Elektronische Bauelemente

SSE140N06-C

140A , 60V , $R_{DS(ON)}$ 4.8mΩ

N-Ch Enhancement Mode Power MOSFET

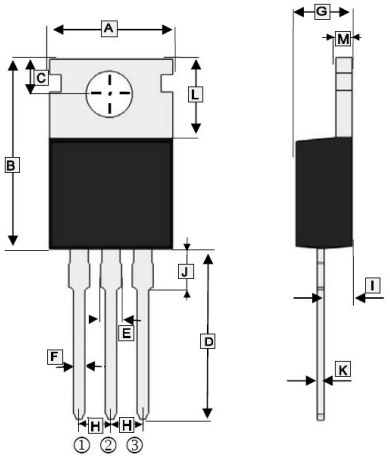
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSE140N06-C 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 SSE140N06-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-220

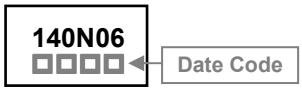


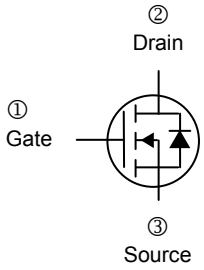
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	9.70	10.60	H	2.54 TYP.	
B	14.22	16.5	I	2.03	2.92
C	2.54.	3.40	J	2.70	3.30
D	12.7	14.7	K	0.33	0.65
E	1.17	1.78	L	5.5	7
F	0.4	1.00	M	1.20	1.40
G	3.60	4.82			

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent dv/dt effect decline
- Green Device Available

MARKING





ORDER INFORMATION

Part Number	Type
SSE140N06-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25°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}=10V	T_C=25°C	I_D	140	A
	T_C=100°C		100	
Pulsed Drain Current [2]		I_{DM}	280	A
Single Pulse Avalanche Energy [4]		E_{AS}	820	mJ
Single Pulse Avalanche Current		I_{AS}	40.5	A
Power Dissipation	T_C=25°C	P_D	138.8	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]		$R_{\theta JC}$	0.9	°C / W

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-	-	V	V_{GS}=0V, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	2.5	-	4.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance	g_{fs}	-	50	-	S	V_{DS}=5V, I_D=30A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0V, T_J=25°C
		-	-	5		V_{DS}=48V, V_{GS}=0V, T_J=55°C
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	-	4.8	mΩ	V_{GS}=15V, I_D=30A
		-	-	5		V_{GS}=10V, I_D=20A
Gate Resistance	R_g	-	1.4	-	Ω	V_{DS}=V_{GS}=0V, f=1MHz
Total Gate Charge	Q_g	-	83.7	-	nC	I_D=15A V_{DS}=48V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	28.6	-		
Gate-Drain Change	Q_{gd}	-	29.3	-		
Turn-on Delay Time	$T_{d(on)}$	-	38.1	-	nS	V_{DD}=30V I_D=30A V_{GS}=10V R_G=3.3Ω
Rise Time	T_r	-	73.3	-		
Turn-off Delay Time	$T_{d(off)}$	-	51.6	-		
Fall Time	T_f	-	26.1	-		
Input Capacitance	C_{iss}	-	5580	-	pF	V_{GS}=0V V_{DS}=15V f=1MHz
Output Capacitance	C_{oss}	-	571	-		
Reverse Transfer Capacitance	C_{rss}	-	278	-		
Guaranteed Avalanche Characteristics						
Single Pulse Avalanche Energy [5]	E_{AS}	312.5	-	-	mJ	V_{DD}=30V, L=1mH, I_{AS}=25A
Source-Drain Diode						
Diode Forward Voltage [3]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Reverse Recovery Time	T_{rr}	-	27	-	ns	I_F=30A, dI_F/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	28	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width ≤10μs, Duty Cycle ≤2%.
3. The Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%.
4. The EAS data shows Max. rating. The test condition is V_{DD}=30V,V_{GS}=10V,L=1mH,I_{AS}=40.5A
5. The Min. value is 100% EAS tested guarantee.

