

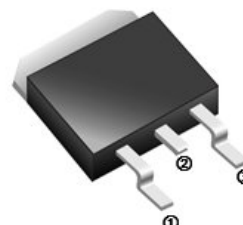
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSU40P06-C is the high cell density trenched P-ch MOSFETs, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSU40P06-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-263



FEATURES

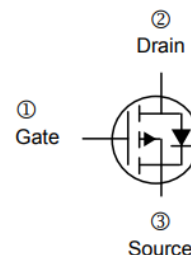
- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-263	0.8K	13 inch



ORDER INFORMATION

Part Number	Type
SSU40P06-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	-40
		$T_C=100^\circ\text{C}$	-25
Pulsed Drain Current ²	I_{DM}	-90	A
Power Dissipation ³	P_D	83	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Data			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.5	

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-60	-	-	V	$V_{GS}=0, I_D = -250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ C$	-	-	-1	uA	$V_{DS} = -48V, V_{GS}=0$
		$T_J=55^\circ C$	-	-	-5		
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	30	35	m Ω	$V_{GS} = -10V, I_D = -20A$	
		-	38	55		$V_{GS} = -4.5V, I_D = -15A$	
Total Gate Charge	Q_g	-	24	-	nC	$I_D = -15A$ $V_{DS} = -15V$ $V_{GS} = -4.5V$	
Gate-Source Charge	Q_{gs}	-	8.6	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	7.3	-			
Turn-on Delay Time	$T_{d(on)}$	-	9	-	nS	$V_{DD} = -15V$ $I_D = -15A$ $V_{GS} = -10V$ $R_G = 3.3\Omega$	
Rise Time	T_r	-	70.7	-			
Turn-off Delay Time	$T_{d(off)}$	-	59.8	-			
Fall Time	T_f	-	20.4	-			
Input Capacitance	C_{iss}	-	2217	-	pF	$V_{GS}=0$ $V_{DS} = -15V$ $f=1MHz$	
Output Capacitance	C_{oss}	-	310	-			
Reverse Transfer Capacitance	C_{rss}	-	238	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	-1.2	V	$I_S = -1A, V_{GS}=0$	
Continuous Source Current ¹	I_S	-	-	-40	A		
Reverse Recovery Time	t_{rr}	-	30	-	nS	$I_F = -20A, dI/dt=100A/\mu s$	
Reverse Recovery Charge	Q_{rr}	-	45	-	nC		

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
- The data tested by pulsed pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- The power dissipation is limited by 150°C junction temperature.

