Elektronische Bauelemente

SSU56N03S-C

56A, 30V, $R_{DS(ON)}$ 10mΩ

N-Channel Shielded Gate Trench Power MOSFET

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

DESCRIPTION

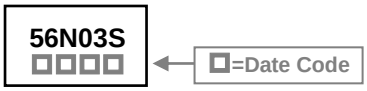
The SSU56N03S-C is the Shielded Gate Technology N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSU56N03S-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Shielded Gate Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



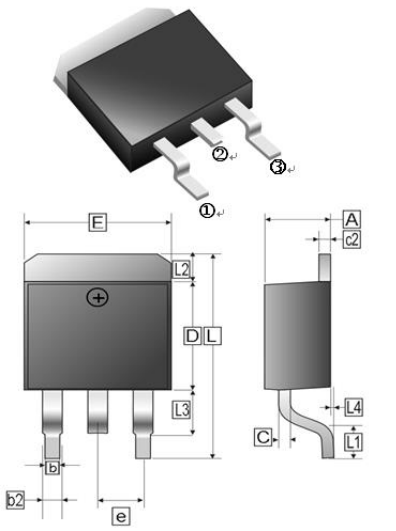
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-263	0.8K	13 inch

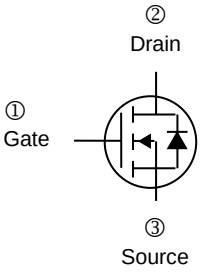
ORDER INFORMATION

Part Number	Type
SSU56N03S-C	Lead (Pb)-free and Halogen-free

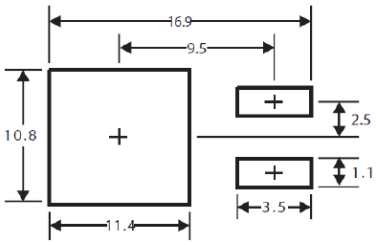
TO-263



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			



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating	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°C	I_D	56	A
	T_C=100°C		34	
Pulsed Drain Current [2]		I_{DM}	130	A
Power Dissipation [3]	T_C=25°C	P_D	86	W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	1.45	

ELECTRICAL CHARACTERISTICS (T_J=25°C 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	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	45	-	S	V_{DS}=5V, I_D=12A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0V
	T_J=55°C		-	-	5		V_{DS}=24V, V_{GS}=0V
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	8	10	mΩ	V_{GS}=10V, I_D=12A
			-	12	15.8		V_{GS}=4.5V, I_D=8A
Total Gate Charge (4.5V)		Q_g	-	4.5	-	nC	I_D=12A V_{DS}=15V V_{GS}=10V
Total Gate Charge		Q_g	-	8.9	-		
Gate-Source Charge		Q_{gs}	-	2.4	-		
Gate-Drain Change		Q_{gd}	-	1.6	-		
Turn-on Delay Time		$T_{d(on)}$	-	6.6	-	nS	V_{DD}=15V I_D=12A V_{GS}=10V R_G=3Ω
Rise Time		T_r	-	51.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	13.1	-		
Fall Time		T_f	-	45.6	-		
Input Capacitance		C_{iss}	-	562	-	pF	V_{GS}=0V V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	274	-		
Reverse Transfer Capacitance		C_{rss}	-	28	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]		I_S	-	-	56	A	V_G=V_D=0, Force Current

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°C junction temperature.

