Elektronische Bauelemente

SSD20N06

20A , 60V , $R_{DS(ON)}$ 43mΩ
N-Ch Enhancement Mode Power MOSFET

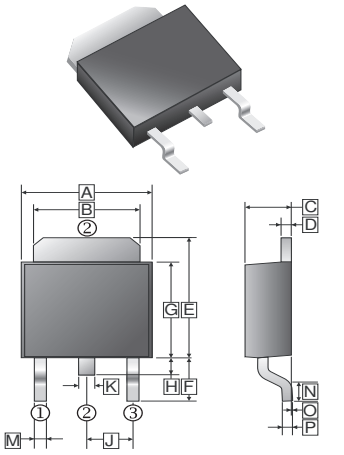
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSD20N06 is the highest performance trench 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 SSD20N06 meet the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)

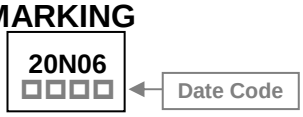


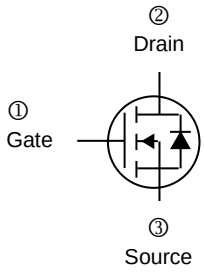
REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	6.35	6.9	J	2.3 REF.	
B	4.95	5.53	K	0.89 REF.	
C	2.1	2.5	M	0.45	1.14
D	0.41	0.9	N	1.55 Typ.	
E	6	7.5	O	0	0.13
F	2.90 REF		P	0.58 REF.	
G	5.4	6.4			
H	0.6	1.2			

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

MARKING





PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}=10V [1]	T_C=25℃	I_D	20	A
	T_C=100℃		13	A
	T_A=25℃		5	A
	T_A=70℃		4	A
Pulsed Drain Current [3]		I_{DM}	40	A
Total Power Dissipation	T_C=25℃	P_D	31.3	W
	T_A=25℃		2	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62.5	℃ / W
Maximum Thermal Resistance Junction-Ambient [2]			110	
Maximum Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	4	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	60	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer conductance		g_{fs}	-	25	-	S	V_{DS}=5V, I_D=15A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=48V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	43	mΩ	V_{GS}=10V, I_D=4A
			-	-	50		V_{GS}=4.5V, I_D=2A
Total Gate Charge	V_{GS}=4.5V	Q_g	-	9.5	-	nC	I_D=15A V_{DS}=48V V_{GS}=10V
Total Gate Charge		Q_g	-	19	-		
Gate-Source Charge		Q_{gs}	-	2.5	-		
Gate-Drain Change		Q_{gd}	-	5	-		
Turn-on Delay Time		$T_{d(on)}$	-	2.8	-	nS	V_{DD}=30V I_D=15A V_{GS}=10V R_G=3.3 Ω
Rise Time		T_r	-	16.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	21.2	-		
Fall Time		T_f	-	5.6	-		
Input Capacitance		C_{iss}	-	1027	-	pF	V_{GS} =0 V_{DS}=15V f =1.0MHz
Output Capacitance		C_{oss}	-	65	-		
Reverse Transfer Capacitance		C_{rss}	-	46	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	20	A	
Pulsed Source Current [3]		I_{SM}	-	-	40	A	
Diode Forward Voltage [4]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0
Reverse Recovery Time		T_{rr}	-	12.2	-	nS	I_F=15A, dI/dt=100A/μs , T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	7.3	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. When mounted on min. copper pad.
3. The power dissipation is limited by 150℃ junc tion temperature.
4. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

