Elektronische Bauelemente

STT2605-C

-3.9A, -30V, $R_{DS(ON)}$ 52mΩ
P-Channel Enhancement Mode MOSFET

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

DESCRIPTION

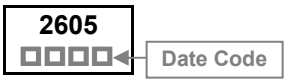
The STT2605-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The STT2605-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING



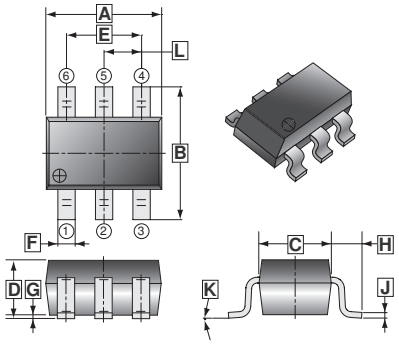
PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

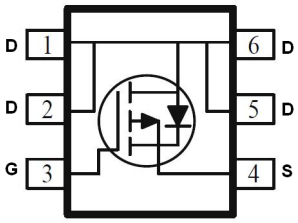
ORDER INFORMATION

Part Number	Type
STT2605-C	Lead (Pb)-free and Halogen-free

TSOP-6



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



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

Parameter		Symbol	Ratings t≦10sec	Ratings Steady State	Unit
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±20		V
Continuous Drain Current, @V_{GS}= -10V [1]	T_A=25°C	I_D	-5	-3.9	A
	T_A=70°C		-4	-3.1	
Pulsed Drain Current [3]		I_{DM}	-20		A
Total Power Dissipation	T_A=25°C	P_D	2		W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150		°C
Thermal Resistance Ratings					
Thermal Resistance Junction-Ambient [1]	t≦10sec	$R_{\theta JA}$	62.5		°C/W
	Steady State		110		
Thermal Resistance Junction-Ambient [2]		$R_{\theta JA}$	156		
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	70		

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D= -250uA
Gate-Threshold Voltage		$V_{GS(th)}$	-1	-1.5	-2.5	V	V_{DS}=V_{GS}, I_D= -250uA
Forward Transconductance		g_{fs}	-	11	-	S	V_{DS}= -5V, I_D= -3A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	-1	uA	V_{DS}= -24V, V_{GS}=0
	T_J=55°C		-	-	-5		
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	42	52	mΩ	V_{GS}= -10V, I_D= -3A
			-	54	80		V_{GS}= -4.5V, I_D= -2A
Total Gate Charge		Q_g	-	6.4	-	nC	I_D= -3A V_{DS}= -15V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	2.3	-		
Gate-Drain Charge		Q_{gd}	-	1.9	-		
Turn-on Delay Time		$T_{d(on)}$	-	2.8	-	nS	V_{DD}= -15V I_D= -3A V_{GS}= -10V R_G=3.3Ω
Rise Time		T_r	-	8.4	-		
Turn-off Delay Time		$T_{d(off)}$	-	39	-		
Fall Time		T_f	-	6	-		
Input Capacitance		C_{iss}	-	583	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	100	-		
Reverse Transfer Capacitance		C_{rss}	-	80	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	-3.9	A	
Pulsed Source Current [3]		I_{SM}	-	-	-20		
Diode Forward Voltage [4]		V_{SD}	-	-0.8	-1.2	V	V_{GS}=0, I_S= -1A, T_J=25°C
Reverse Recovery Time		t_{rr}	-	7.8	-	nS	I_F= -3A, dI/dt=100A/μs T_J=25°C
Reverse Recovery Charge		Q_{rr}	-	2.5	-	nC	

Notes:
1. 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°C junction temperature, pulse width≦300μs, duty cycle≦2%.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