CHARACTERISTIC CURVES

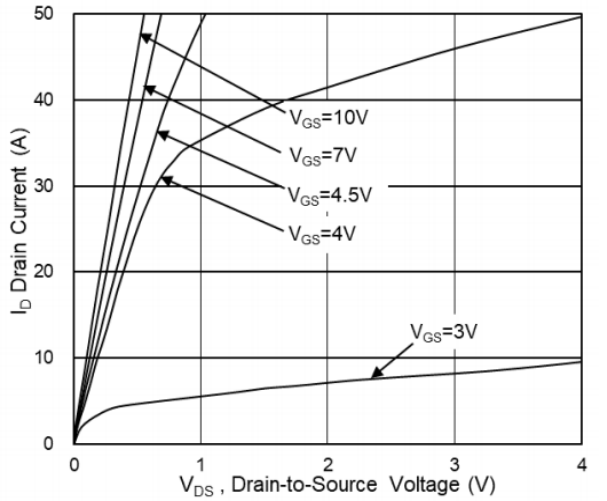


Fig.1 Typical Output Characteristics

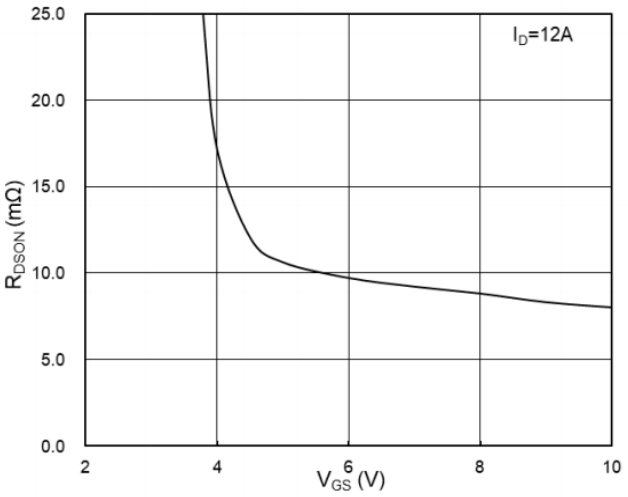


Fig.2 On-Resistance vs G-S Voltage

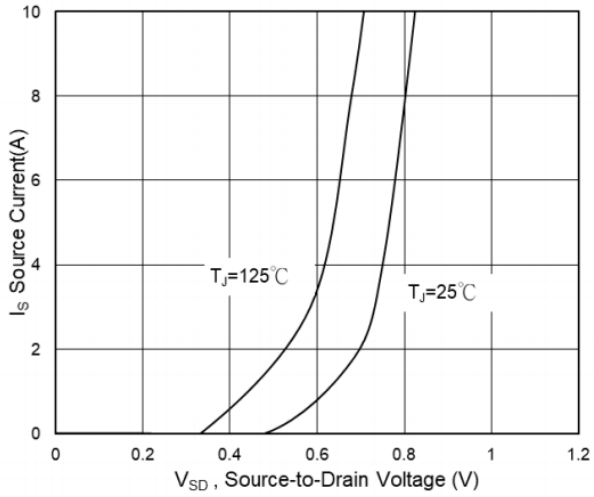


Fig.3 Source Drain Forward Characteristics

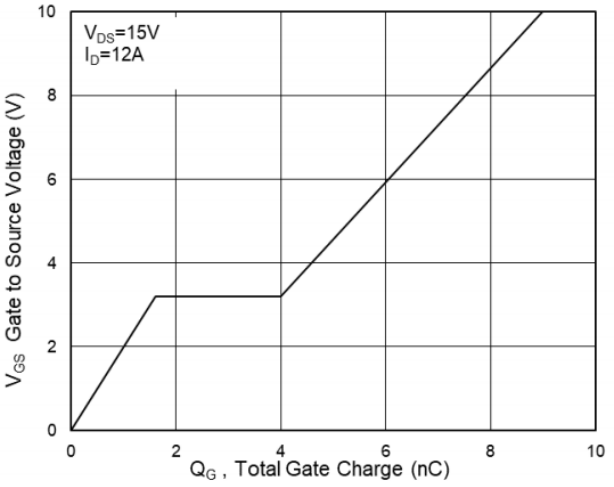