CHARACTERISTIC CURVES

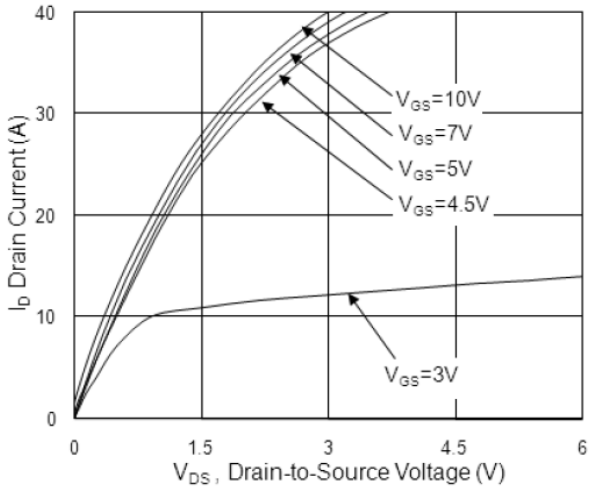


Fig.1 Typical Output Characteristics

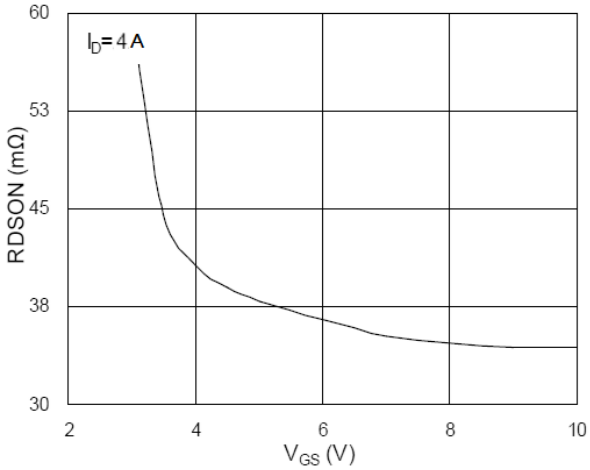


Fig.2 On-Resistance vs. Gate-Source

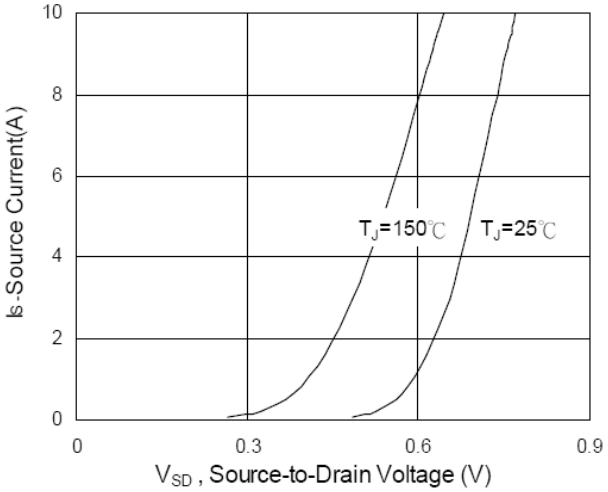


Fig.3 Forward Characteristics Of Reverse

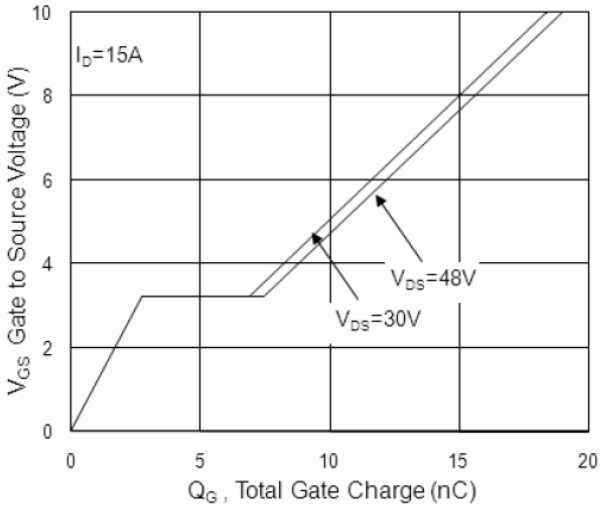