CHARACTERISTICS CURVE

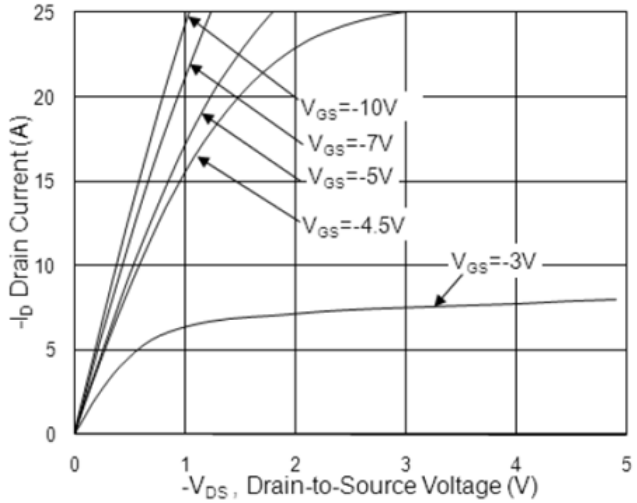


Fig.1 Typical Output Characteristics

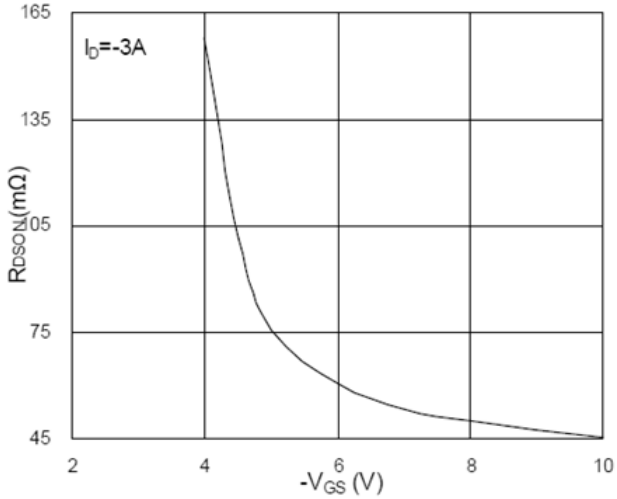


Fig.2 On-Resistance vs. Gate-Source

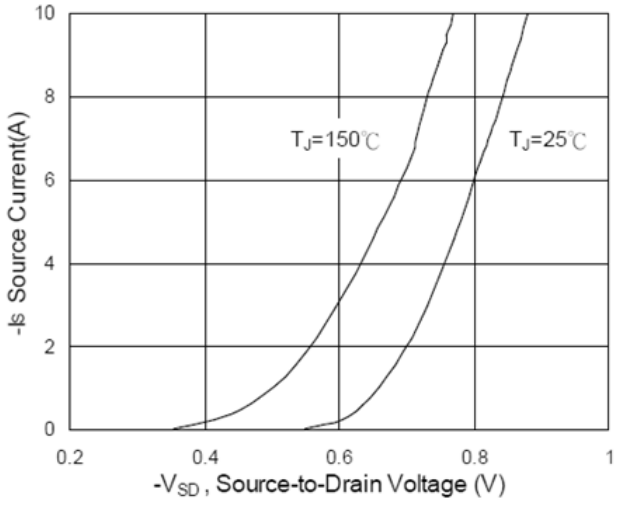


Fig.3 Forward Characteristics of Reverse

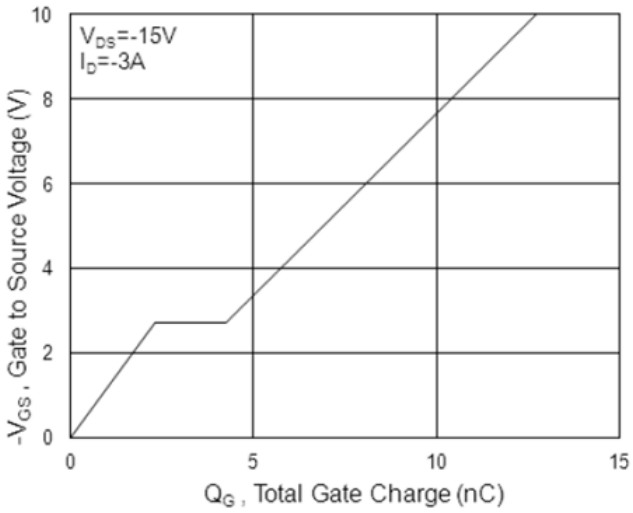