CHARACTERISTIC CURVES

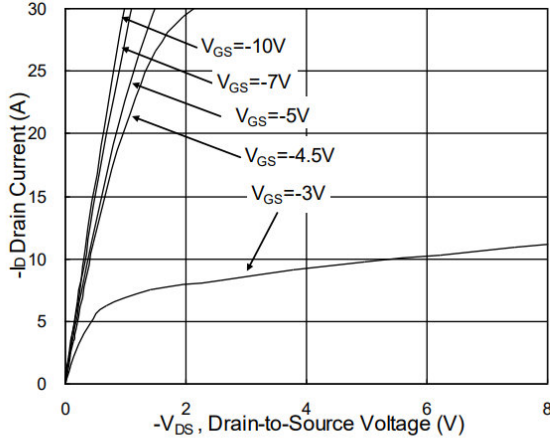


Fig.1 Typical Output Characteristics

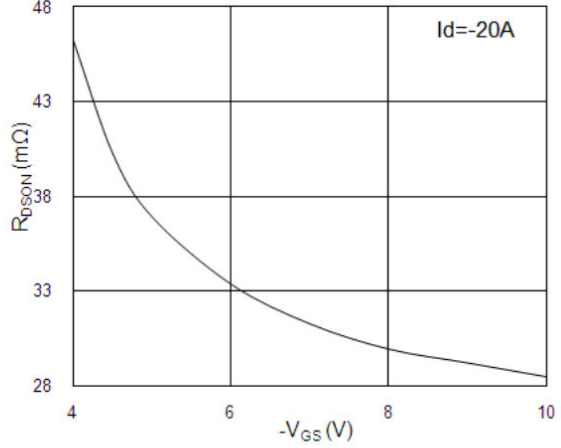


Fig.2 On-Resistance vs G-S Voltage

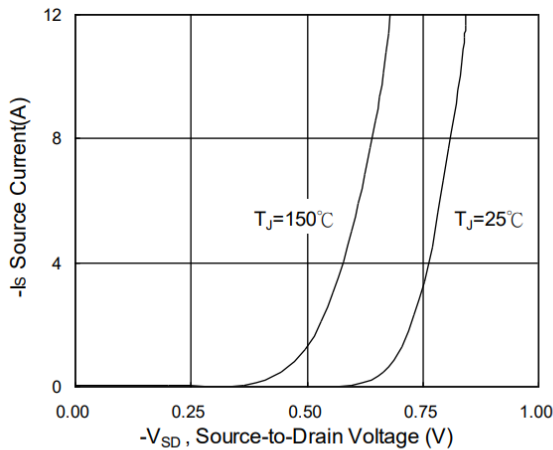


Fig.3 Source Drain Forward Characteristics

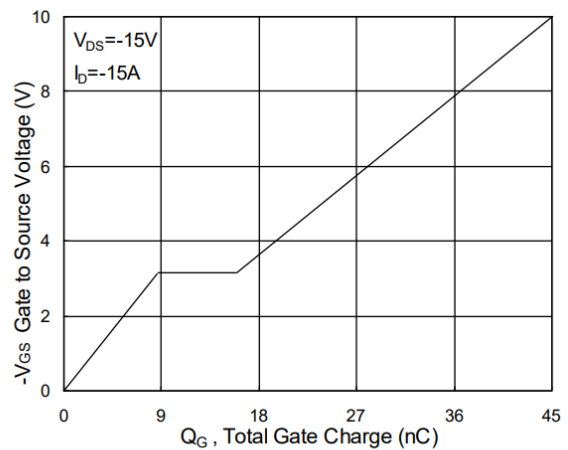


Fig.4 Gate-charge Characteristics

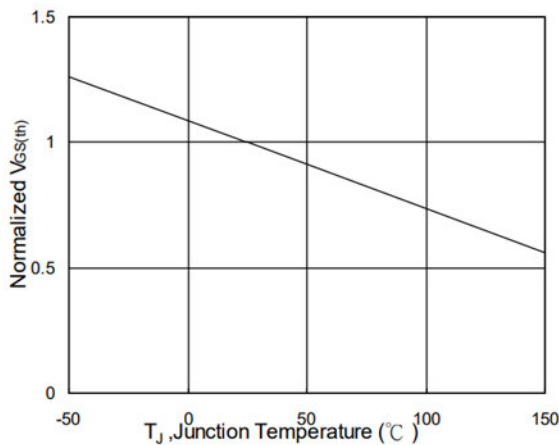


Fig.5 Normalized $V_{GS(th)}$ vs T_J

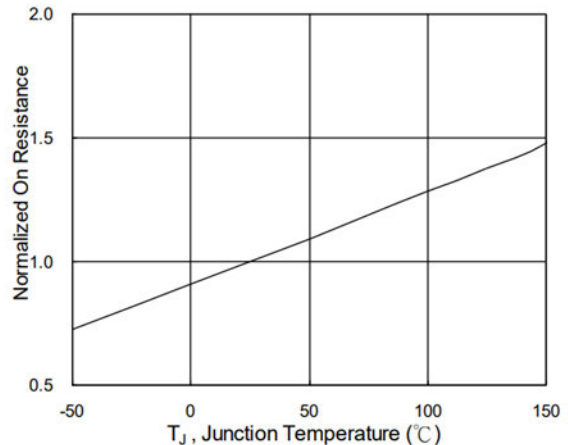


