATION

Part Number	Type
SSU38N03-C	Lead (Pb)-free and Halogen-free



Mounting Pad Layout



*Dimensions in millimeters

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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	38	A
	T_C=100℃		24	
	T_A=25℃		8.2	
	T_A=70℃		6.5	
Pulsed Drain Current [2]		I_{DM}	75	A
Single Pulse Avalanche Energy [4]		E_{AS}	22	mJ
Avalanche Current		I_{AS}	21	A
Power Dissipation [3]	T_C=25℃	P_D	41	W
	T_A=25℃		2	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	30	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1.2	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	19	-	S	V_{DS}=15V, I_D=30A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0V
	T_J=55℃		-	-	5		V_{DS}=24V, V_{GS}=0V
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	18	mΩ	V_{GS}=10V, I_D=15A
			-	-	28		V_{GS}=4.5V, I_D=10A
Gate Resistance		R_g	-	2.5	-	Ω	V_{DS}=V_{GS}=0, f=1MHz
Total Gate Charge		Q_g	-	6.2	-	nC	I_D=15A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	2.4	-		
Gate-Drain Change		Q_{gd}	-	2.5	-		
Turn-on Delay Time		$T_{d(on)}$	-	3	-	nS	V_{DD}=15V I_D=15A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	7.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	21	-		
Fall Time		T_f	-	4	-		
Input Capacitance		C_{iss}	-	572	-	pF	V_{GS}=0V V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	81	-		
Reverse Transfer Capacitance		C_{rss}	-	65	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	38	A	V_{DS}=V_{GS}=0V, Force Current
Pulsed Source Current [2]		I_{SM}	-	-	75	A	
Reverse Recovery Time		t_{rr}	-	17	-	nS	I_F=15A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	3	-	nC	

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed pulse width≦ 300us, duty cycle≦ 2%.
3. The power dissipation is limited by 150℃ juncti on temperature.
4. The E_{AS} data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=21A.