CHARACTERISTIC CURVES

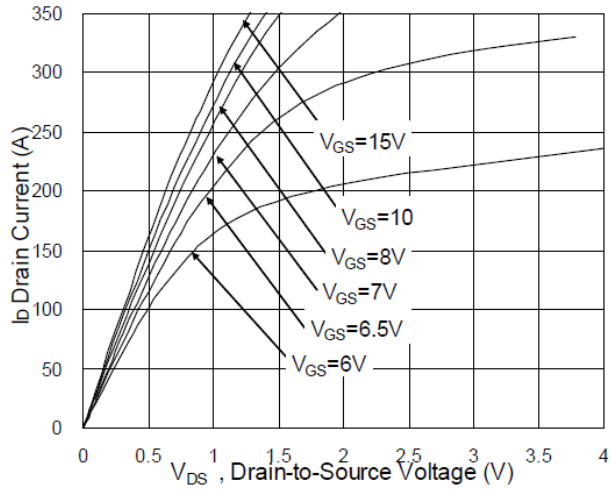


Fig.1 Typical Output Characteristics

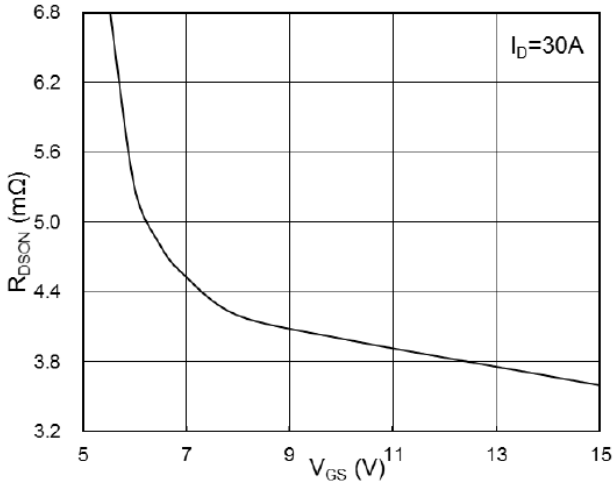


Fig.2 On-Resistance vs. G-S Voltage

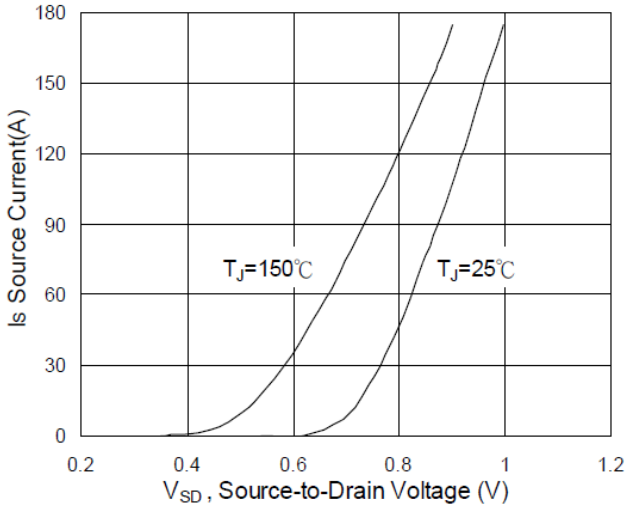


Fig.3 Source Drain Forward Characteristics

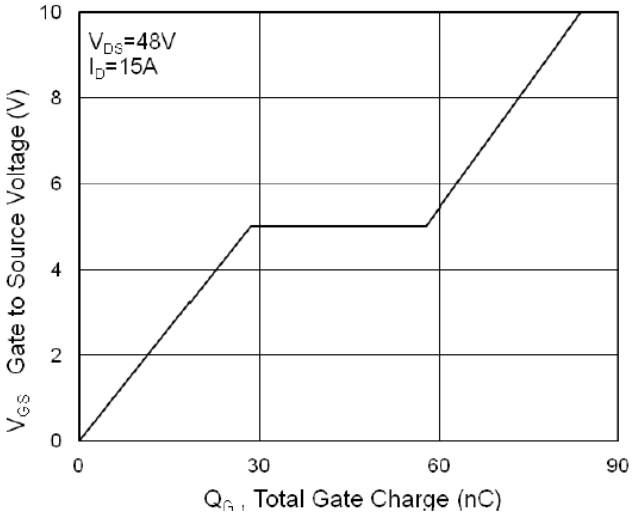


