Elektronische Bauelemente

SSE190N04S-C

190A, 40V, $R_{DS(ON)}$ 2.6mΩ

N-Ch Enhancement Mode Power MOSFET

RoHS Compliant Product

A suffix of "-C" specifies halogen free

DESCRIPTION

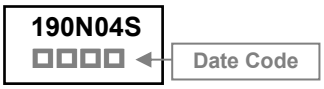
The SSE190N04S-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSE190N04S-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

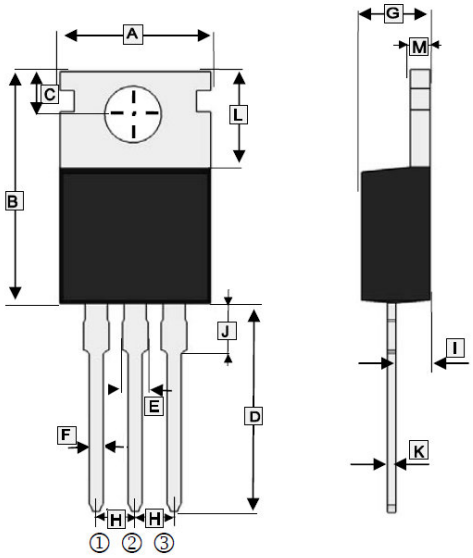
MARKING

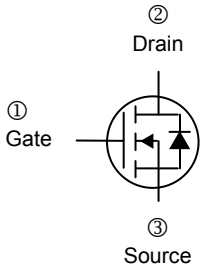


ORDER INFORMATION

Part Number	Type
SSE190N04S-C	Lead (Pb)-free and Halogen-free

TO-220





REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter 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			

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25°C	I_D	190	A
	T_C=100°C		120	
Pulsed Drain Current [2]		I_{DM}	350	A
Power Dissipation [3]	T_A=25°C	P_D	156	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	65	°C/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	0.8	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	40	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance	g_{fs}	-	53	-	S	V_{DS}=5V, I_D=20A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=32V, V_{GS}=0V, T_J=25°C
			-	5		V_{DS}=32V, V_{GS}=0V, T_J=100°C
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	-	2.6	mΩ	V_{GS}=10V, I_D=20A
		-	-	3.2		V_{GS}=4.5V, I_D=20A
Total Gate Charge (4.5V)	Q_g	-	45	-	nC	I_D=20A V_{DS}=15V V_{GS}=10V
Total Gate Charge	Q_g	-	88	-		
Gate-Source Charge	Q_{gs}	-	12	-		
Gate-Drain Change	Q_{gd}	-	18.5	-		
Turn-on Delay Time	$T_{d(on)}$	-	18.5	-	nS	V_{DD}=15V I_D=20A V_{GS}=10V R_G=3.3Ω
Rise Time	T_r	-	9	-		
Turn-off Delay Time	$T_{d(off)}$	-	58.5	-		
Fall Time	T_f	-	32	-		
Input Capacitance	C_{iss}	-	3972	-	pF	V_{GS}=0V V_{DS}=25V f=1MHz
Output Capacitance	C_{oss}	-	896	-		
Reverse Transfer Capacitance	C_{rss}	-	62	-		
Source-Drain Diode						
Diode Forward Voltage [2]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current [1]	I_S	-	-	190	A	V_{DS}=V_{GS}=0V, Force Current

