

General Description

The WST6006 is the highest performance trench N-CH MOSFET with extreme high cell density, which provide excellent R_{DS(on)} and gate charge for most of the small power switching and load switch applications.

The WST6006 meet the RoHS and Green Product requirement with full function reliability approved.

Features

- High-speed switching
- Green Device Available
- ESD Protected:2KV

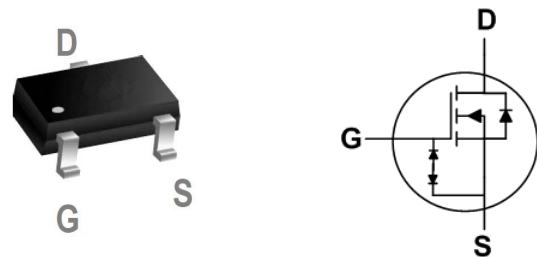
Product Summary

BVDSS	R _{DS(on)}	I _D
60V	1.4Ω	115mA

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC
- Networking DC-DC Power System
- Load Switch

SOT-323 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	115	mA
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ¹	75	mA
I _{DM}	Pulsed Drain Current ²	1.0	A
P _D @T _A =25°C	Total Power Dissipation ³	0.2	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-Ambient ¹	---	625	°C/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.05	---	V/°C
R _{DS(on)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =0.5A	---	1.4	7.5	Ω
		V _{GS} =5V, I _D =0.05A	---	10.5	13.5	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	1	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-3.7	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V, T _J =25°C	---	---	1	μA
		V _{DS} =60V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±10	μA
g _{fs}	Forward Transconductance	V _{DS} ≥ 2.0 V _{DS(on)} , I _D = 200 mAdc	---	80	---	mS
T _{d(on)}	Turn-On Delay Time	(V _{DD} = 25 Vdc, I _D =500 mAdc, R _G = 25 Ω, R _L = 50 Ω, V _{gen} = 10 V)	---	7	6	ns
T _r	Rise Time		---	1.8	3.3	
T _{d(off)}	Turn-Off Delay Time		---	11	40	
T _f	Fall Time		---	6.8	13.6	
C _{iss}	Input Capacitance	V _{DS} = 25 Vdc, V _{GS} = 0, f = 1.0 MHz	---	17	---	pF
C _{oss}	Output Capacitance		---	10	---	
C _{rss}	Reverse Transfer Capacitance		---	2.5	---	