Fig.6 Normalized $R_{DS(ON)}$ vs T_J

CHARACTERISTIC CURVES

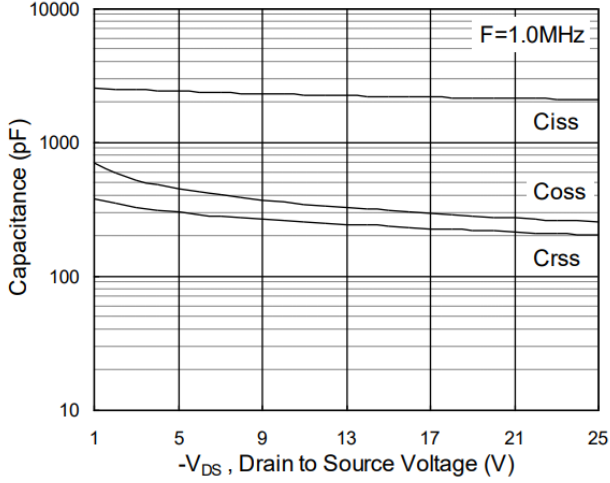


Fig.7 Capacitance

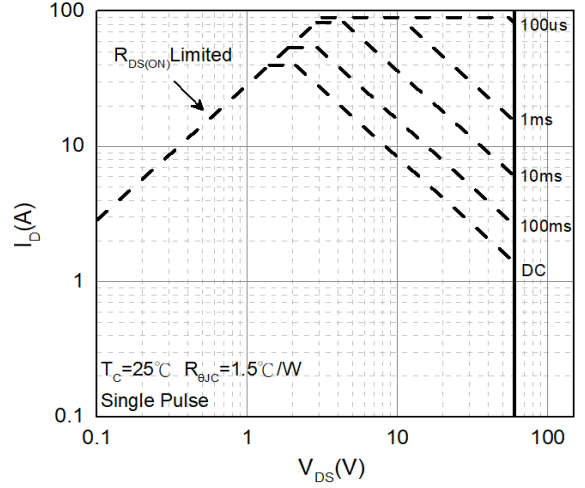


Fig.8 Safe Operating Area

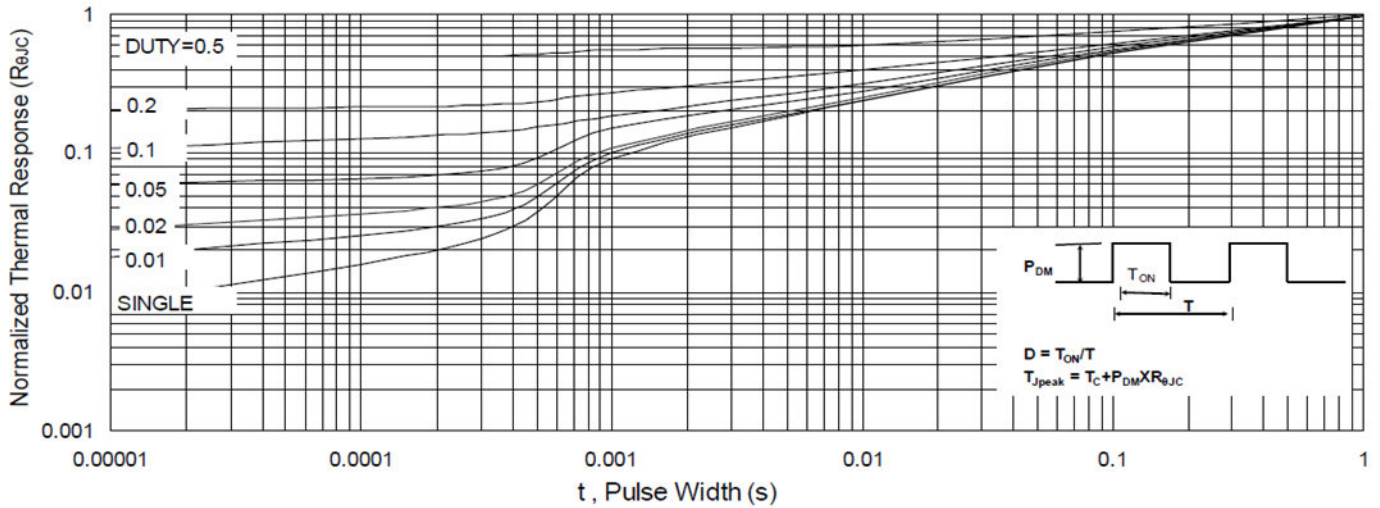


Fig.9 Normalized Maximum Transient Thermal Impedance

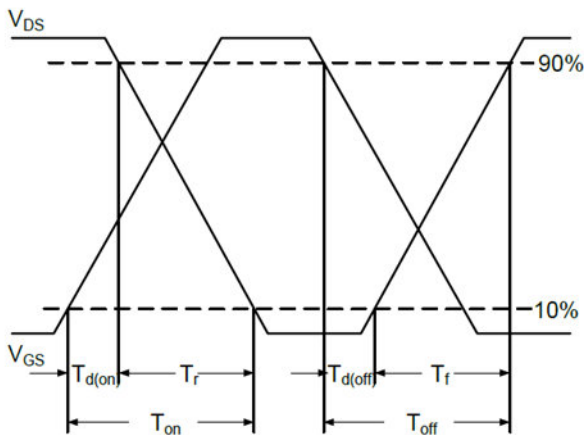


Fig.10 Switching Time Waveform

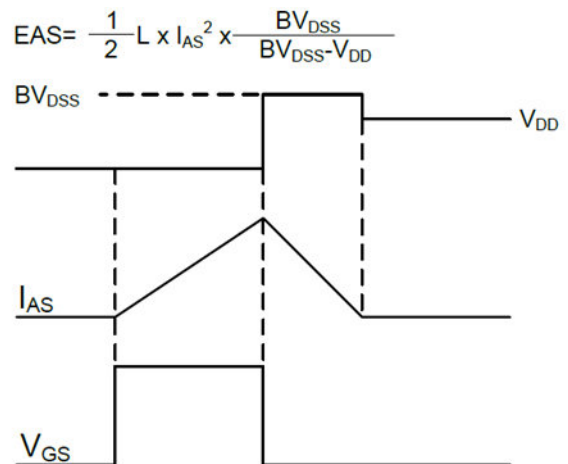
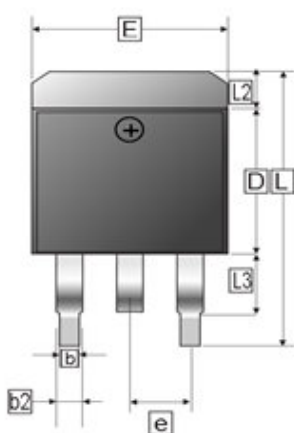


Fig.11 Unclamped Inductive Switching Waveform

PACKAGE OUTLINE DIMENSIONS

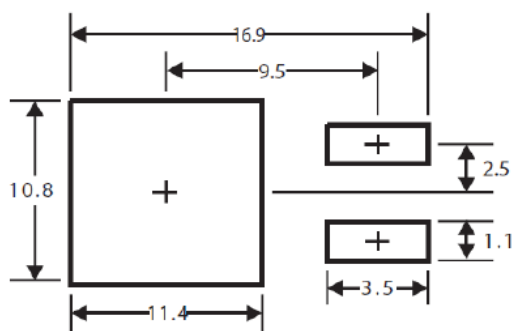
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REF.	Millimeter	
	Min.	Max.
A	4.00	4.87
b	0.508	1.01
L4	0	0.30
C	0.30	0.74
L3	1.50 REF.	
L1	2.50 REF.	
E	9.60	10.67
c2	1.07	1.65
b2	1.34 REF.	
D	8.00	9.652
e	2.54 REF.	
L	14.6	16.1
L2	1.27 REF.	

MOUNTING PAD LAYOUT

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*Dimensions in millimeters