Elektronische Bauelemente

SSG10N10

10A , 100V , $R_{DS(ON)}$ 21mΩ

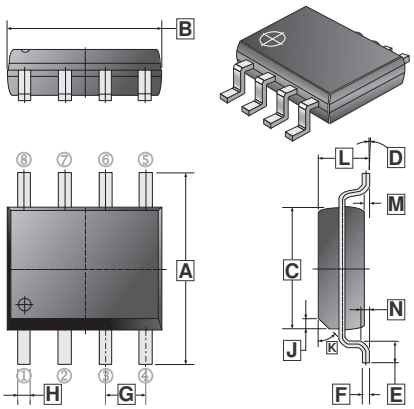
N-Ch Enhancement Mode Power MOSFET

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

DESCRIPTION

The SSG10N10 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 .

SOP-8

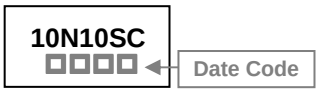


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				

FEATURES

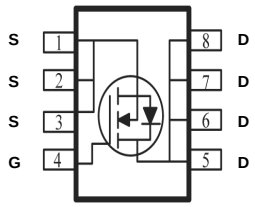
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	3K	13 inch



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_A=25℃	I_D	10	A
	T_A=70℃		7.5	A
Pulsed Drain Current [2]		I_{DM}	50	A
Total Power Dissipation @ T_A=25℃ [4]		P_D	1.6	W
Single Pulse Avalanche Energy [3]		E_{AS}	98	mJ
Single Pulse Avalanche Current		I_{AS}	41	A
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	80	℃ / W

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static							
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0, I_D= 250μA
Gate-Threshold Voltage		$V_{GS(th)}$	2.5	-	4.5	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	21	mΩ	V_{GS}=10V, I_D=10A
			-	-	30		V_{GS}=7V, I_D=6A
Total Gate Charge [2]		Q_g	-	27.6	-	nC	I_D=7A V_{DS}=80V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	11.4	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	7.9	-		
Turn-on Delay Time [2]		$T_{d(on)}$	-	15.6	-	nS	V_{DS}=50V I_D=7A V_{GS}=10V R_L=3.3 Ω
Rise Time		T_r	-	17.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	16.8	-		
Fall Time		T_f	-	9.2	-		
Input Capacitance		C_{iss}	-	1890	-	pF	V_{GS} =0 V_{DS}=15V f =1.0MHz
Output Capacitance		C_{oss}	-	268	-		
Reverse Transfer Capacitance		C_{rss}	-	67	-		
Guaranteed Avalanche Characteristics							
Single Pulse Avalanche Energy [5]		EAS	53	-	-	mJ	V_{DD}=25V, L=0.1mH, I_{AS}=30A
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0, T_J=25℃
Continuous Source Current [1,6]		I_S	-	-	10	A	V_D=V_G=0, Force Current
Pulsed Source Current [2,6]		I_{SM}	-	-	50	A	
Reverse Recovery Time		T_{rr}	-	34	-	nS	I_F=7A, dI/dt=100A/μs , T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	47	-	nC	

Notes:

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2_{OZ} copper. 125℃/W when mounted on Min. copper pad.
2. The data tested by pulsed , pulse width ≦ 300μs , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=41A
4. The power dissipation is limited by 150℃, junction temperature
5. The Min. value is 100% EAS tested guarantee.
6. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

