

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

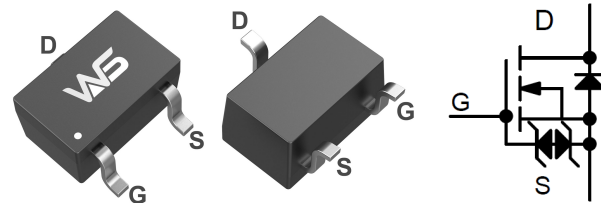
Product Summary

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 =250uA	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 =250uA	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	uA
		V _{DS} =60V, V _{GS} =0V, T _J =55 °C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±10	uA
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	50	pF
C _{oss}	Output Capacitance		---	10	25	
C _{rss}	Reverse Transfer Capacitance		---	2.5	5.0	

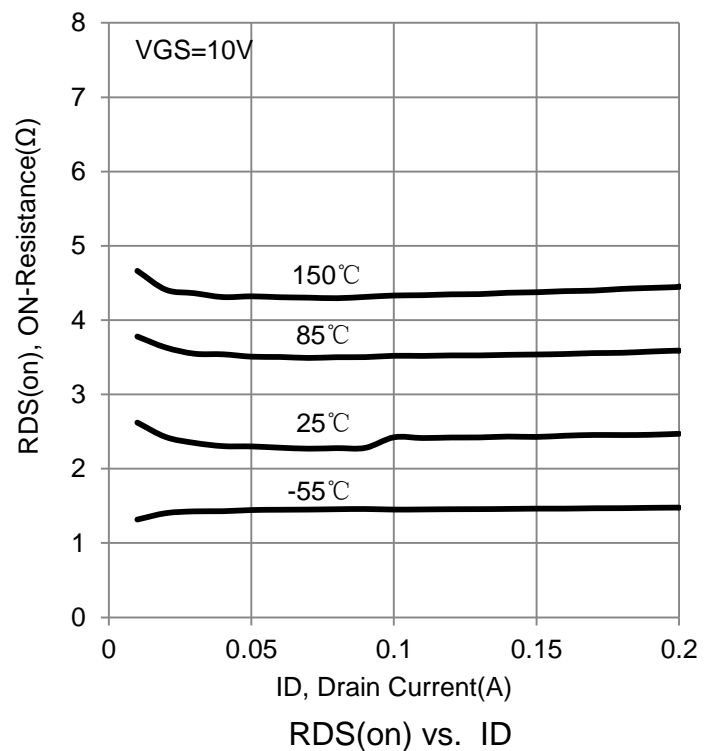
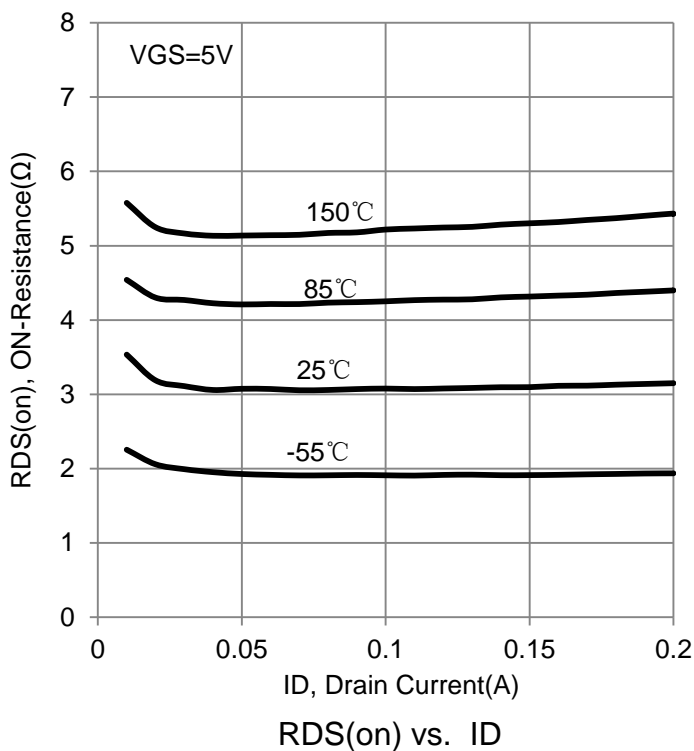
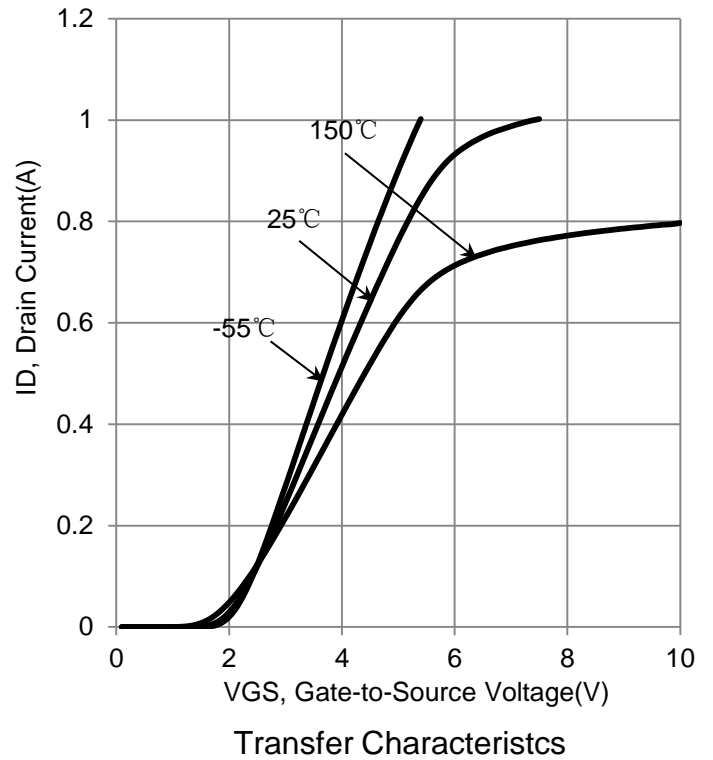
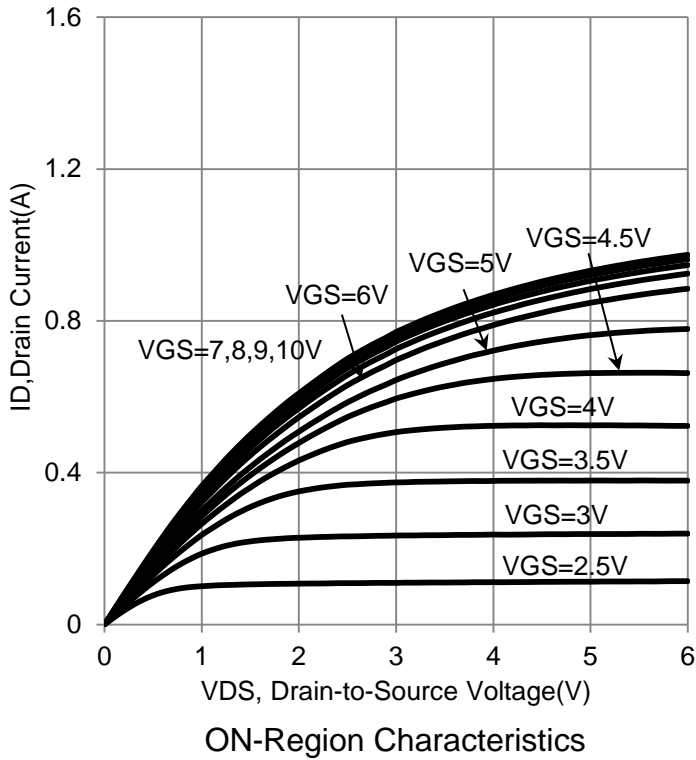
Diode Characteristics

