Elektronische Bauelemente

STT3998N-C

4A, 20V, $R_{DS(ON)}$ 37mΩ

Dual N-Ch Enhancement Mode Power MOSFET

RoHS Compliant Product

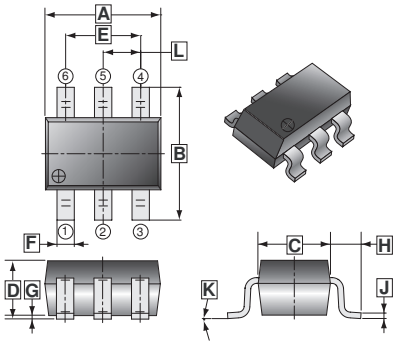
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

The STT3998N-C is the highest performance trench Dual 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 STT3998N-C meet the RoHS and Green Product requirement with full function reliability approved.

TSOP-6



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60 REF.	
C	1.40	1.80	J	0.12 REF.	
D	1.45 MAX.		K	0°	10°
E	1.90 REF.		L	0.95 REF.	
F	0.30	0.50			

FEATURES

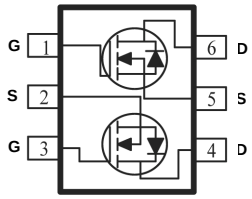
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

ORDER INFORMATION

Part Number	Type
STT3998N-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [1], @V_{GS}=4.5V	T_A=25℃	I_D	4	A
	T_A=70℃		3.2	
Pulsed Drain Current [3]		I_{DM}	12	A
Total Power Dissipation	T_A=25℃	P_D	1.14	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Data				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦10sec, 110	℃/W
			Steady State, 150	
Thermal Resistance Junction-Ambient [2]			180	
Thermal Resistance Junction-case [1]		$R_{\theta JC}$	70	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	0.5	-	1.2	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	20	-	S	V_{DS}=5V, I_D=4A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	uA	V_{DS}=16V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=16V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	37	mΩ	V_{GS}=4.5V, I_D=4A
			-	-	45		V_{GS}=2.5V, I_D=3A
Total Gate Charge		Q_g	-	8.6	-	nC	I_D=4A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	1.37	-		
Gate-Drain Charge		Q_{gd}	-	2.3	-		
Turn-on Delay Time		$T_{d(on)}$	-	5.2	-	nS	V_{DD}=10V I_D=4A V_{GS}=4.5V R_G=3.3Ω
Rise Time		T_r	-	34	-		
Turn-off Delay Time		$T_{d(off)}$	-	23	-		
Fall Time		T_f	-	9.2	-		
Input Capacitance		C_{iss}	-	635	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	70	-		
Reverse Transfer Capacitance		C_{rss}	-	63	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	4	A	
Pulsed Source Current [3]		I_{SM}	-	-	12		
Diode Forward Voltage [4]		V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A, T_J=25℃
Reverse Recovery Time		t_{rr}	-	7.5	-	nS	I_F=4A, dI/dt=100A/μs T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	2.1	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. Surface mounted on FR4 Board using the minimum recommended pad size.
3. The power dissipation is limited by 150℃ juncti on temperature, Pw≦300μs, Duty cycle≦1%.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