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

TYPICAL CHARACTERISTIC

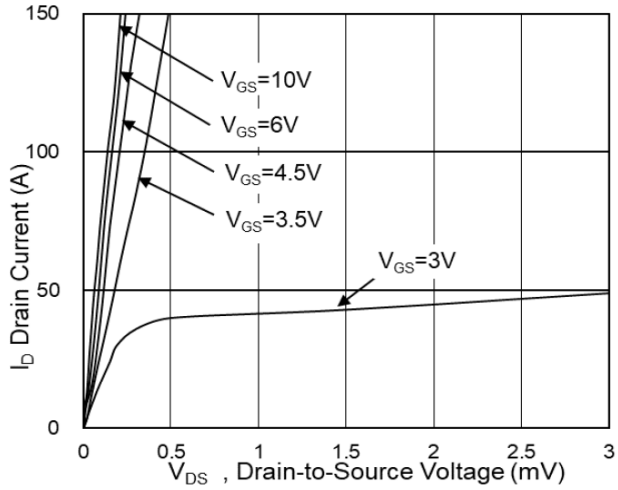


Fig.1 Typical Output Characteristics

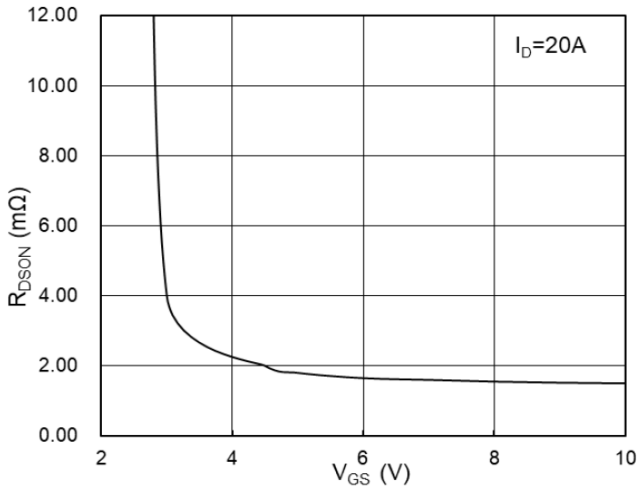


Fig.2 On-Resistance vs G-S Voltage

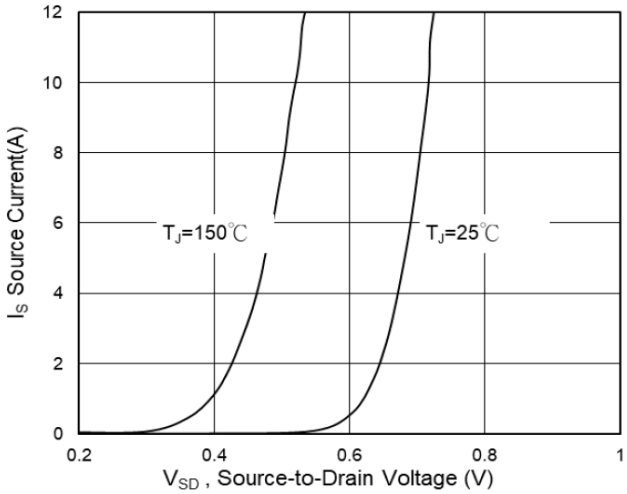


Fig.3 Source Drain Forward Characteristics