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

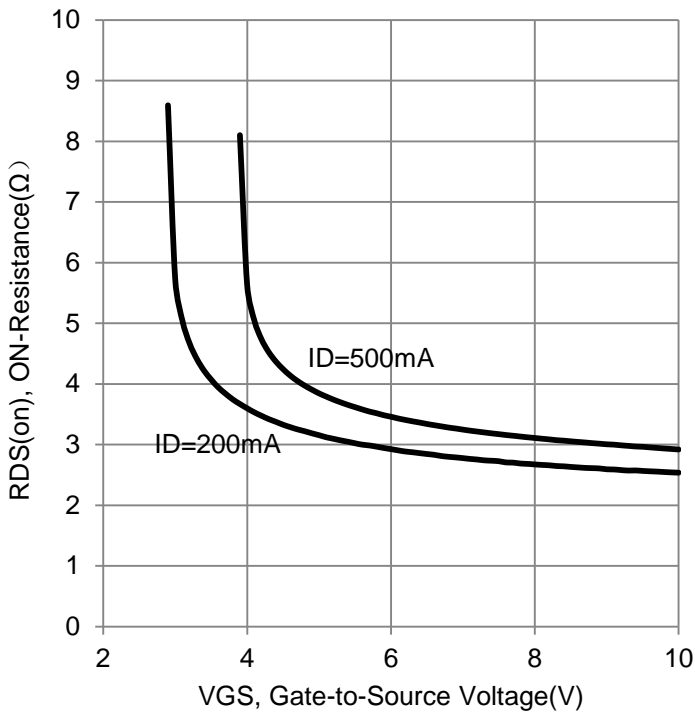
Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ 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.

