STN2302

20V N-Channel Enhancement Mode MOSFET

DESCRIPTION

The STN2302 is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density. advanced trench technology to provide excellent $R_{DS(ON)}$. low gate charge and operation gate as 1.8V.
This device is suitable for use as a load switch or other general applications.

STN2302S-TRG ROHS Compliant This is Halogen Free

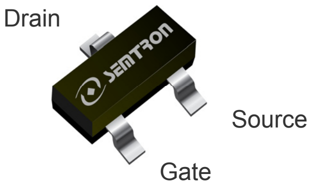
FEATURE

- ***20V/4.0A, $R_{DS(ON)}$ =50mΩ(typ.)@V_{GS} =4.5V***
- ***20V/3.0A, $R_{DS(ON)}$ =65mΩ(typ.)@V_{GS} =2.5V***
- Super high density cell design for extremely low Gate Charge
- Exceptional on-resistance and Maximum DC current capability

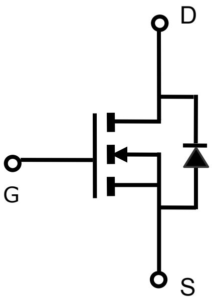
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Load Switch

PIN CONFIGURATION



SOT-23
Top View



PART NUMBER INFORMATION

ST N 2302 S - TR G a b c d e f	**a : Company name.** **b : Channel type.** **c : Product Serial number.** **d : Package code** **e : Handling code** **f : Green product code**

ORDERING INFORMATION

Part Number	Package Code	Handling Code	Shipping
STN2302S-TRG	S : SOT-23	TR : Tape&Reel	3K/Reel

※ Year Code : 0 ~ 9, 2010 : 0
※ Week Code : A(1~2) ~ Z(53~54)
※ SOT-23 : Only available in tape and reel packaging.

ABSOLUTE MAXIMUM RATINGS *(T_A = 25°C Unless otherwise noted)*

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current (T_C=25°C)^A	V_{GS}=4.5V	4.6	A
	Continuous Drain Current (T_C=70°C)^A		3.8	A
I_{DM}	Pulsed Drain Current^B		14	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.0 0.7	W
T_J	Operation Junction Temperature		-55 to150	°C
T_{STG}	Storage Temperature Range		-55 to150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL DATA

Symbol	Parameter		Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient^A	Steady-State	-	125	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Lead^A	Steady-State	-	85	°C/W

ELECTRICAL CHARACTERISTICS(T_A = 25°C Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	0.5		1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V,V_{GS}=0V			1	μA
		V_{DS}=20V,V_{GS}=0V T_J=55°C			5	
$R_{DS(ON)}$	Drain-source On-Resistance[B]	V_{GS}=4.5V,I_D=4.0A V_{GS}=2.5V,I_D=3.0A		40 54	50 75	mΩ
G_{fs}	Forward Transconductance	V_{DS}=5V,I_D=3A		10.5		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=1.0A,V_{GS}=0V		0.7	1.2	V
I_S	Continuous Source Current[AD]				3.6	A
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=10V V_{GS}=4.5V I_D=3.0A		4.7	6.6	nC
Q_{gs}	Gate-Source Charge			0.68	0.96	
Q_{gd}	Gate-Drain Charge			1.3	1.8	
C_{iss}	Input Capacitance	V_{DS}=15V V_{GS}=0V f=1MHz		296	415	pF
C_{oss}	Output Capacitance			44	62	
C_{rss}	Reverse Transfer Capacitance			35	49	
$t_{d(on)}$	Turn-On Time	V_{DD}=10V I_D=3.0A V_{GEN}=4.5V R_G=3.3Ω		1.4	2.8	nS
t_r				40	72	
$t_{d(off)}$	Turn-Off Time			12.4	25	
t_f				5.6	11	

Note:

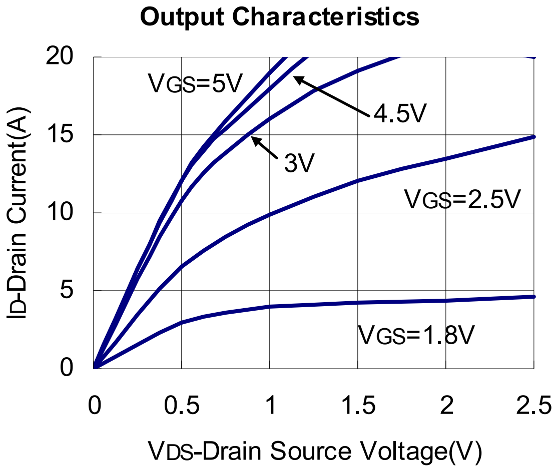
A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