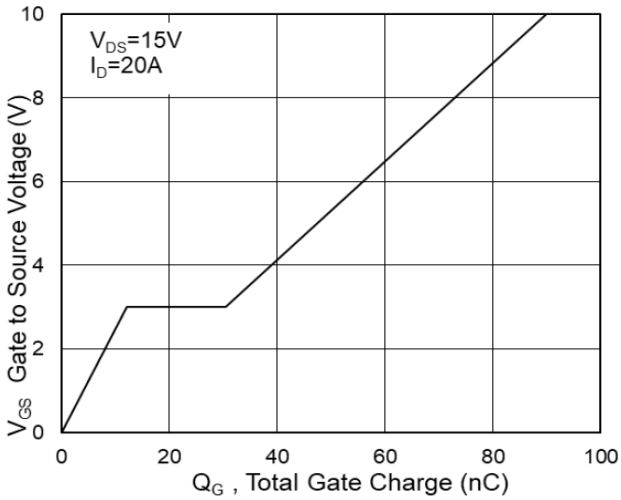


Fig.4 Gate-Charge Characteristics

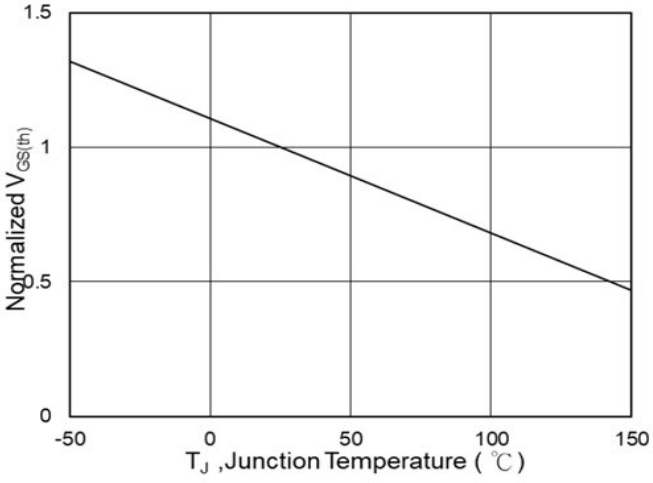


Fig.5 Normalized $V_{GS(th)}$ vs T_J

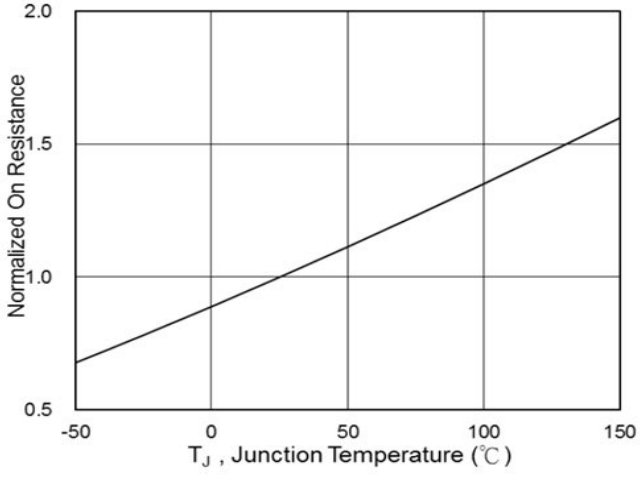


Fig.6 Normalized R_{DSON} vs T_J

TYPICAL CHARACTERISTIC

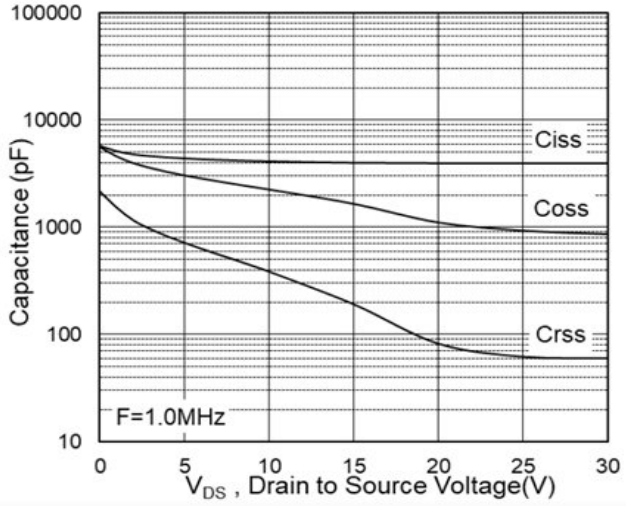


Fig.7 Capacitance