CHARACTERISTIC CURVES

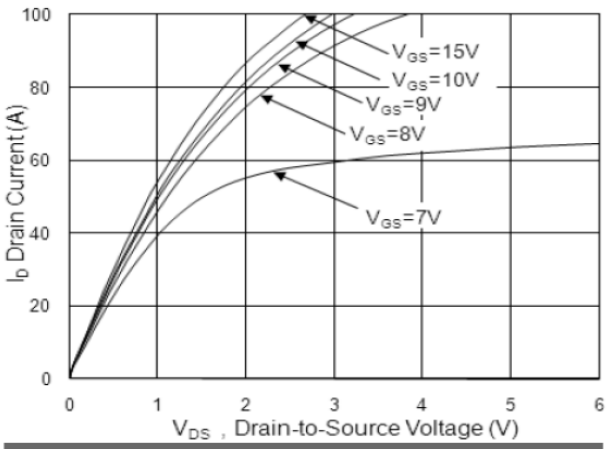


Fig.1 Typical Output Characteristics

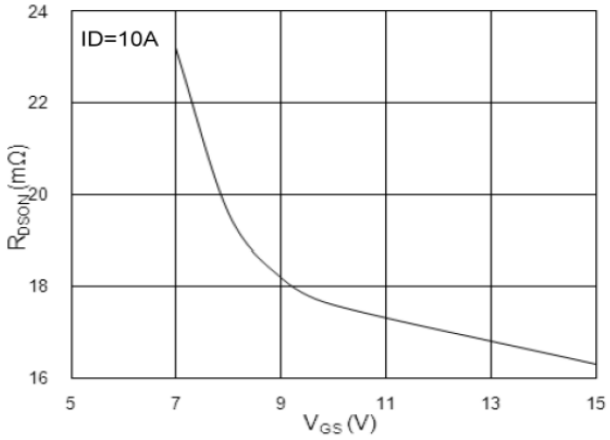


Fig.2 On-Resistance v.s Gate-Source

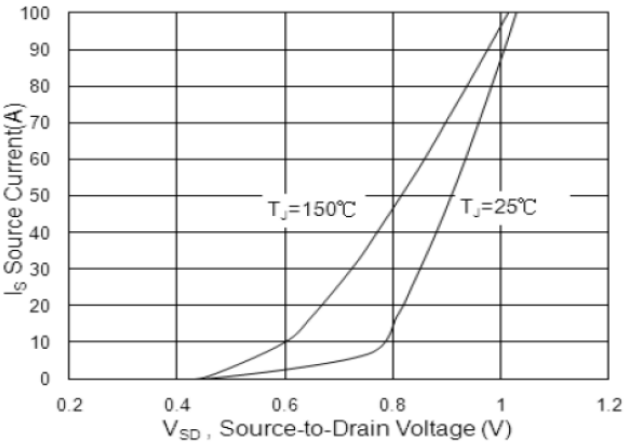


Fig.3 Forward Characteristics of Reverse

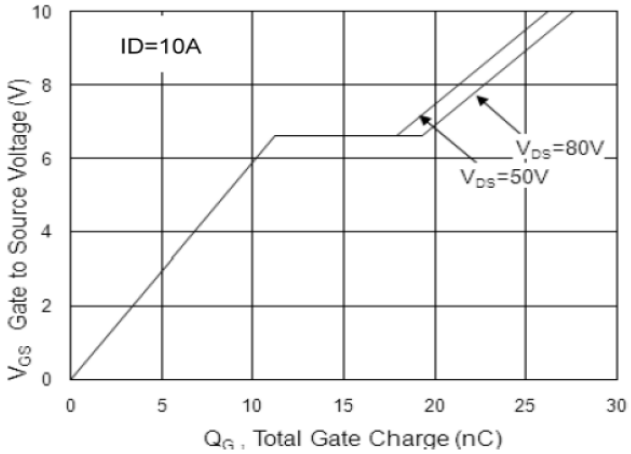


Fig.4 Gate-Charge Characteristics

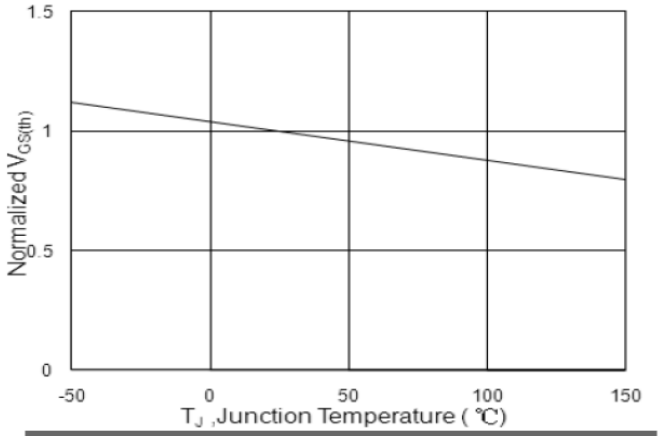


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

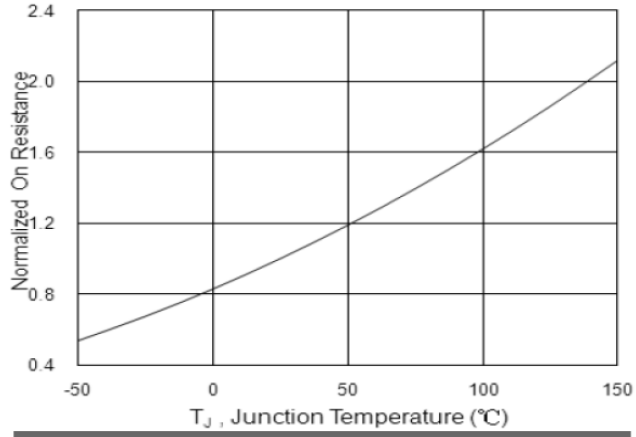


