

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

DESCRIPTION

The SSU50N20SV-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 SSU50N20SV-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

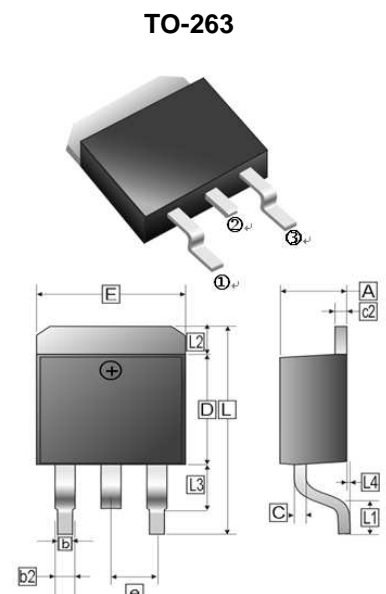
- Shielded Gate Trench Technology
- Green Device Available
- Super Low Gate Charge

MARKING



PACKAGE INFORMATION

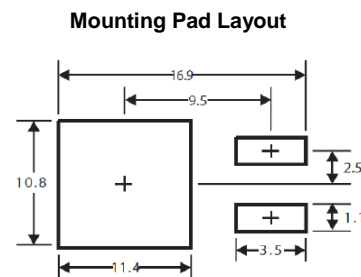
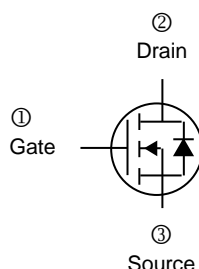
Package	MPQ	Leader Size
TO-263	0.8K	13 inch



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			

ORDER INFORMATION

Part Number	Type
SSU50N20SV-C	Lead (Pb)-free and Halogen-free



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	$T_C=25^\circ C$	50
		$T_C=100^\circ C$	36
Pulsed Drain Current ²	I_{DM}	150	A
Total Power Dissipation	P_D	178	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Data			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	0.7	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	200	-	-	V	$V_{GS}=0V, I_D=250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Forward Transfer Conductance	g_{fs}	-	31	-	S	$V_{DS}=5V, I_D=10A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=160V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	100		$V_{DS}=160V, V_{GS}=0V$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	28	32	m Ω	$V_{GS}=10V, I_D=10A$	
Gate Resistance	R_g	-	4.6	-	Ω	$f=1\text{MHz}$	
Total Gate Charge	Q_g	-	19	-	nC	$I_D=10A$ $V_{DS}=100V$ $V_{GS}=10V$	
Gate-Source Charge	Q_{gs}	-	7	-			
Gate-Drain Change	Q_{gd}	-	2	-			
Turn-on Delay Time	$T_{d(on)}$	-	12	-	nS	$V_{DD}=100V$ $I_D=10A$ $V_{GS}=10V$ $R_G=10\Omega$	
Rise Time	T_r	-	17	-			
Turn-off Delay Time	$T_{d(off)}$	-	23	-			
Fall Time	T_f	-	10	-			
Input Capacitance	C_{iss}	-	1598	-	pF	$V_{GS}=0V$ $V_{DS}=100V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	124	-			
Reverse Transfer Capacitance	C_{rss}	-	7.5	-			
Source-Drain Diode							
Diode Forward Voltage ³	V_{SD}	-	0.9	1.2	V	$I_S=10A, V_{GS}=0V$	
Continuous Source Current ¹	I_S	-	-	50	A		
Pulsed Source Current ²	I_{SM}	-	-	150			
Reverse Recovery Time	T_{rr}	-	90	-	nS	$V_R=100V, I_F=10A,$ $di/dt=100A/\mu s$	
Reverse Recovery Charge	Q_{rr}	-	306	-	nC		

Notes:

- Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The Pulse width limited by maximum junction temperature, Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- The Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