Fig.4 Gate-Charge Characteristics

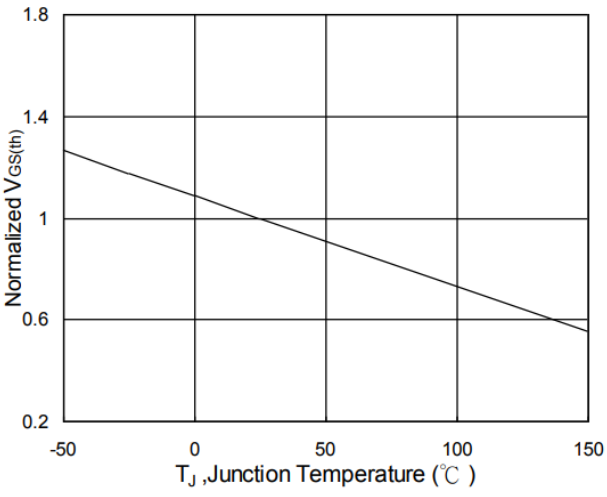


Fig.5 Normalized $V_{GS(th)}$ vs T_J

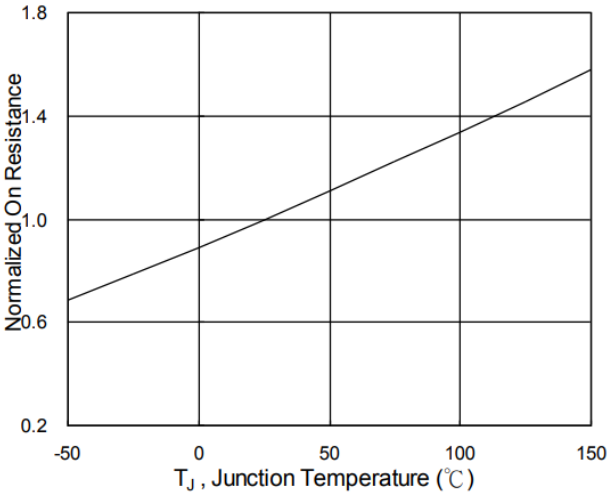


Fig.6 Normalized R_{DSON} vs T_J

CHARACTERISTIC CURVES

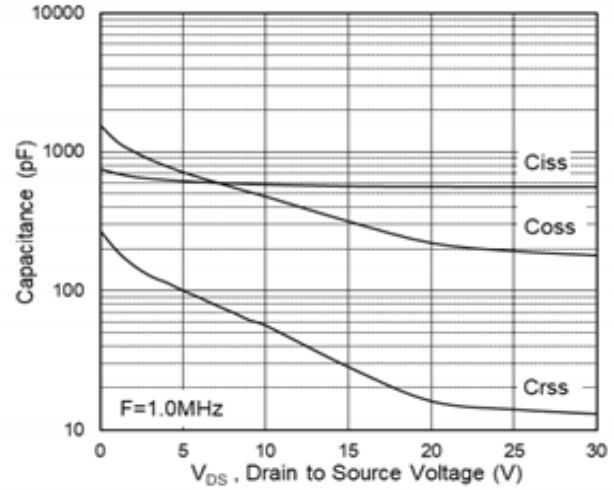


Fig.7 Capacitance

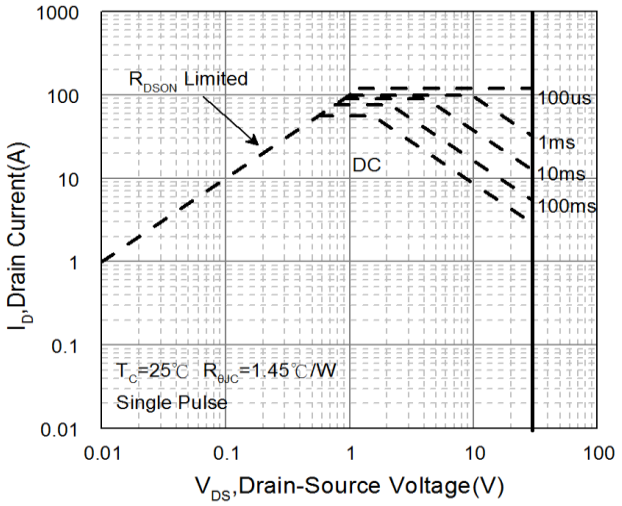