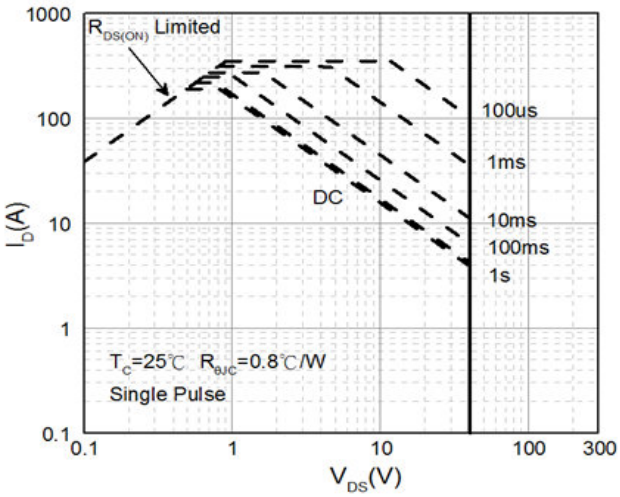


Fig.8 Safe Operating Area

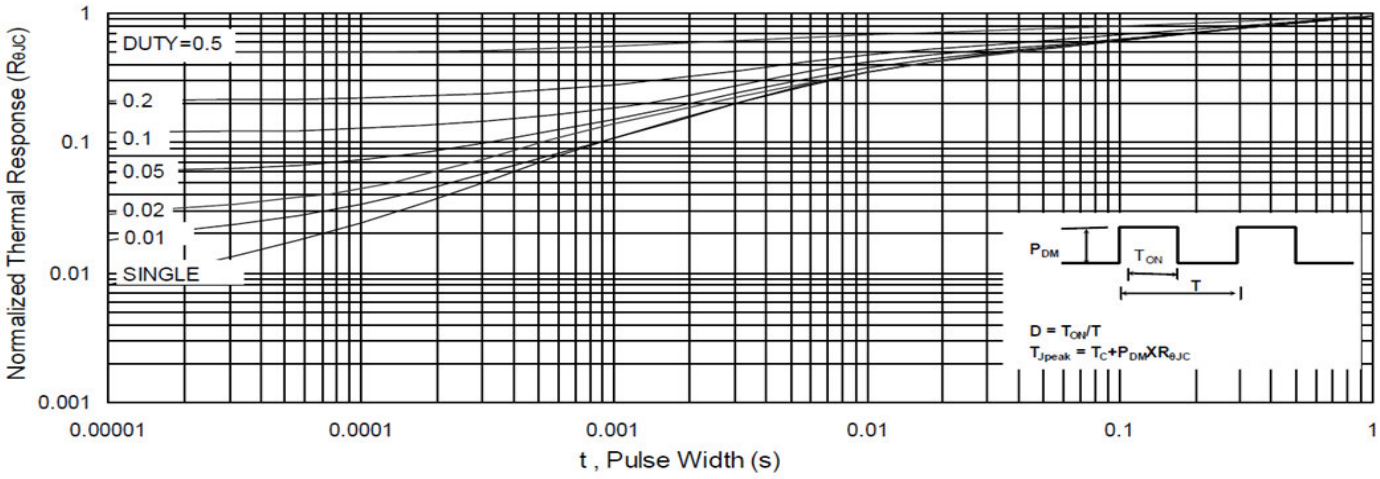


Fig.9 Normalized Maximum Transient Thermal Impedance

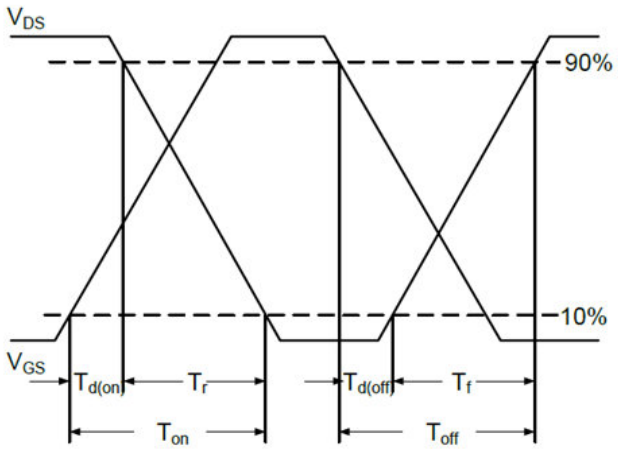


Fig.10 Switching Time Waveform

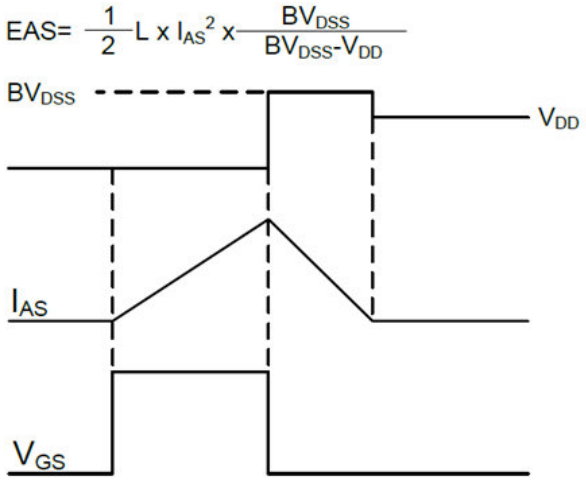


Fig.11 Unclamped Inductive Switching Waveform