CHARACTERISTIC CURVES

Fig 1. Typical Output Characteristics

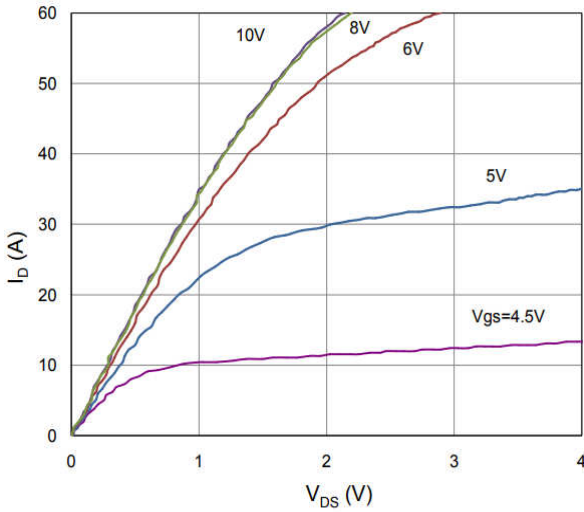


Figure 2. On-Resistance vs. Gate-Source Voltage

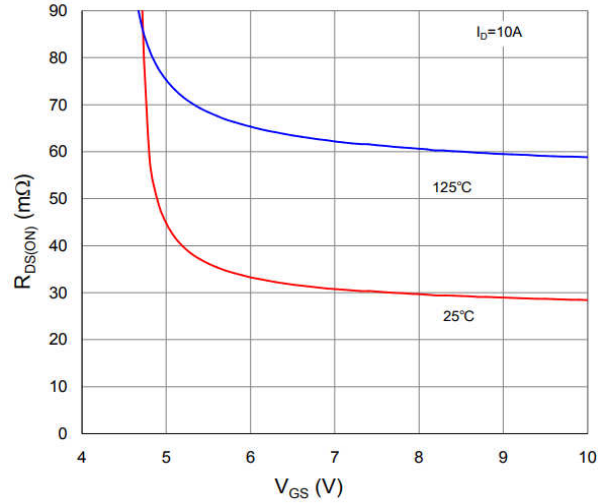


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

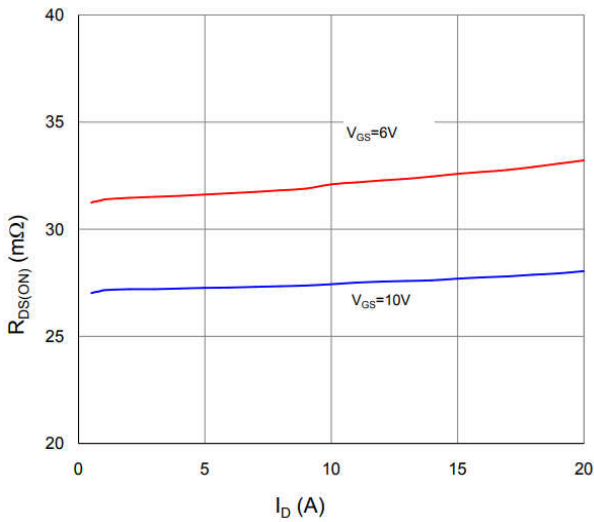


Figure 4. Normalized On-Resistance vs. Junction Temperature

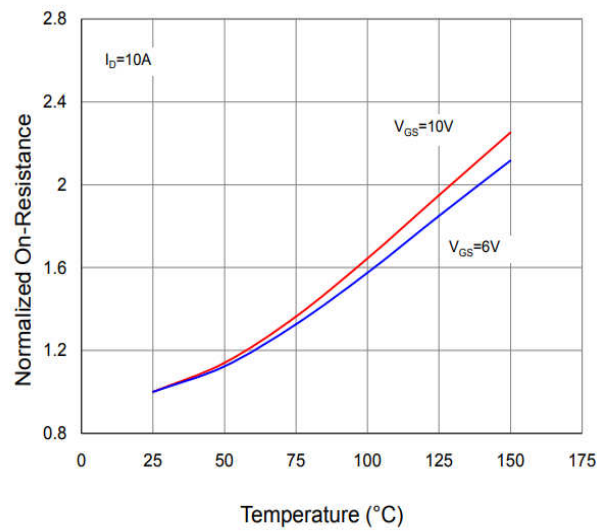


Figure 5. Typical Transfer Characteristics

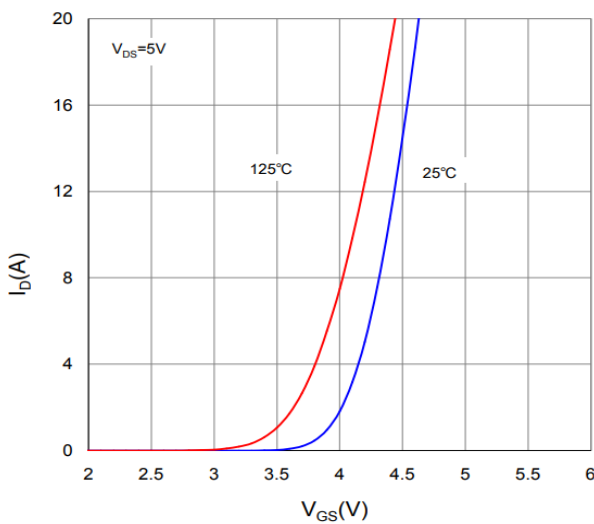
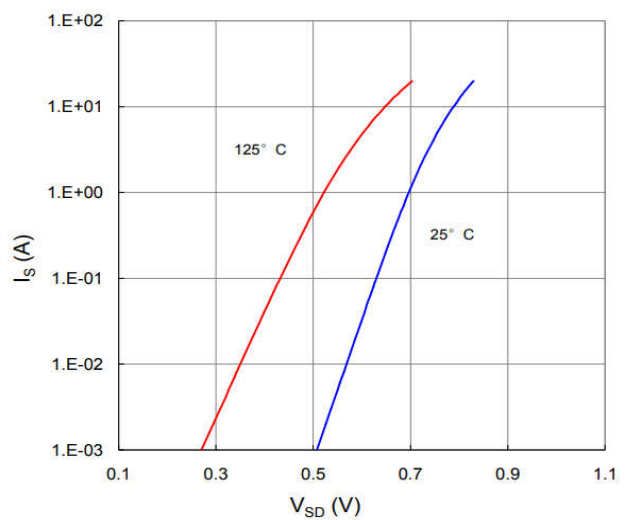