TYPICAL CHARACTERISTIC

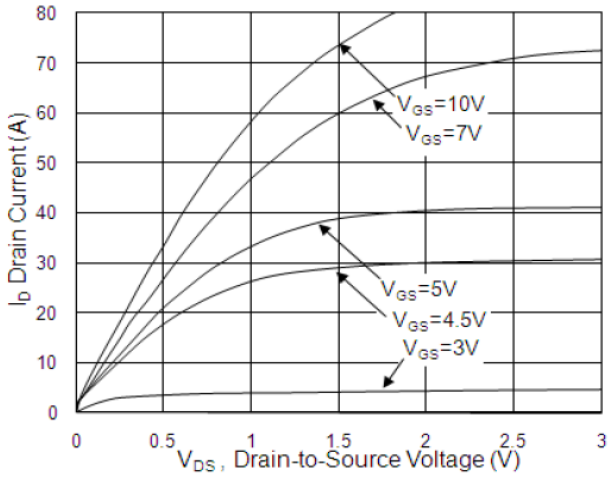


Fig.1 Typical Output Characteristics

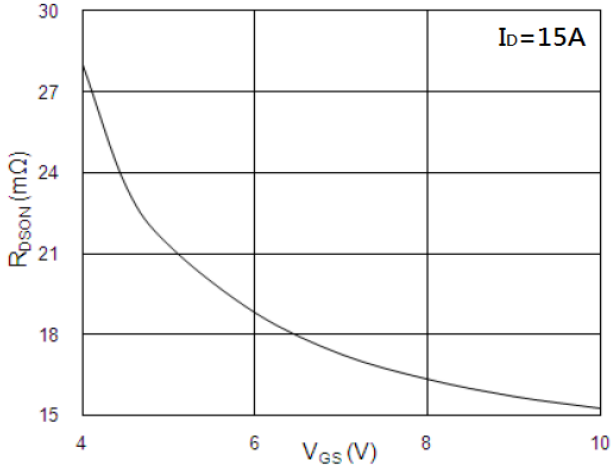


Fig.2 On-Resistance vs. G-S Voltage

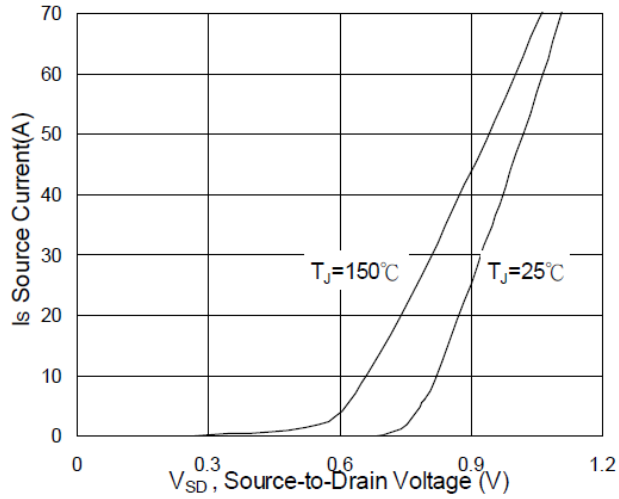


Fig.3 Forward Characteristics Of Reverse

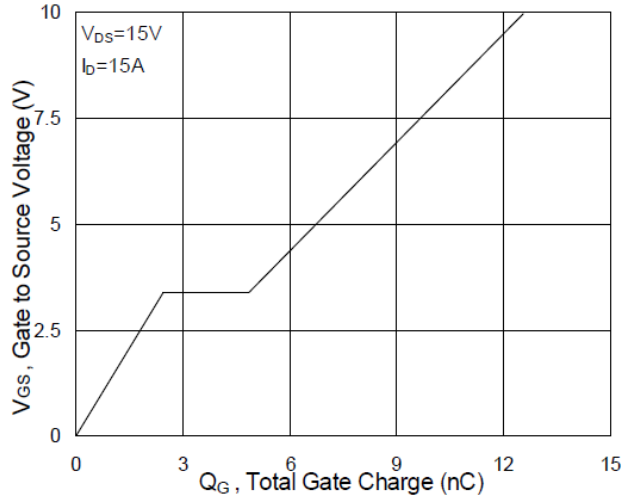


Fig.4 Gate-Charge Characteristics

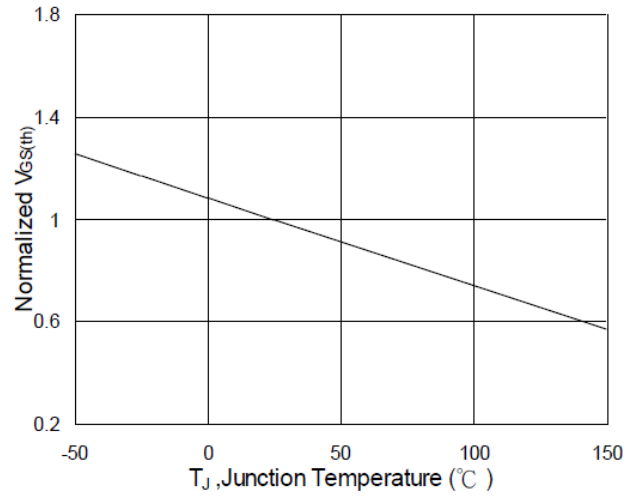


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

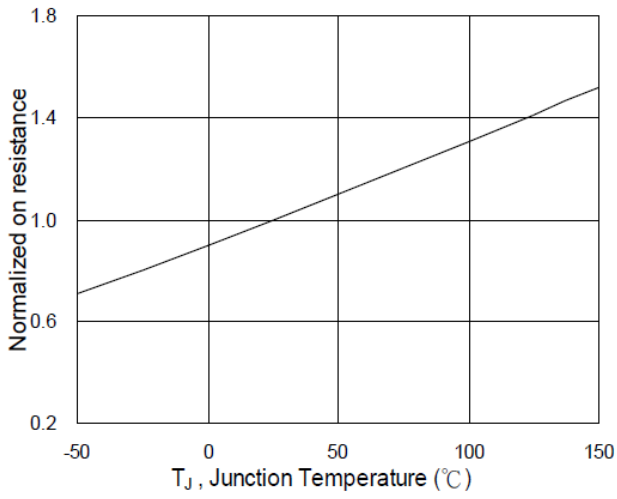