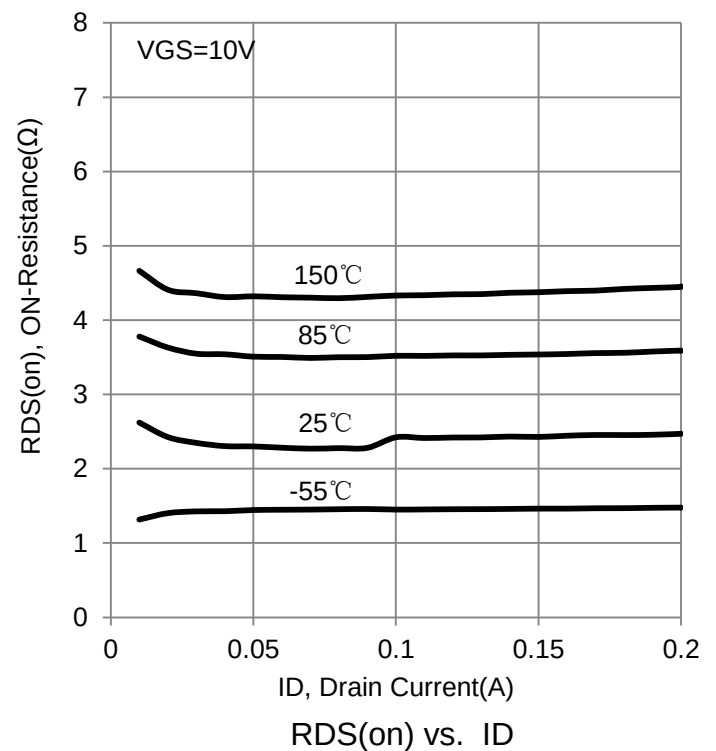
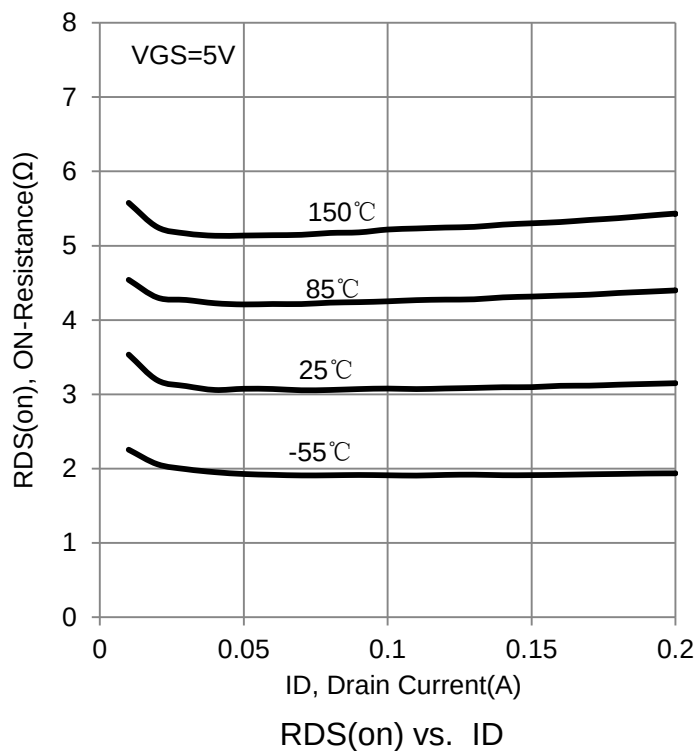
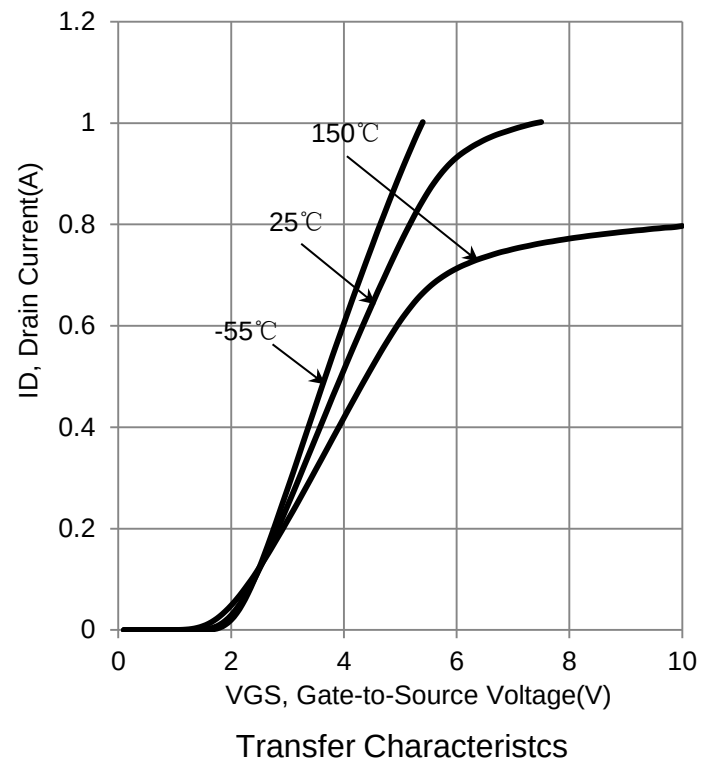
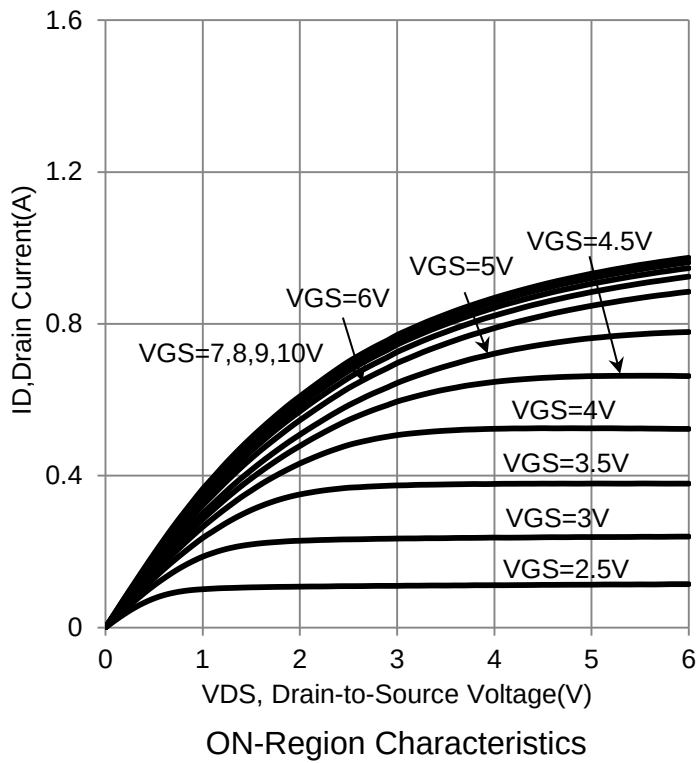
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	115	mA
I _{SM}	Pulsed Source Current ^{2,4}		---	---	800	mA
V _{SD}	Diode Forward Voltage ²	I _S = 115 mAdc, V _{GS} = 0 V	---	---	1.5	V