Fig.4 Gate-Charge Characteristics

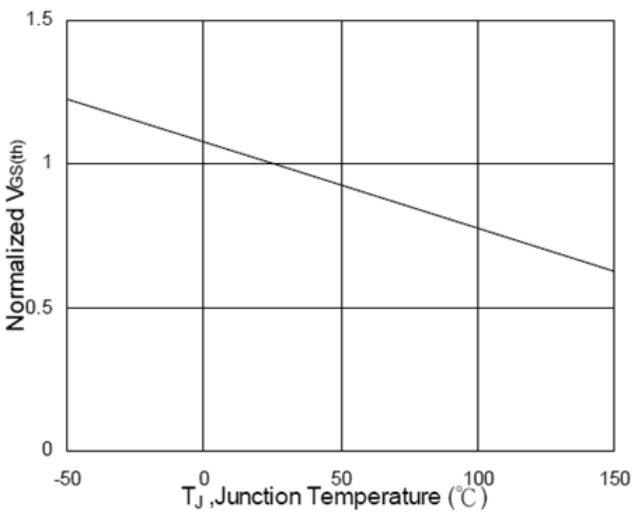


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

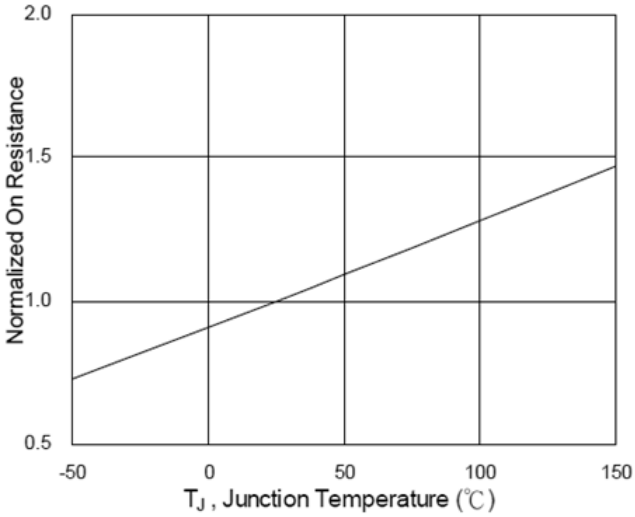


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTICS CURVE

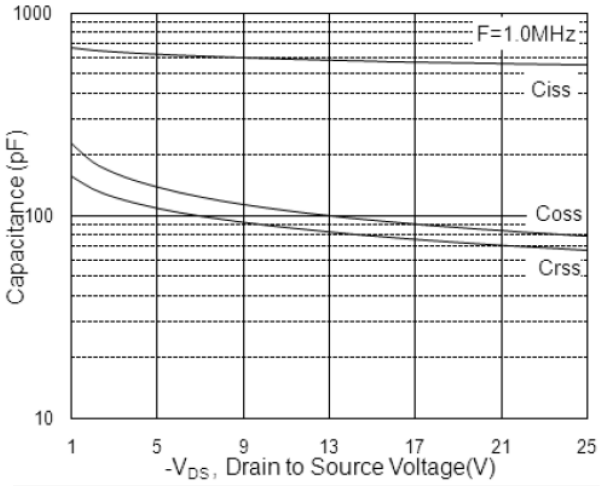


Fig.7 Capacitance