Fig.4 Gate-Charge Characteristics

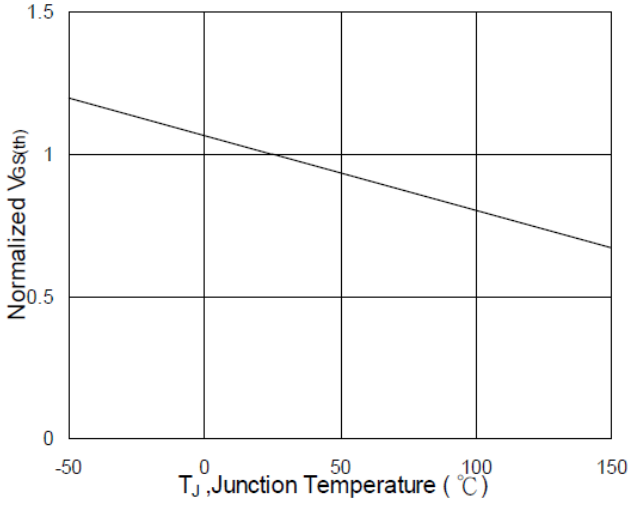


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

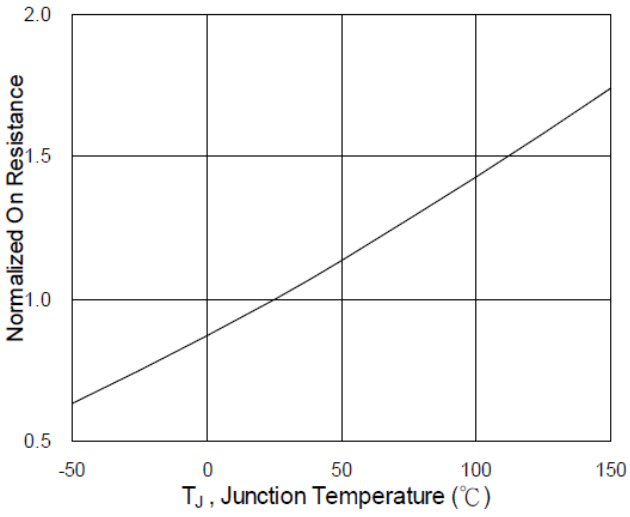


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

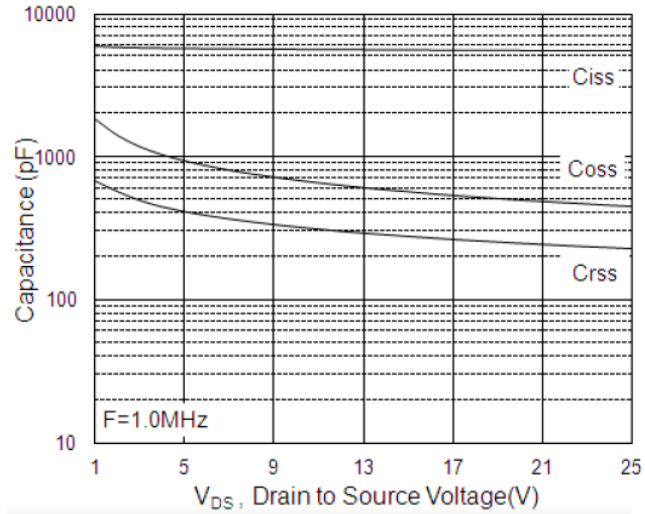


Fig.7 Capacitance