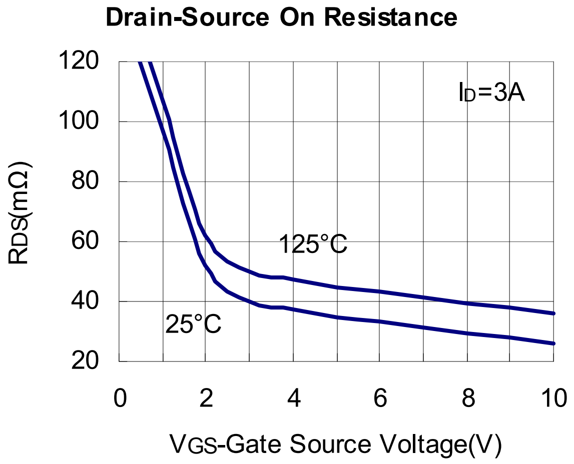
B. The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%

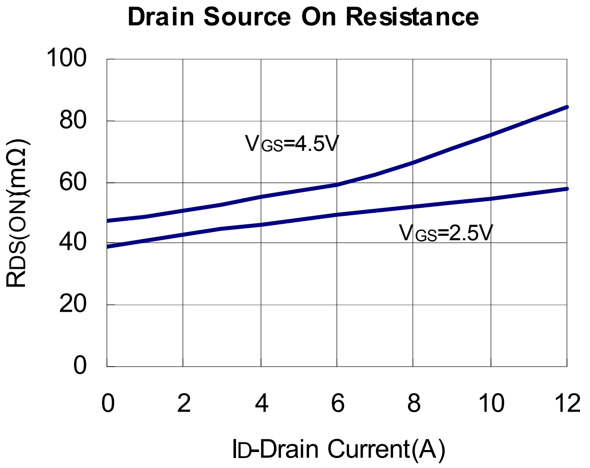
C. The EAS data shows Max. rating . The test condition is V_{DD}=-25V,V_{GS}=-10V,L=0.1mH.

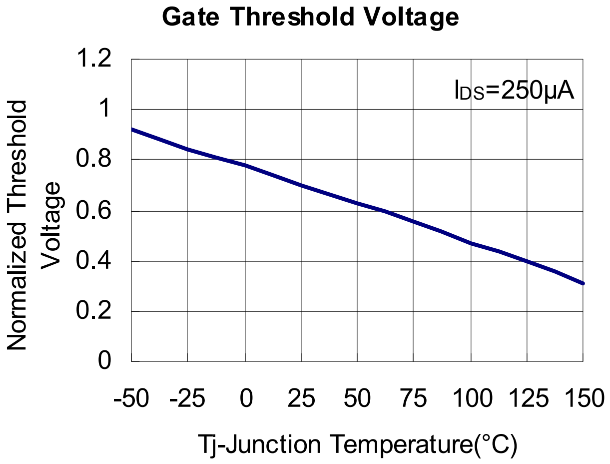
D. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

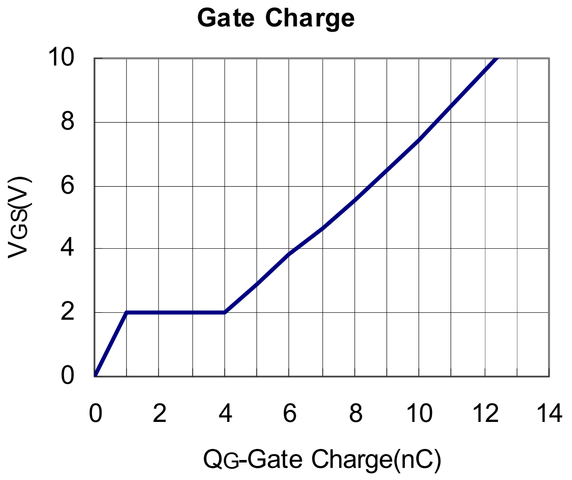
TYPICAL CHARACTERISTICS

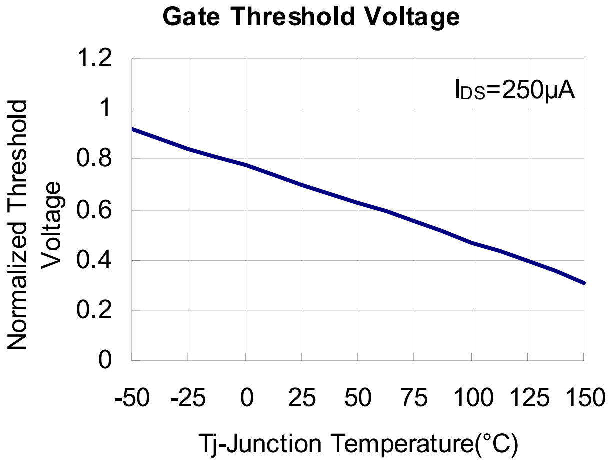












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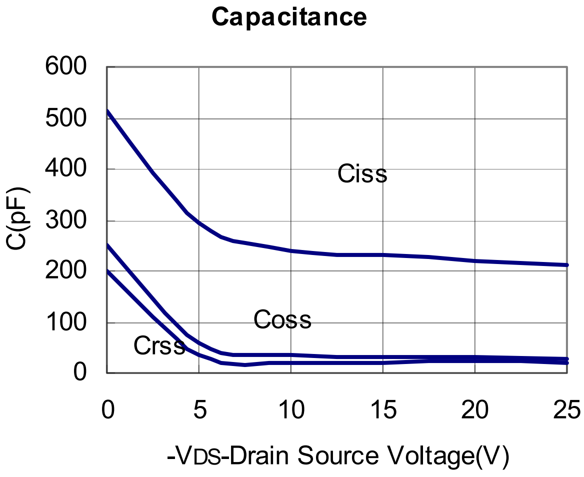