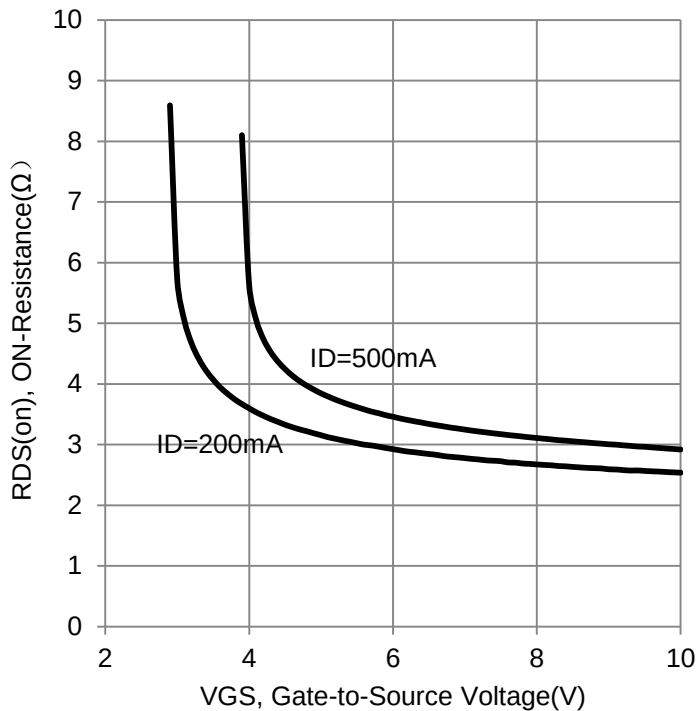
Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature.
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