Figure 6. Typical Source-Drain Diode Forward Voltage



CHARACTERISTIC CURVES

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

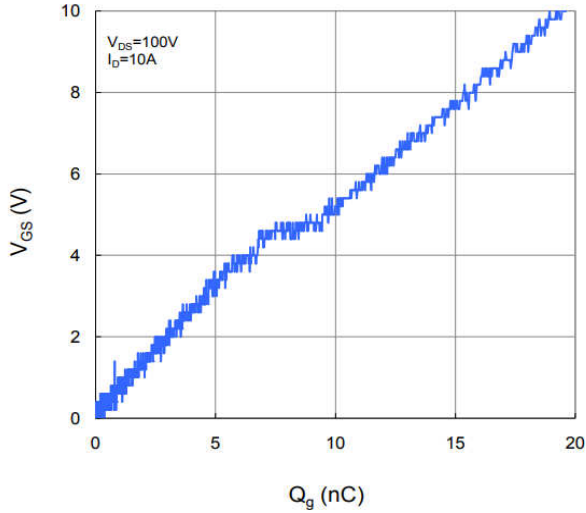


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

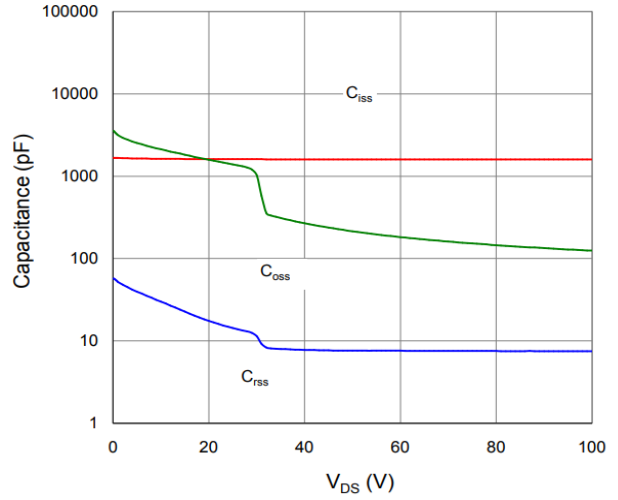


Figure 9. Maximum Safe Operating Area

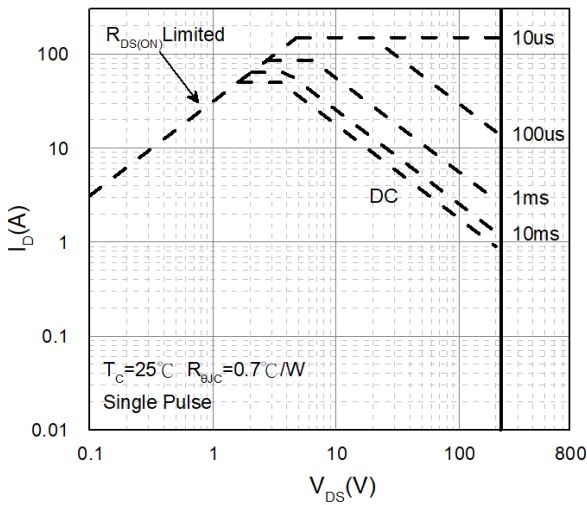


Figure 10. Maximum Drain Current vs. Case Temperature

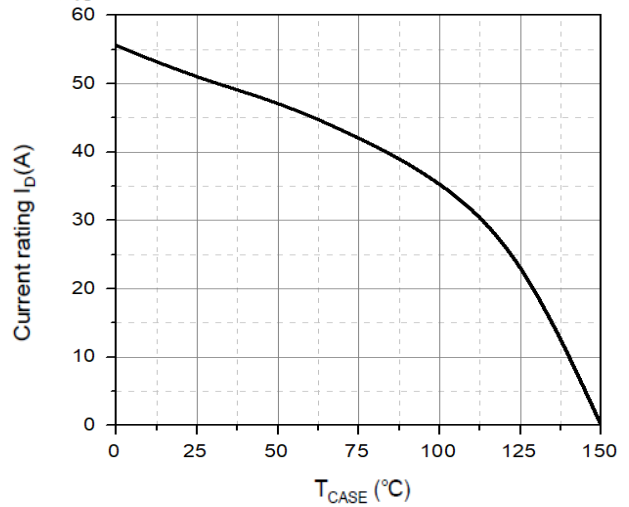


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