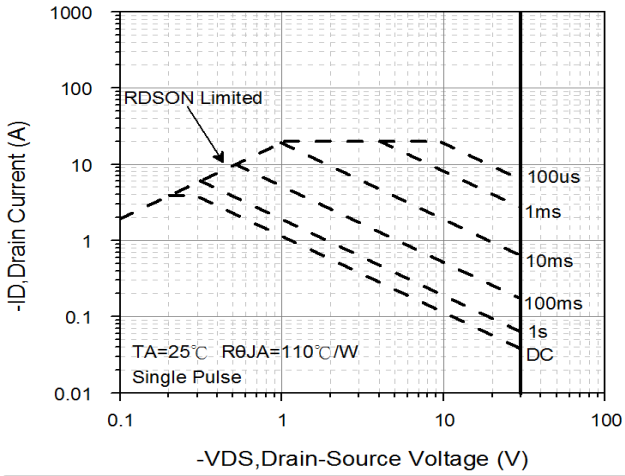


Fig.8 Safe Operating Area

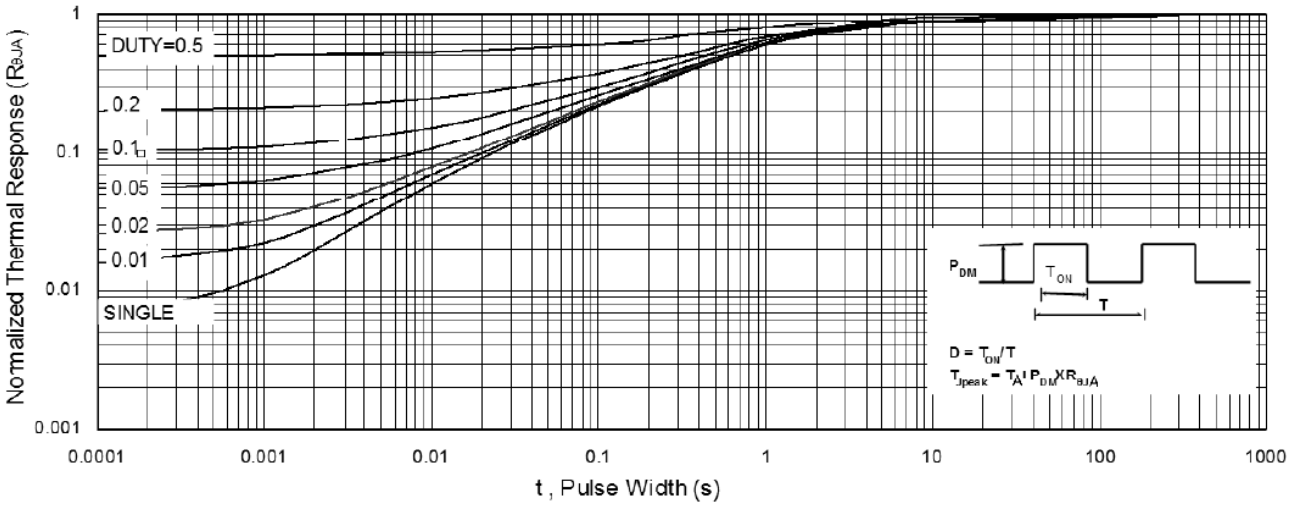


Fig.9 Normalized Maximum Transient Thermal Impedance

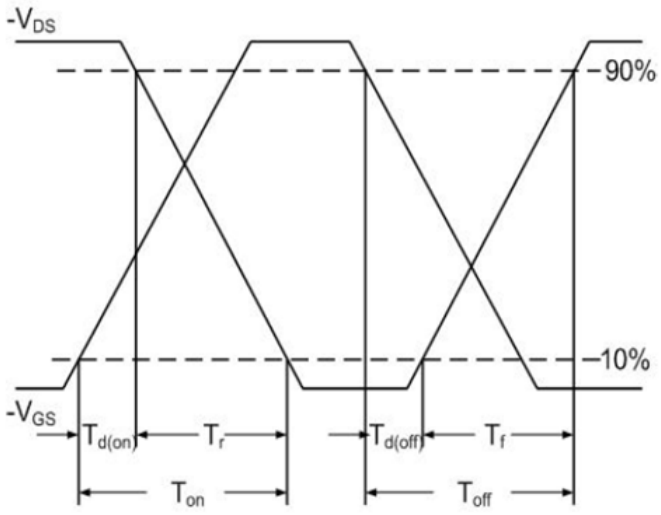


Fig.10 Switching Time Waveform

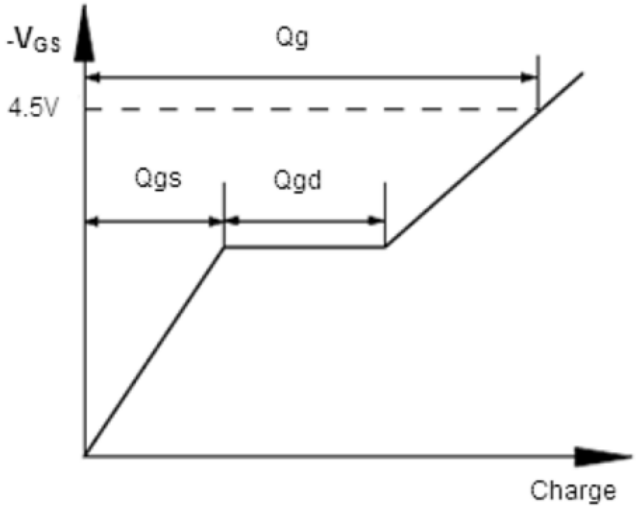


Fig.11 Gate Charge Waveform