

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

DESCRIPTION

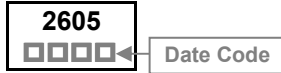
The STT2605-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

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

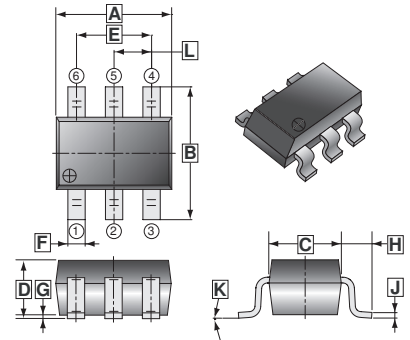
MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

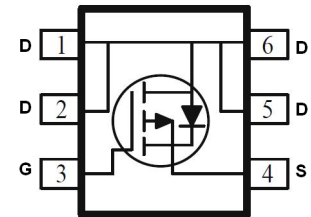
TSOP-6



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			

ORDER INFORMATION

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



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

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

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ 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
Reverse Recovery Charge		Q _{rr}	-	2.5	-	nC	T _J =25°C

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

CHARACTERISTICS CURVE

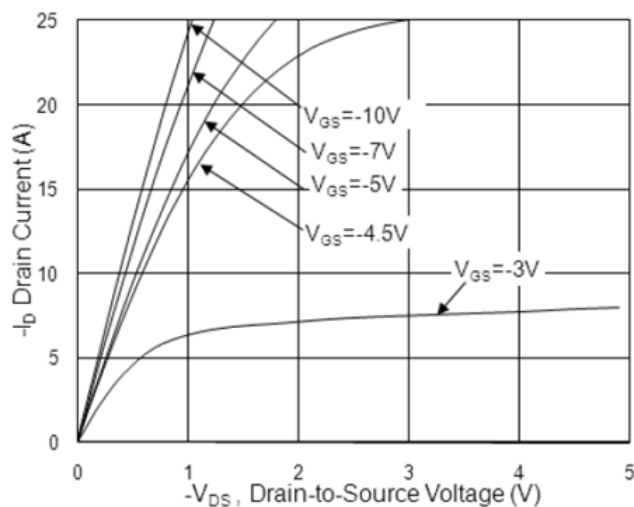


Fig.1 Typical Output Characteristics

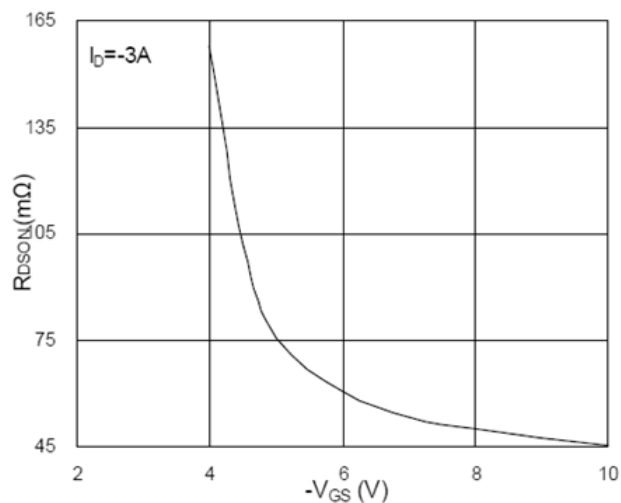


Fig.2 On-Resistance vs. Gate-Source

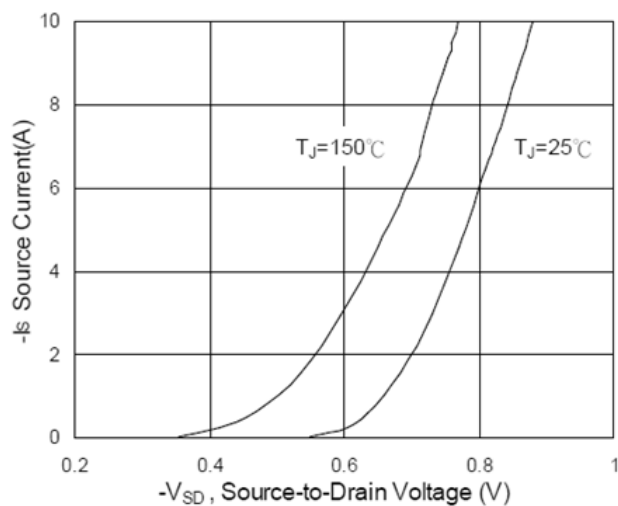


Fig.3 Forward Characteristics of Reverse

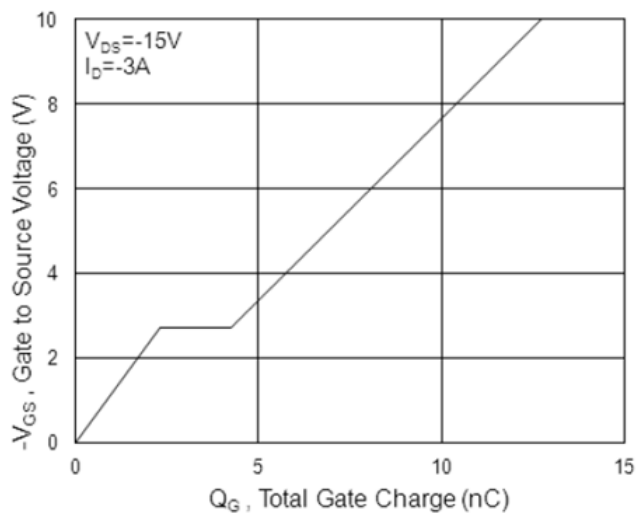


Fig.4 Gate-Charge Characteristics