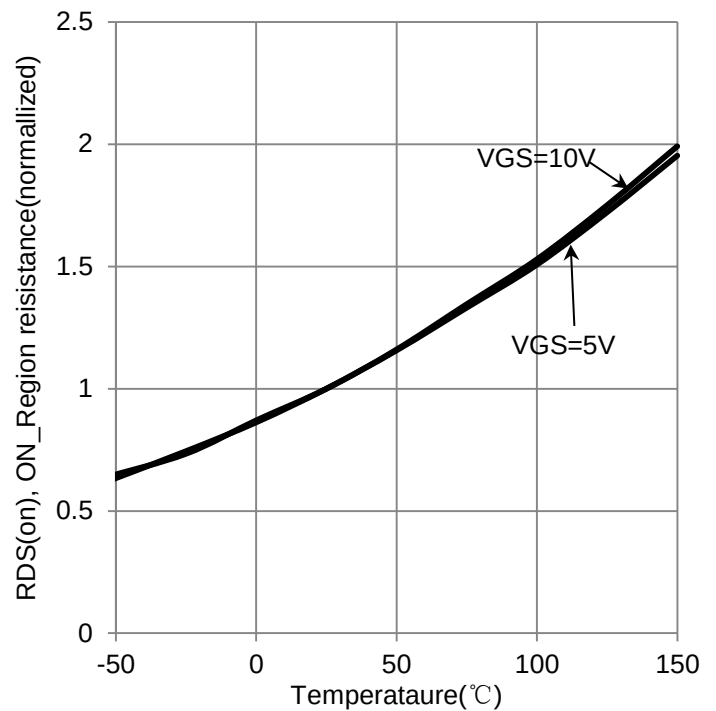
Typical Characteristics



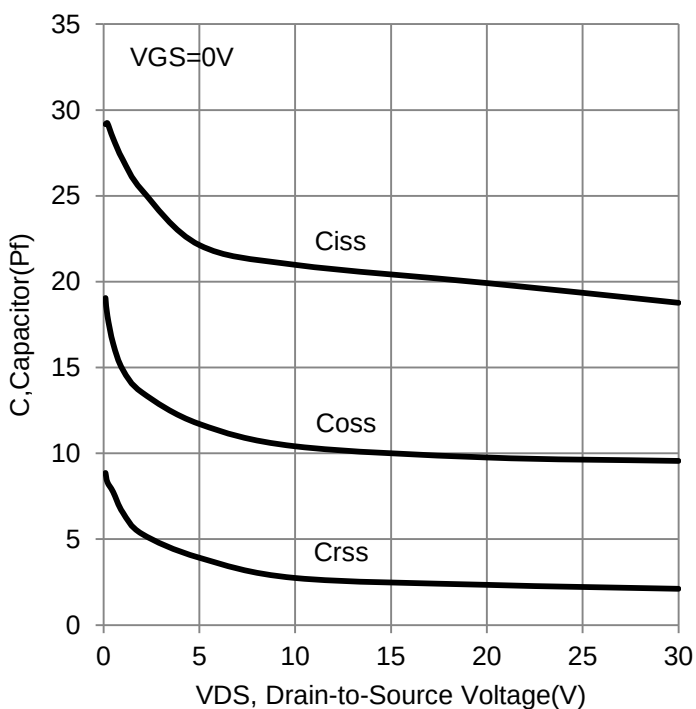
Typical Characteristics



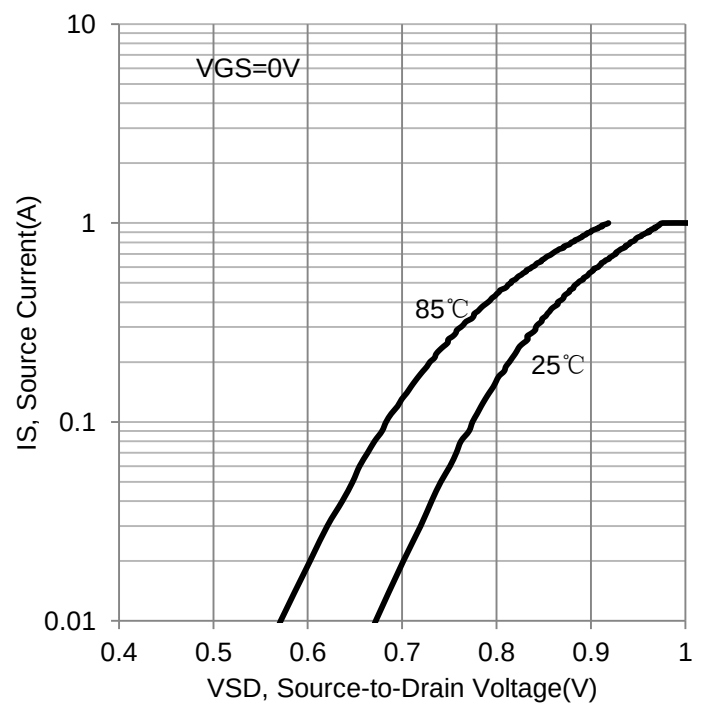
RDS(on) vs. VGS



RDS(on) vs. Temperature

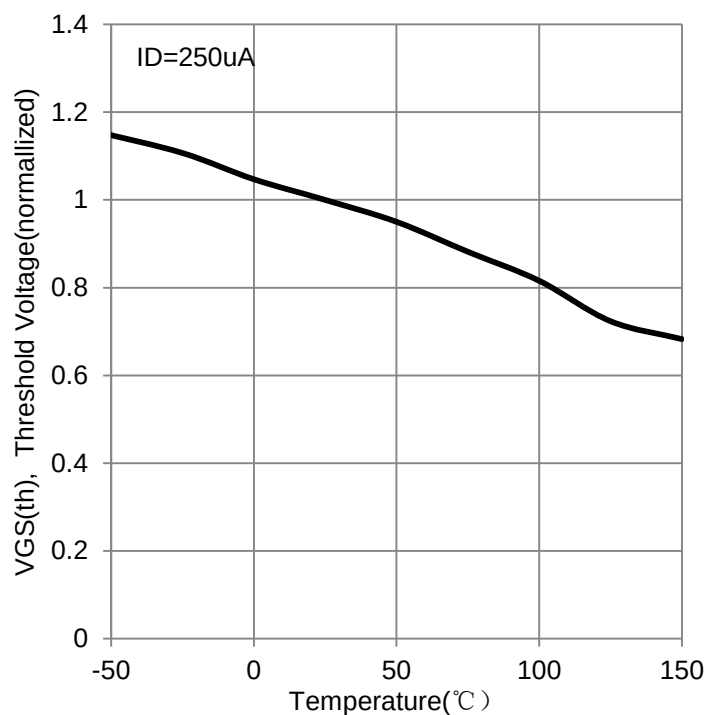


Capacitor vs. VDS

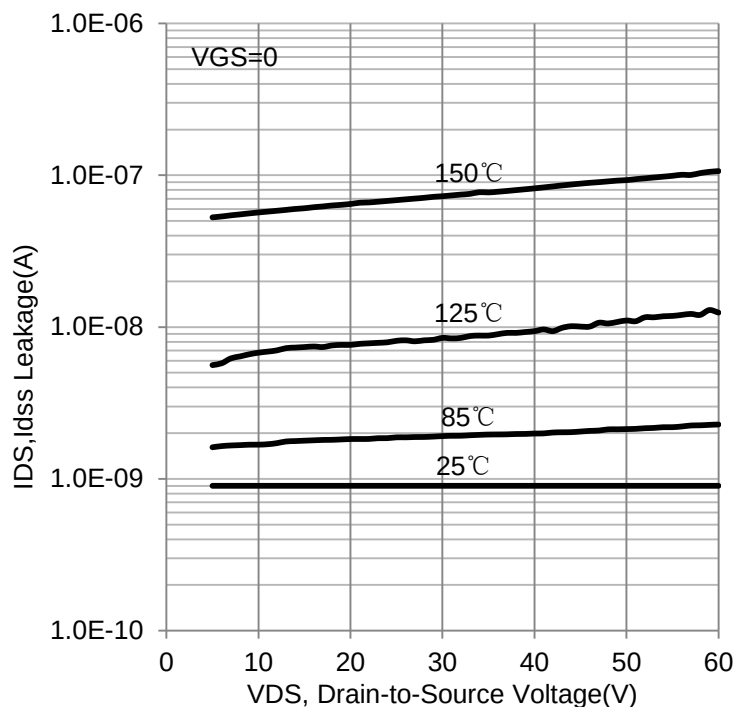


I_S vs. V_{SD}

Typical Characteristics

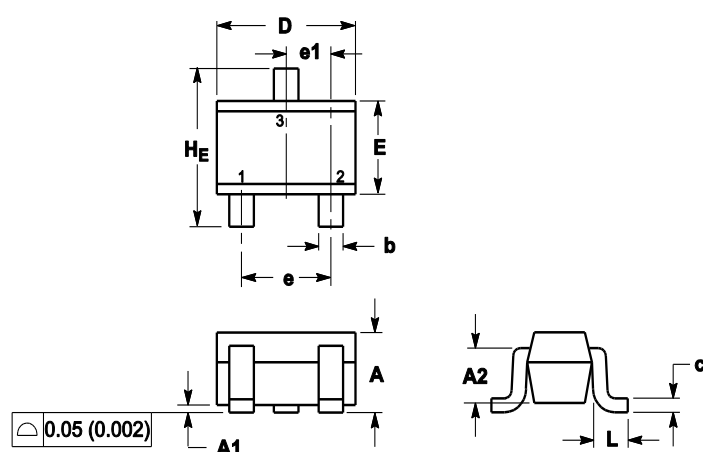


VGS(th) vs. Temperature



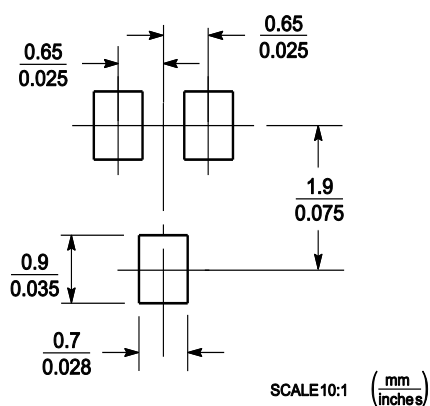
IDS vs. VDS

OUTLINE AND DIMENSIONS



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.039
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.70REF			0.028REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65REF			0.026REF		
L	0.20	0.38	0.56	0.008	0.015	0.022
H _E	2.00	2.10	2.40	0.079	0.083	0.095

SOLDERING FOOTPRINT



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