Fig.6 Normalized R_{DSON} v.s T_J

CHARACTERISTIC CURVES

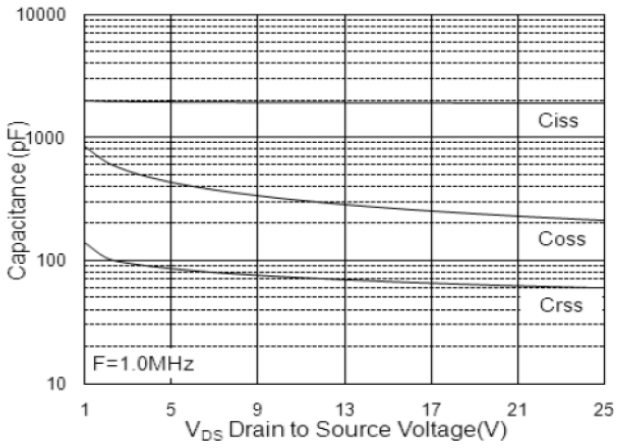


Fig.7 Capacitance

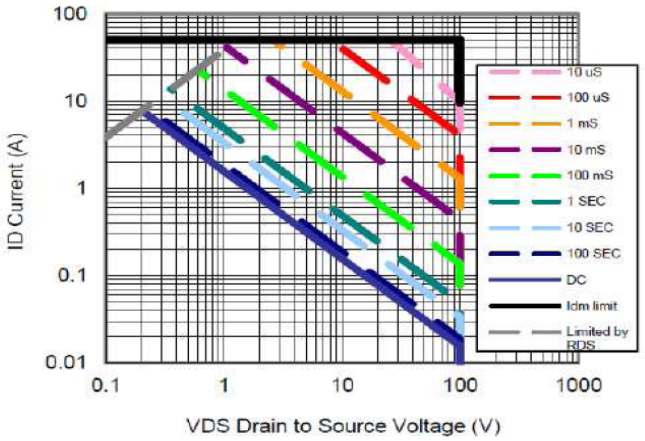


Fig.8 Safe Operating Area

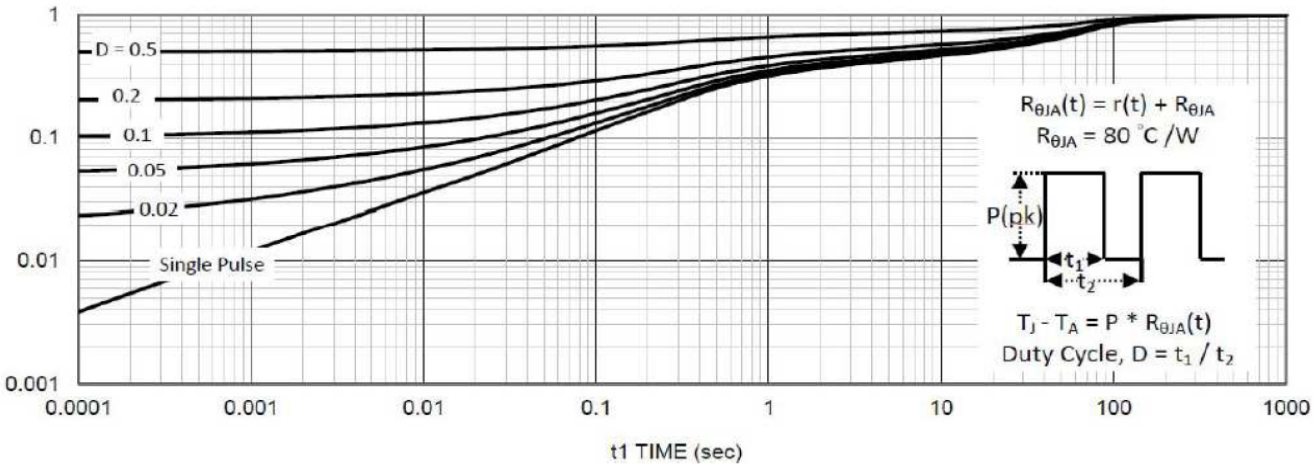


Fig.9 Normalized Maximum Transient Thermal Impedance

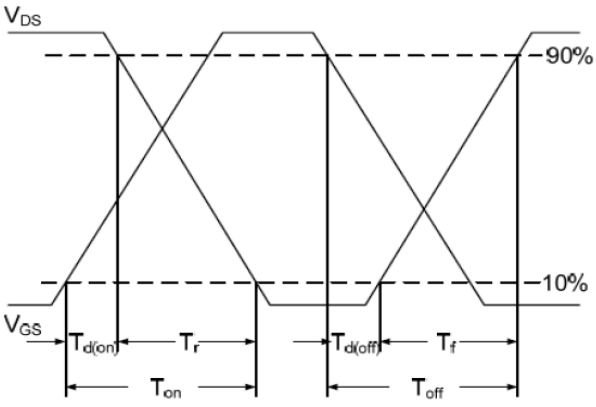


Fig.10 Switching Time Waveform

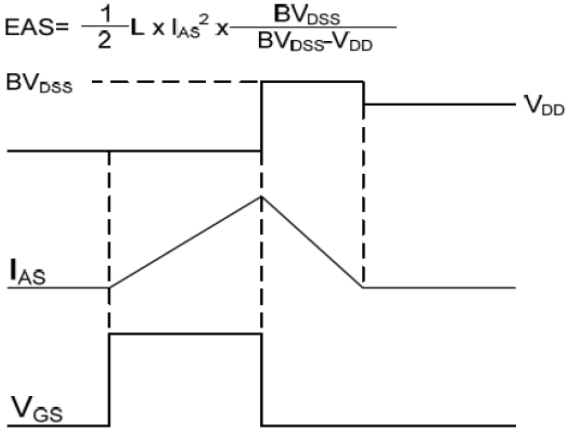


Fig.11 Unclamped Inductive Switching Waveform