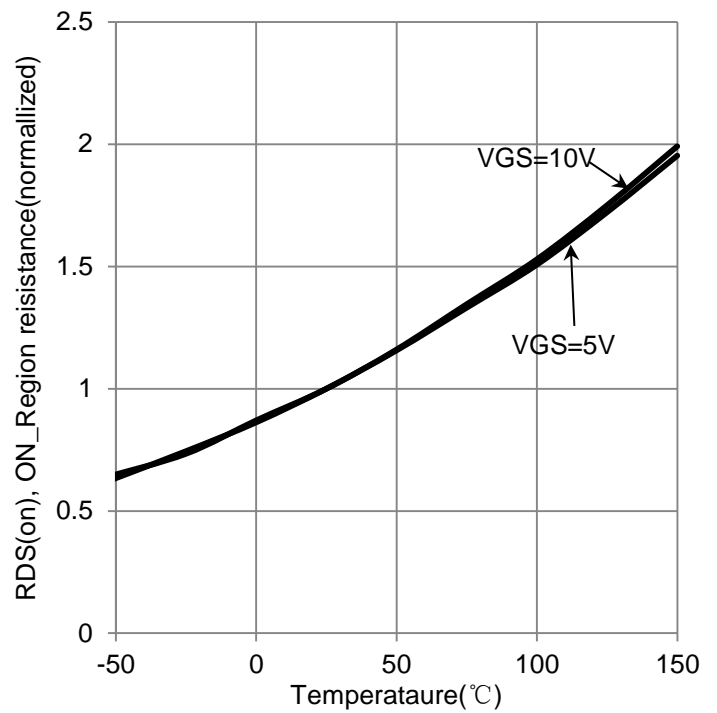
Typical Characteristics



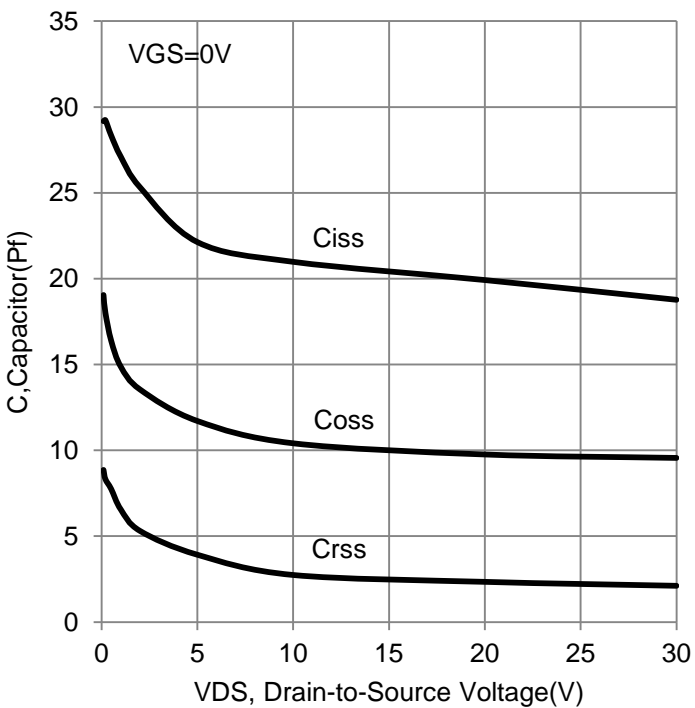
Typical Characteristics



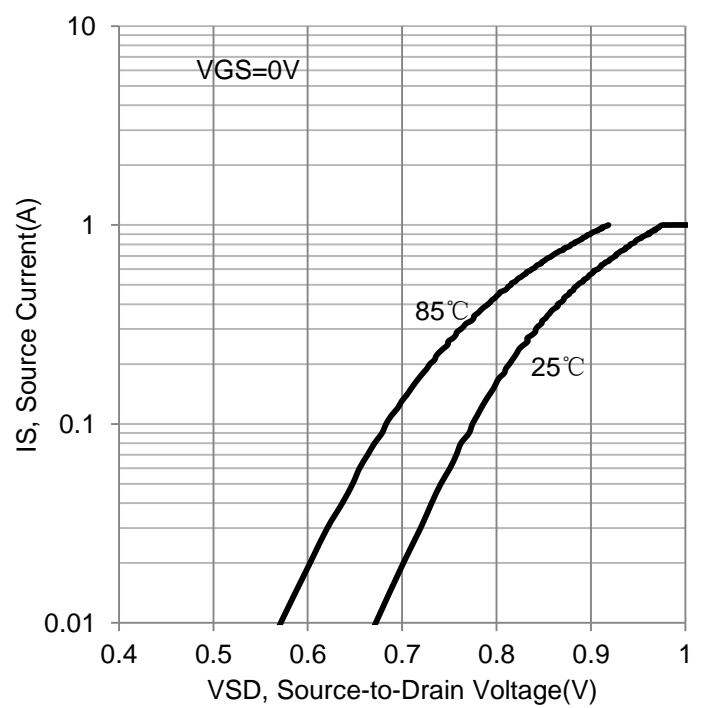
RDS(on) vs. VGS



RDS(on) vs. Temperature

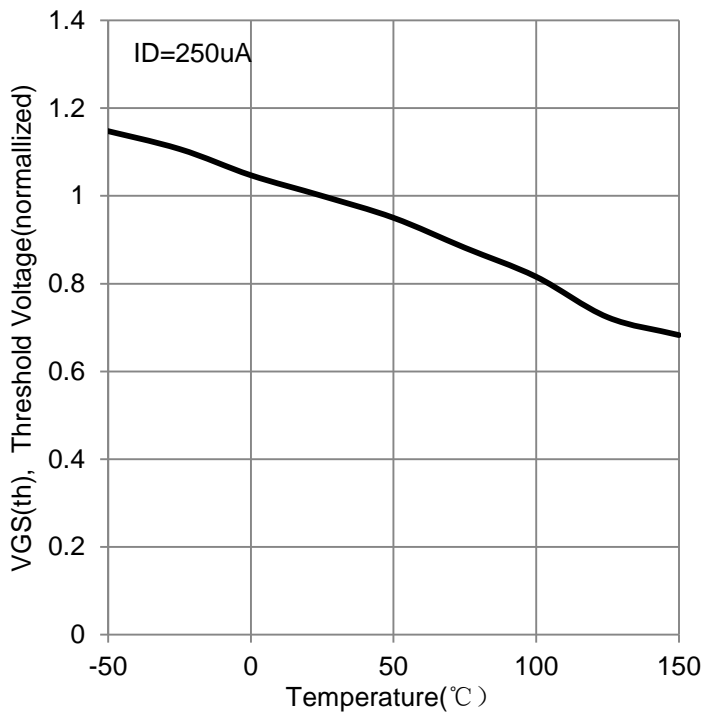


Capacitor vs. VDS