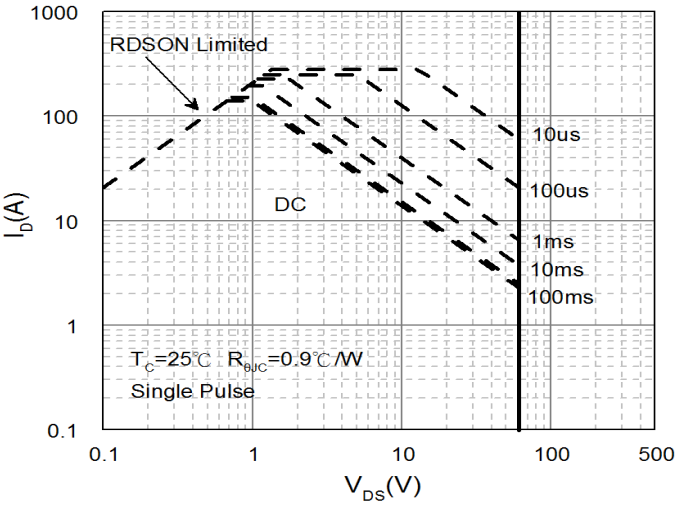


Fig.8 Safe Operating Area

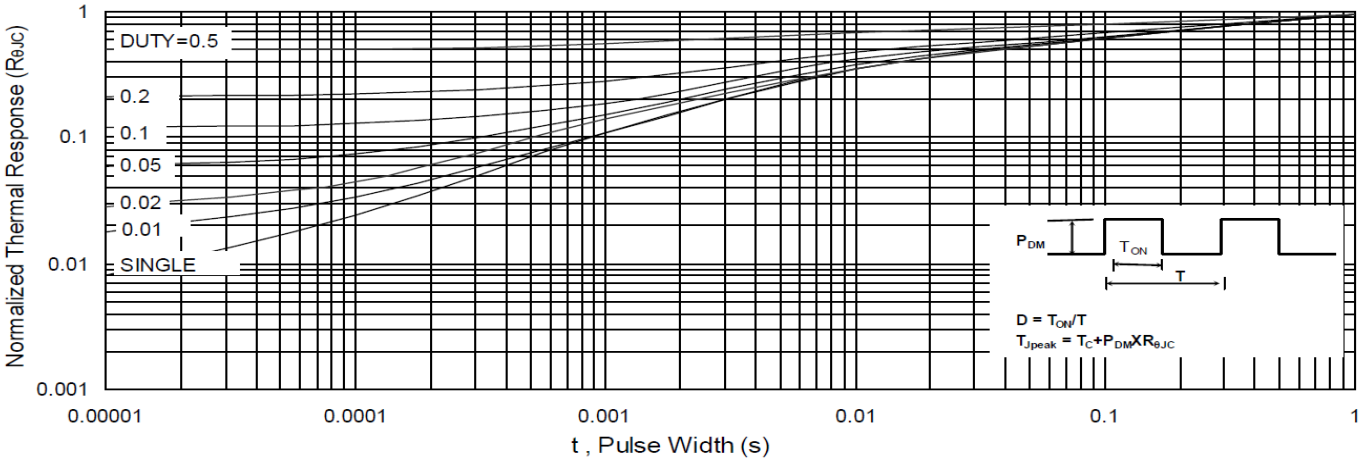


Fig.9 Normalized Maximum Transient Thermal Impedance

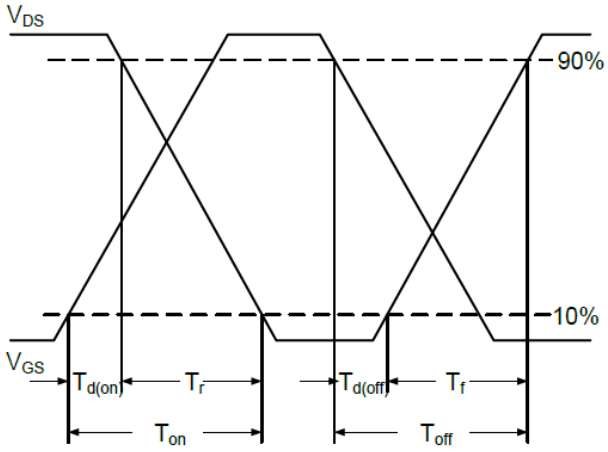


Fig.10 Switching Time Waveform

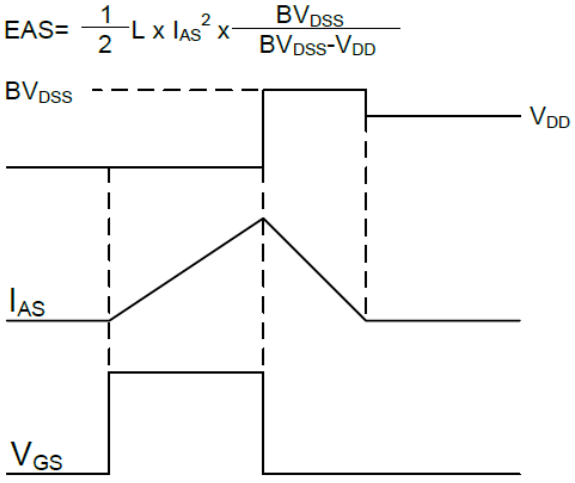


Fig.11 Unclamped Inductive Switching Waveform