TYPICAL CHARACTERISTICS

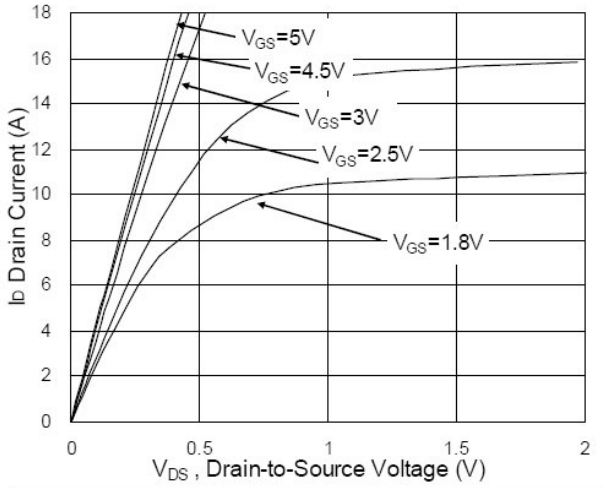


Fig.1 Typical Output Characteristics

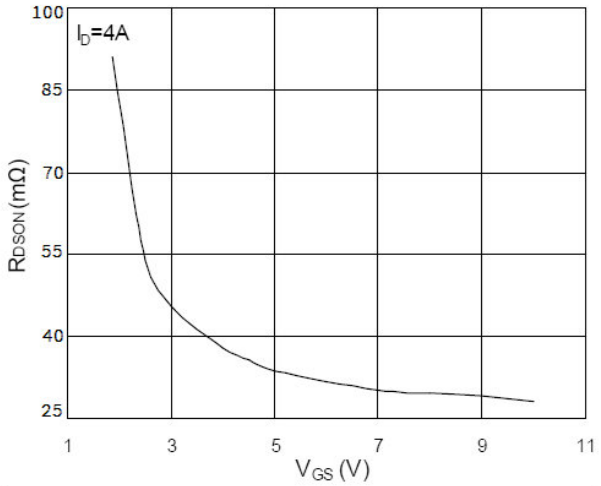


Fig.2 On-Resistance vs. Gate-Source

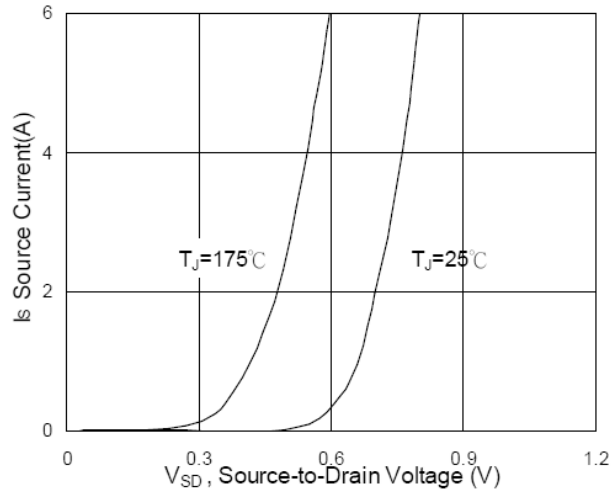


Fig.3 Forward Characteristics Of Reverse

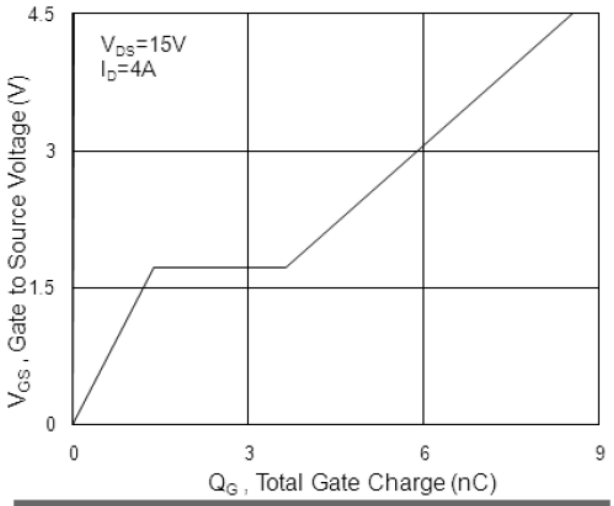