Fig.4 Gate-Charge Characteristics

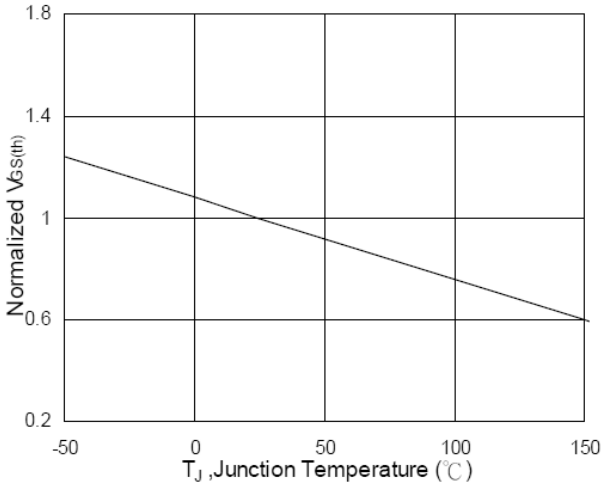


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

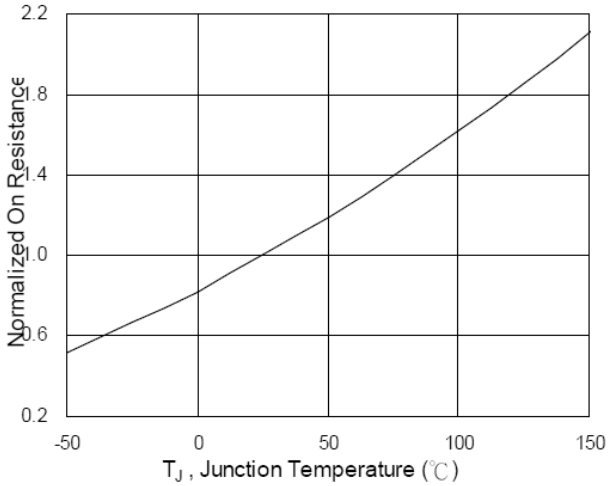


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

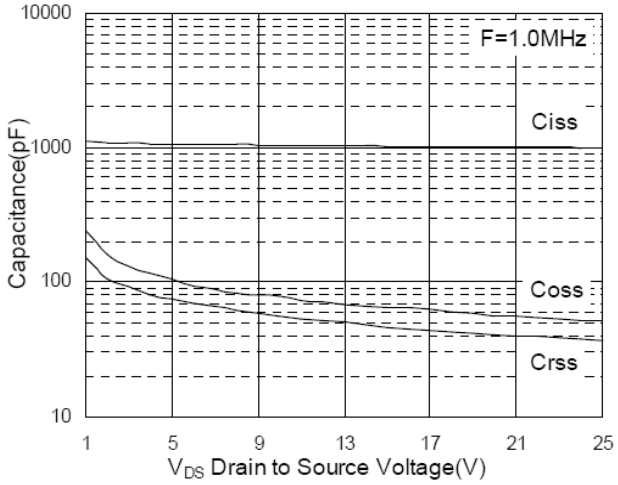


Fig.7 Capacitance