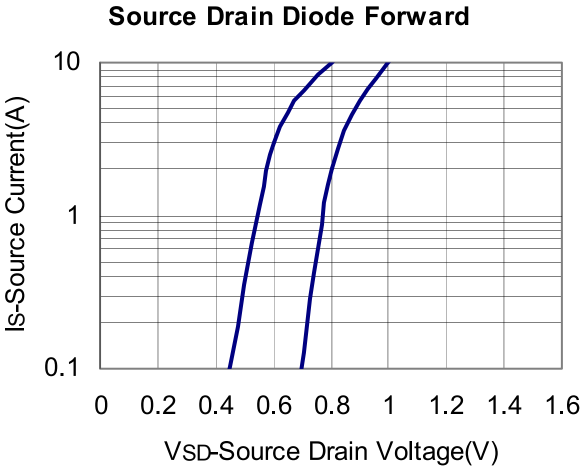

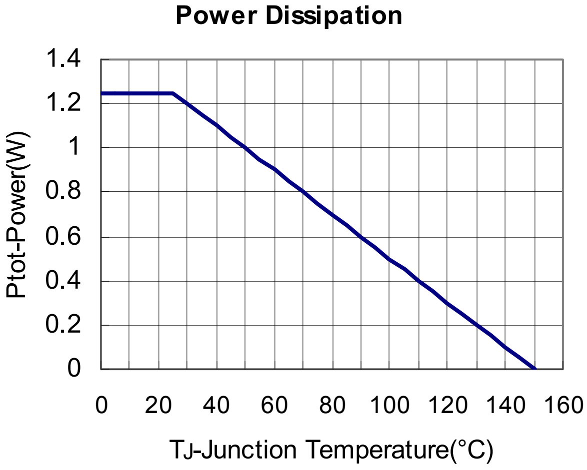

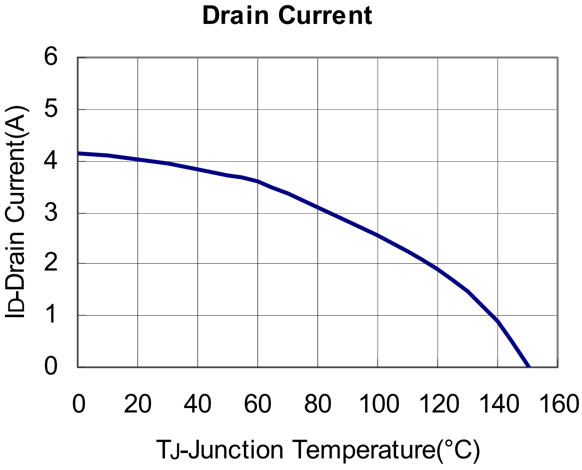

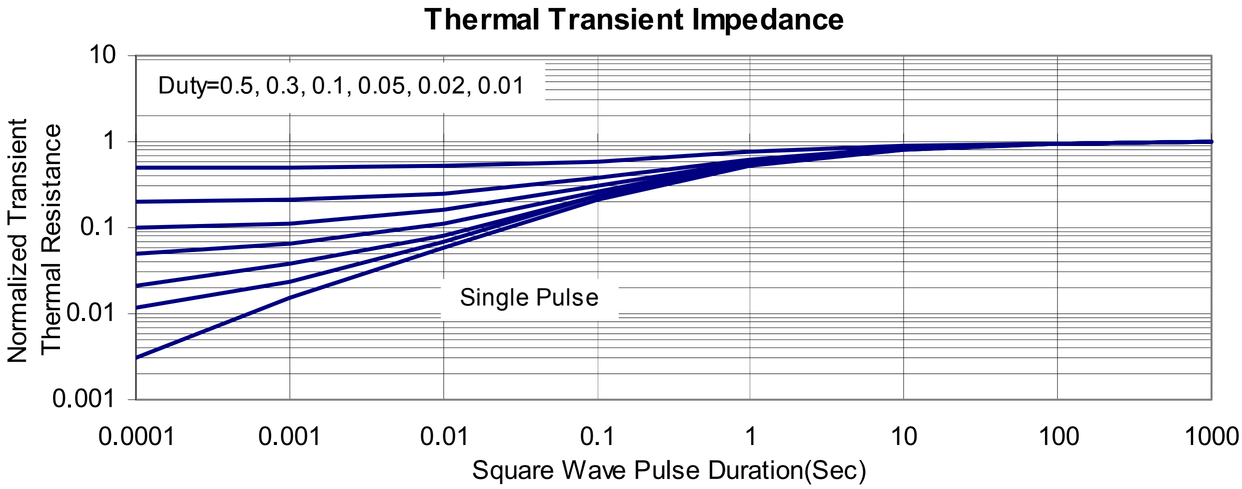

SOT-23 PACKAGE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L1	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°