Fig.4 Gate-Charge Characteristics

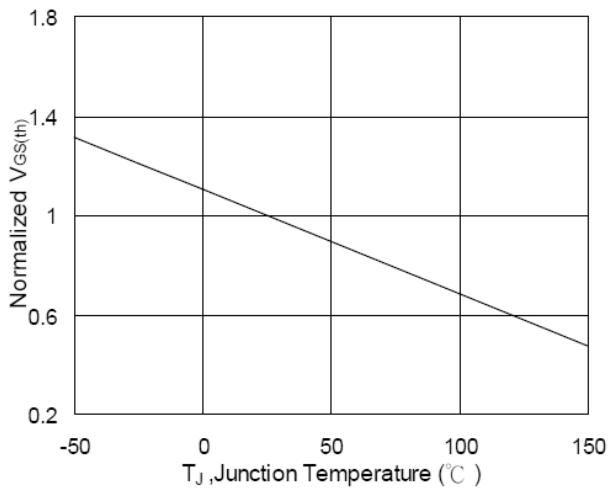


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

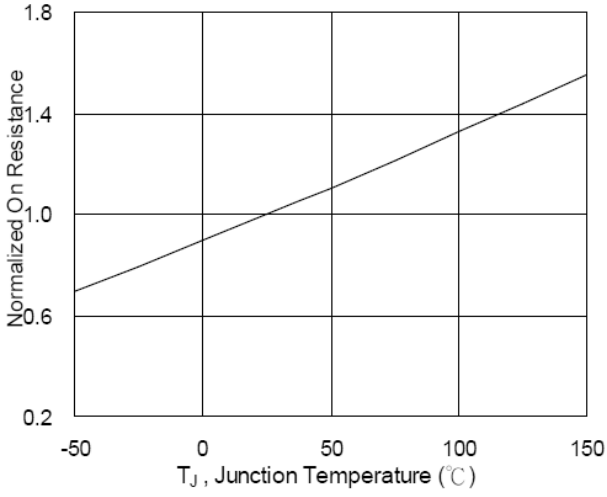


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS

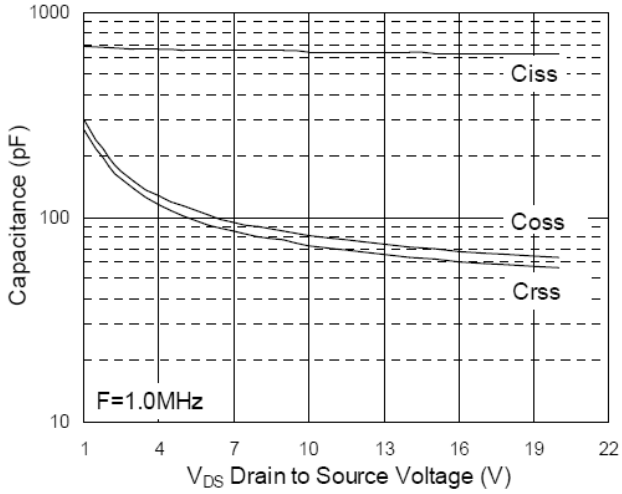


Fig.7 Capacitance