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTIC

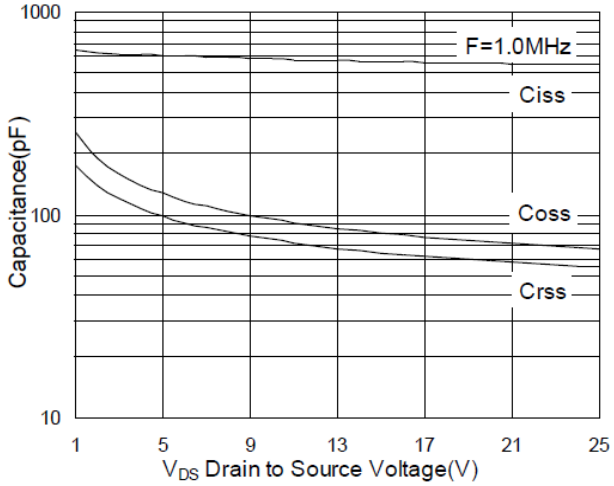


Fig.7 Capacitance

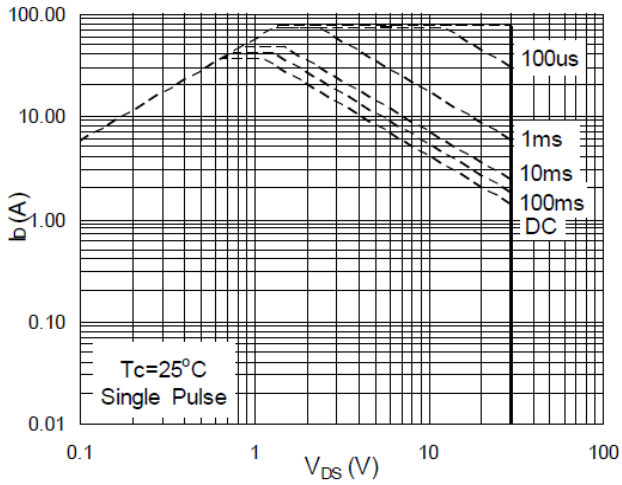


Fig.8 Safe Operating Area

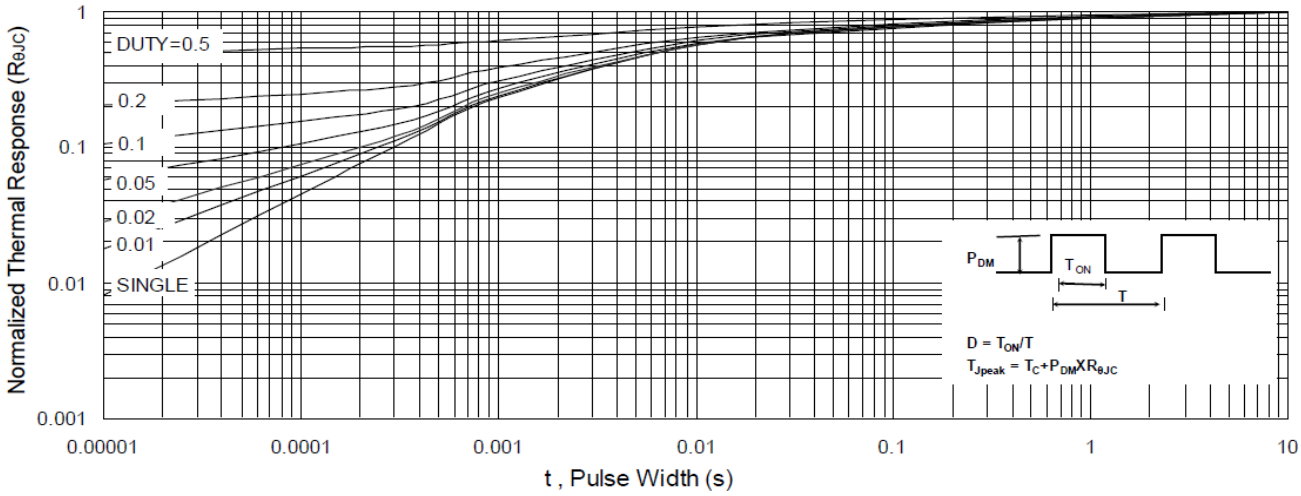


Fig.9 Normalized Maximum Transient Thermal Impedance

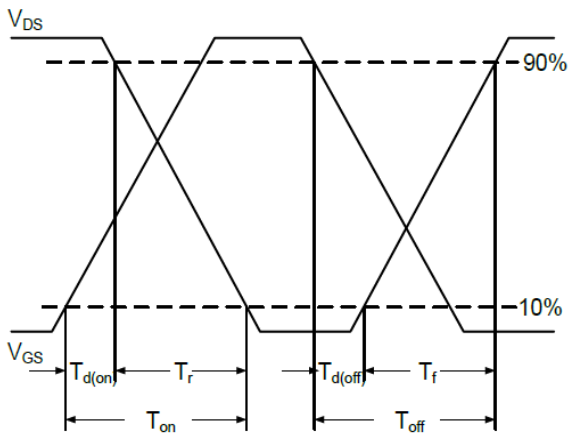


Fig.10 Switching Time Waveform

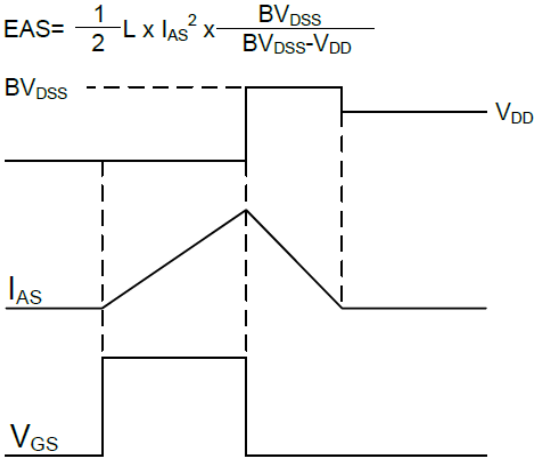


Fig.11 Unclamped Inductive Switching Waveform