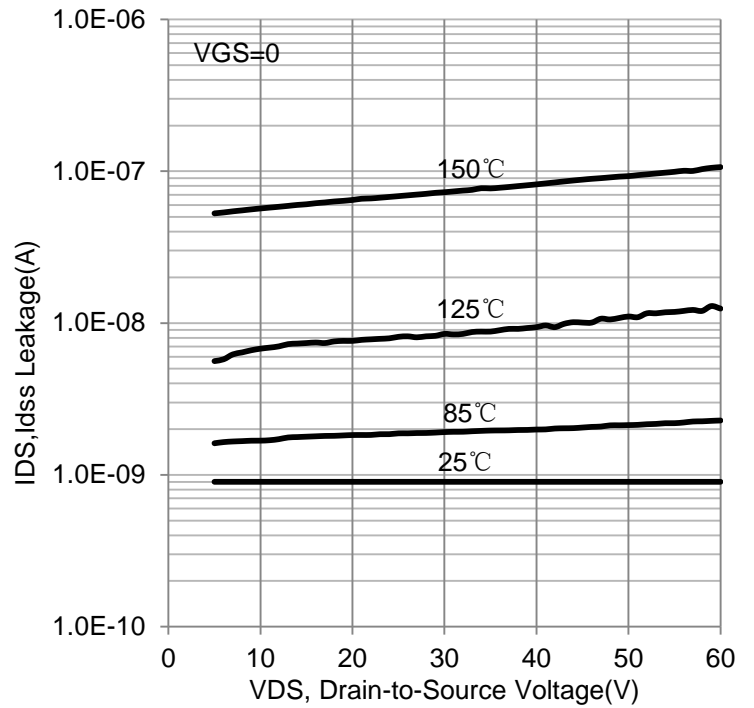


IS vs. VSD

Typical Characteristics

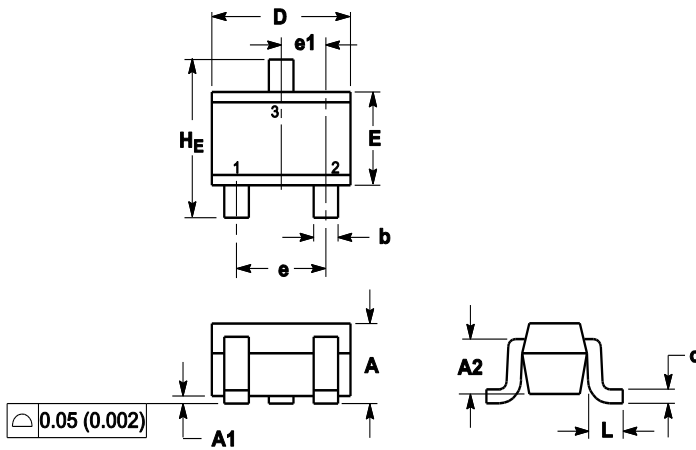


VGS(th) vs. Temperature



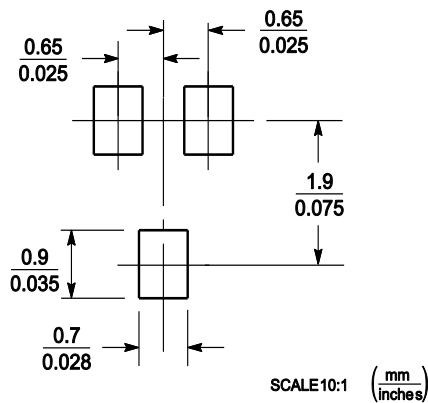
IDS vs. VDS

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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