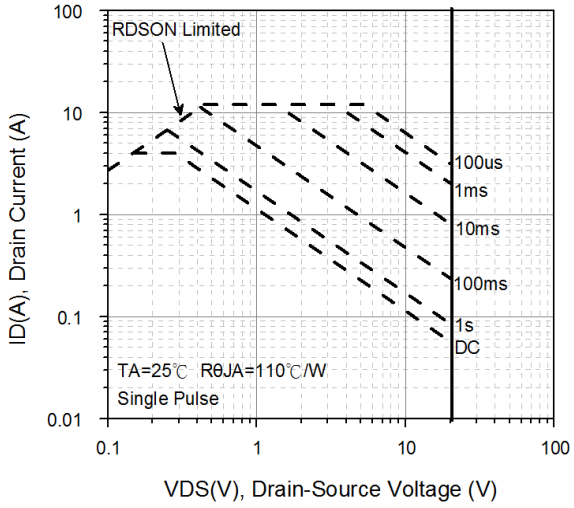


Fig.8 Safe Operating Area

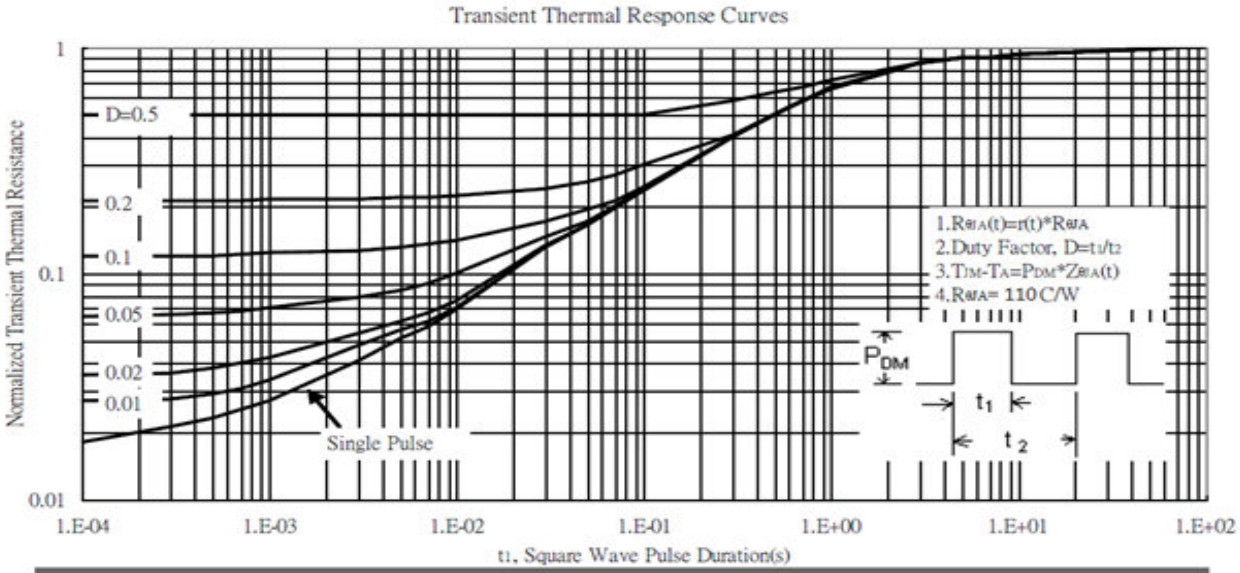


Fig.9 Normalized Maximum Transient Thermal Impedance

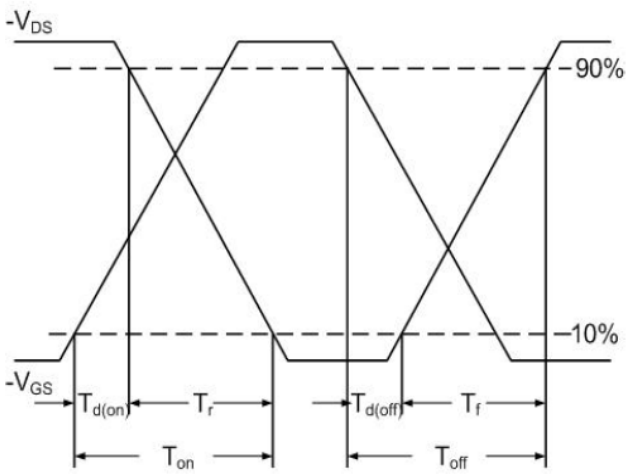


Fig.10 Switching Time Waveform

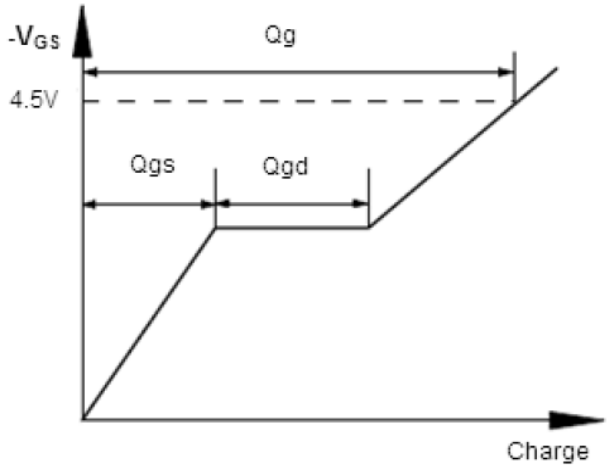


Fig.11 Gate Charge Waveform