Fig.8 Safe Operating Area

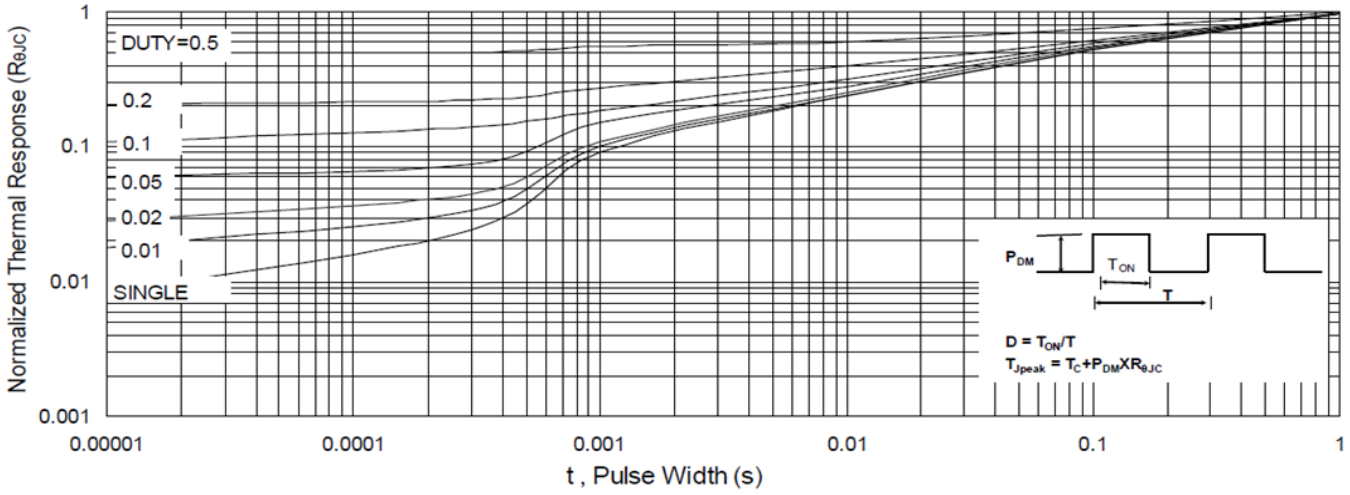


Fig.9 Normalized Maximum Transient Thermal Impedance

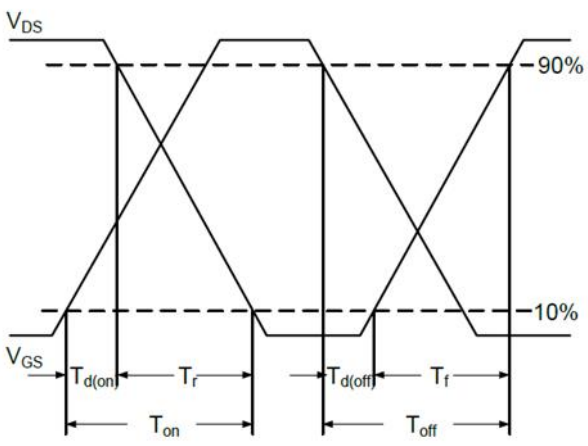


Fig.10 Switching Time Waveform

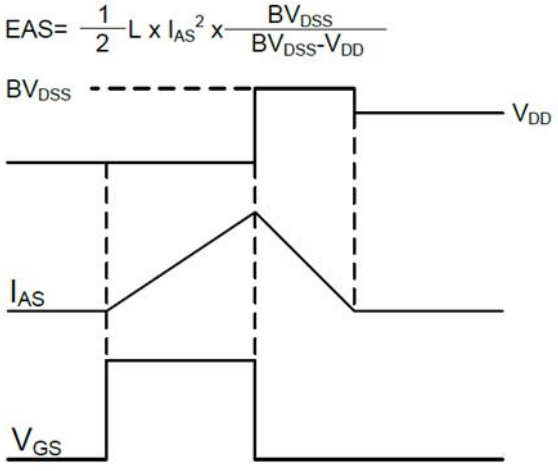


Fig.11 Unclamped Inductive Switching Waveform