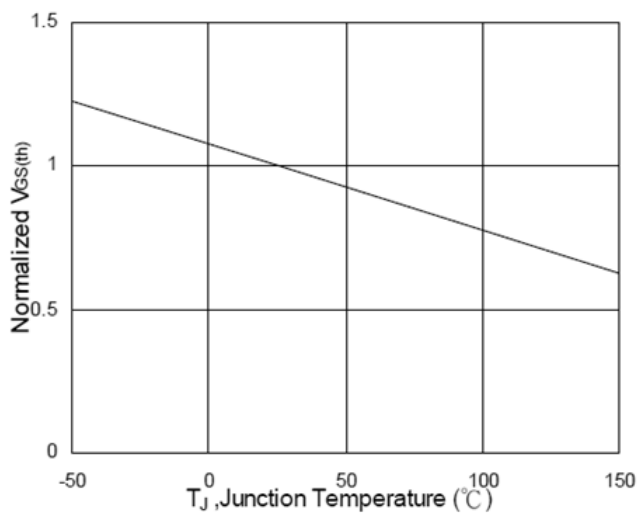


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

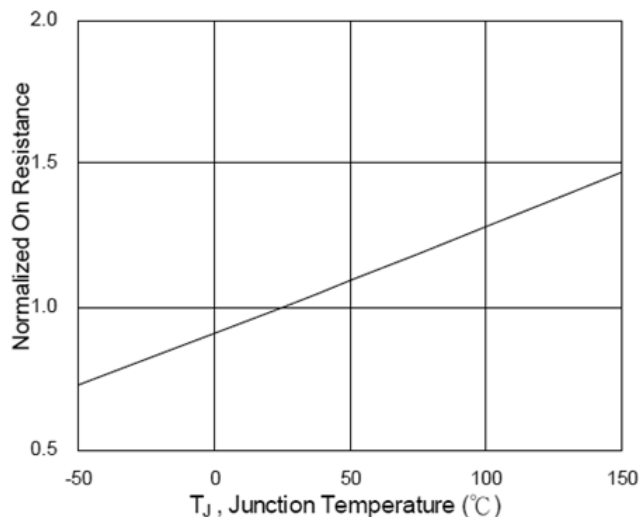


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

CHARACTERISTICS CURVE

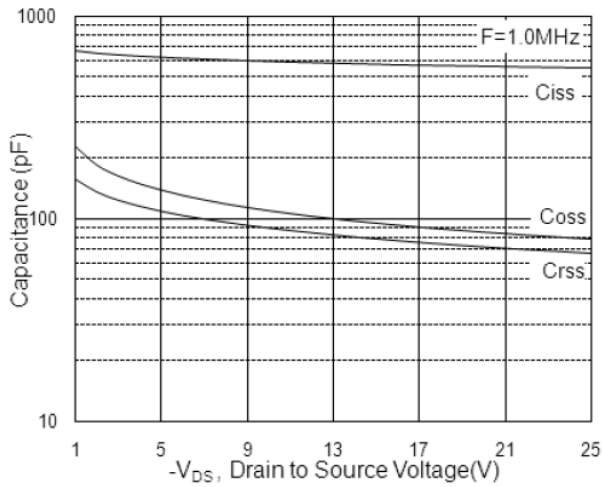


Fig.7 Capacitance

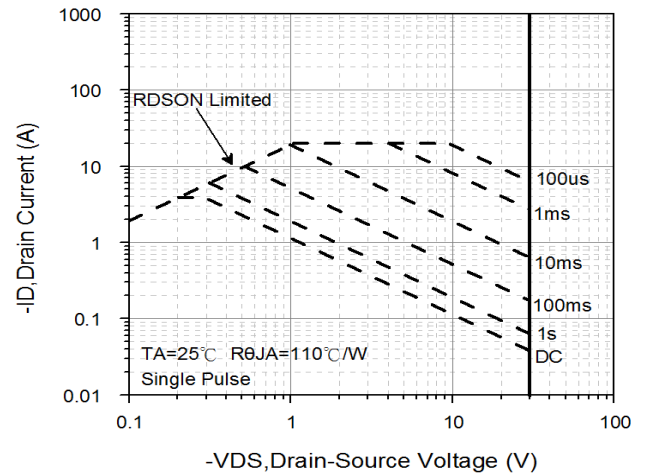


Fig.8 Safe Operating Area

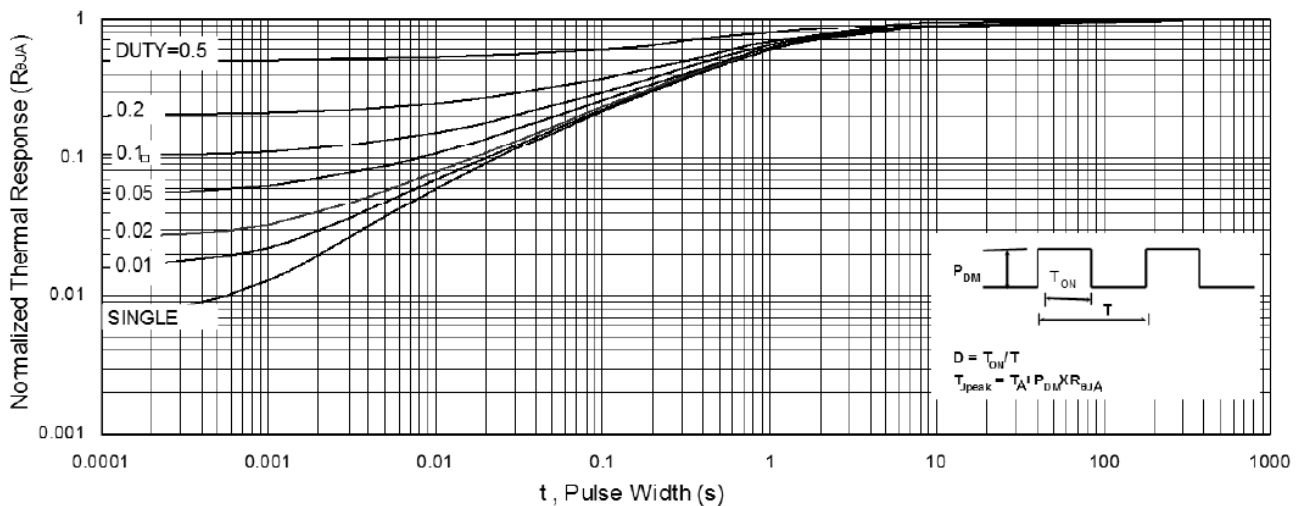


Fig.9 Normalized Maximum Transient Thermal Impedance

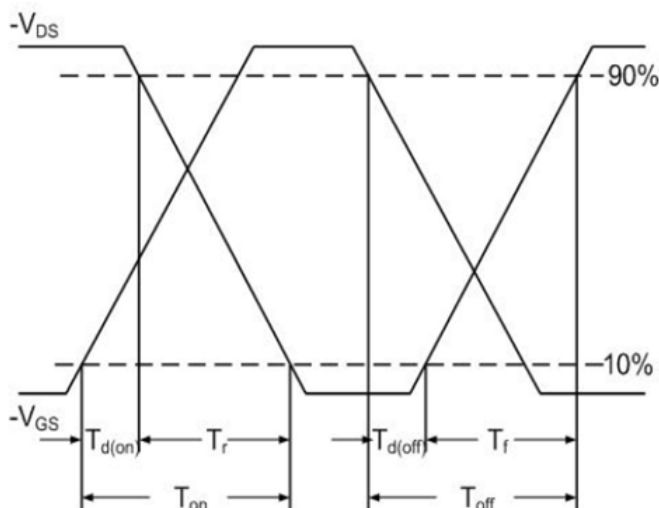


Fig.10 Switching Time Waveform

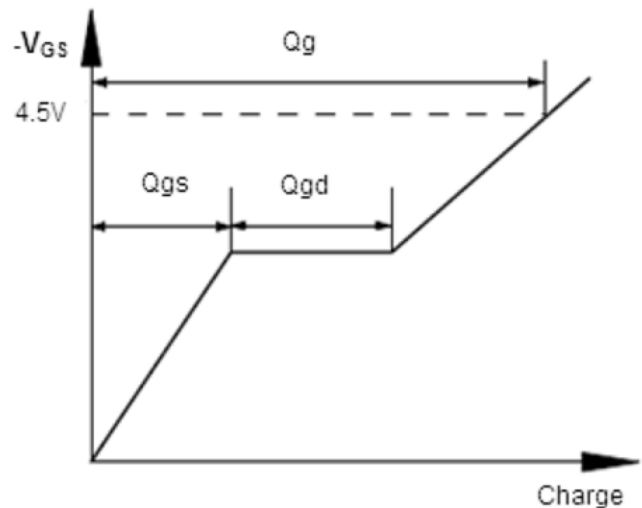


Fig.11 Gate Charge Waveform