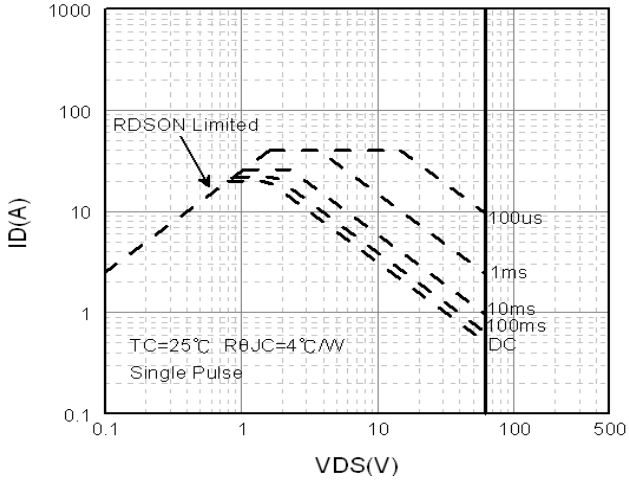


Fig.8 Safe Operating Area

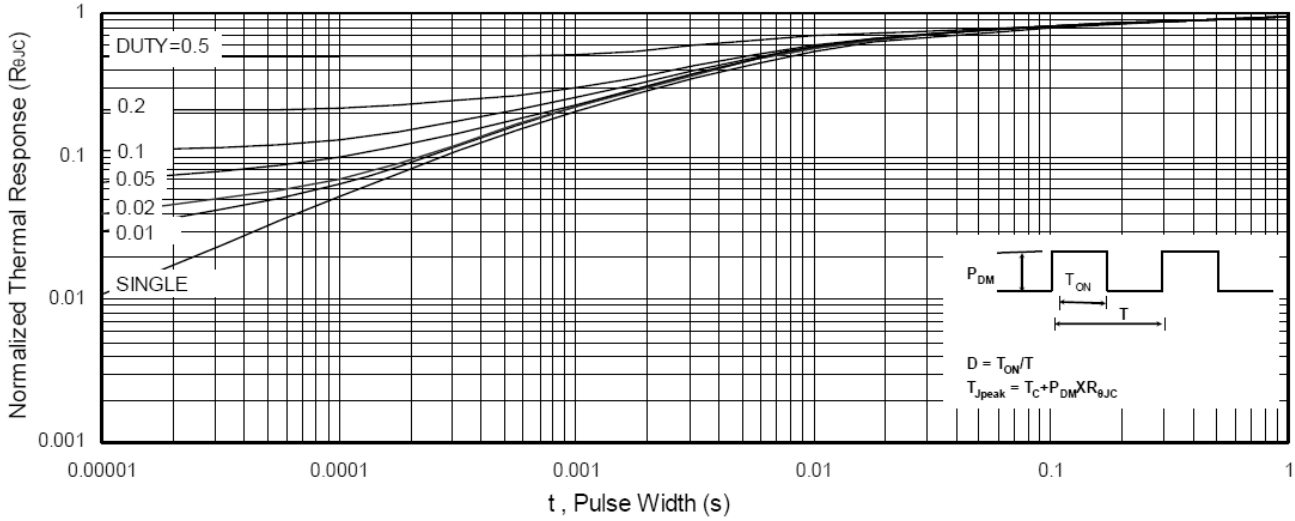


Fig.9 Normalized Maximum Transient Thermal Impedance

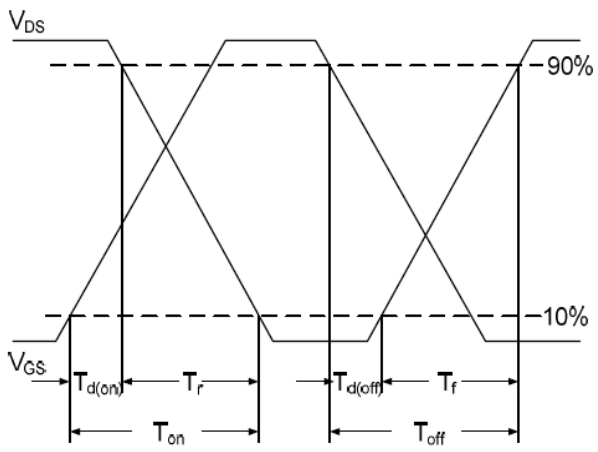


Fig.10 Switching Time Waveform

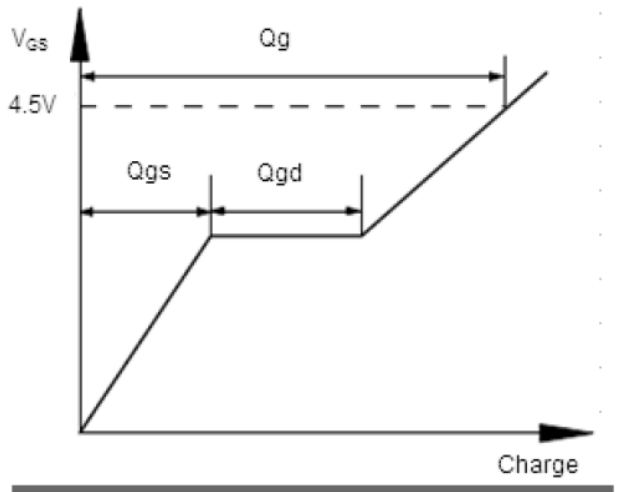


Fig.11 Gate Charge Waveform