

### General Description

The WST3032 is the highest performance trench N-CH MOSFET with extreme high cell density, which provide excellent R<sub>DS(on)</sub> and gate charge for most of the small power switching and load switch applications.

The WST3032 meet the RoHS and Green Product requirement with full function reliability approved.

### Features

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

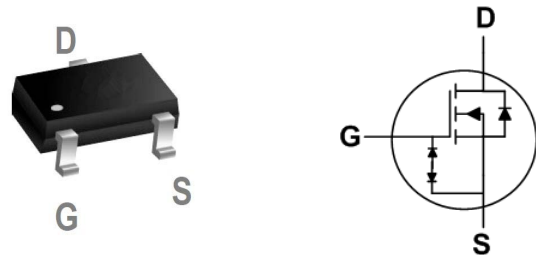
### Product Summary

BVDSS	R <sub>DS(on)</sub>	I <sub>D</sub>
30V	5Ω	200mA

### 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 <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>A</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup>	200	mA
I <sub>D</sub> @T <sub>A</sub> =70°C	Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup>	100	mA
I <sub>DM</sub>	Pulsed Drain Current <sup>2</sup>	800	mA
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>3</sup>	0.2	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-Ambient <sup>1</sup>	---	625	°C/W

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25 °C, I <sub>D</sub> =1mA	---	0.05	---	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =0.2A	---	---	5	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.1A	---	---	5.5	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1	1.5	2.0	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-3.7	---	mV/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25 °C	---	---	1	uA
		V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55 °C	---	---	5	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±10	uA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =0.2A	---	940	---	mS
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =30V, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω, I <sub>D</sub> =200mA, R <sub>L</sub> =500Ω.	---	4.63	---	ns
T <sub>r</sub>	Rise Time		---	18.9	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	6.8	---	
T <sub>f</sub>	Fall Time		---	11.4	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	---	42	---	pF
C <sub>oss</sub>	Output Capacitance		---	15	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	3	---	

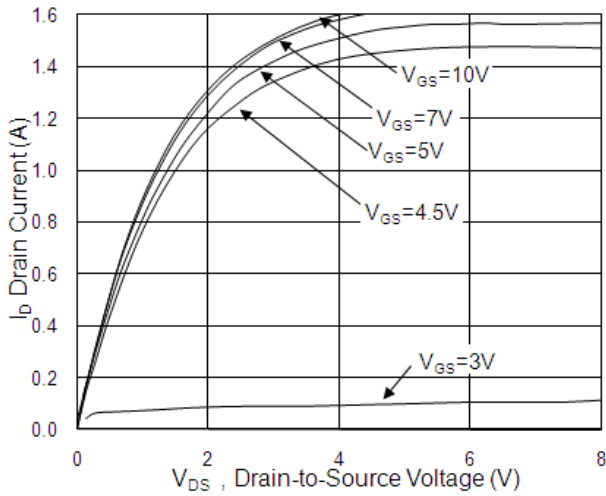
**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,4</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	50	mA
I <sub>SM</sub>	Pulsed Source Current <sup>2,4</sup>		---	---	0.2	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.2A, T <sub>J</sub> =25 °C	---	---	1	V

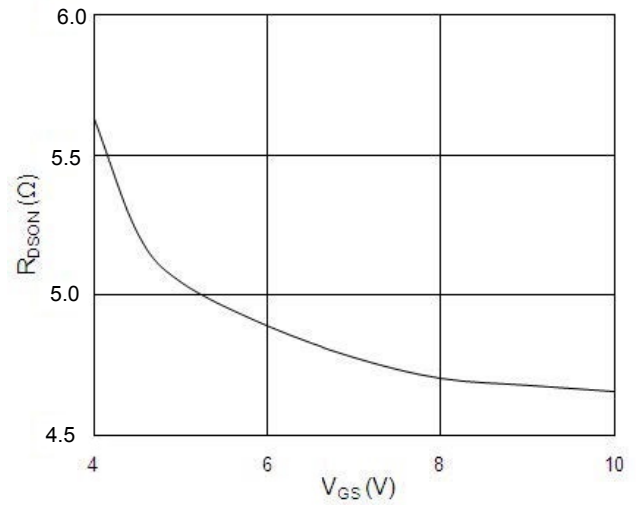
Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> 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<sub>D</sub> and I<sub>DM</sub>, in real applications, should be limited by total power dissipation.

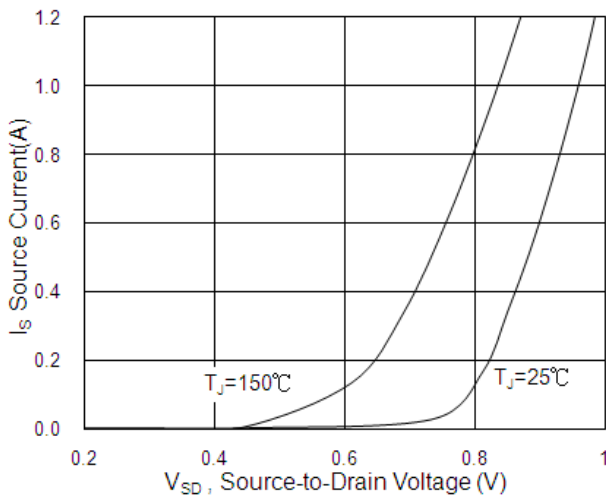
**Typical Characteristics**



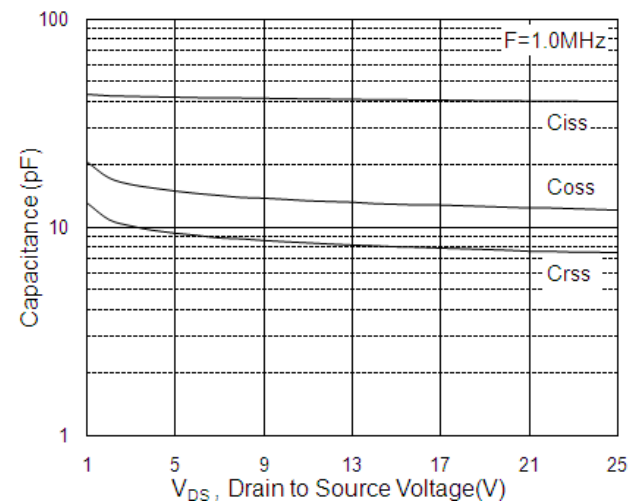
**Fig.1 Typical Output Characteristics**



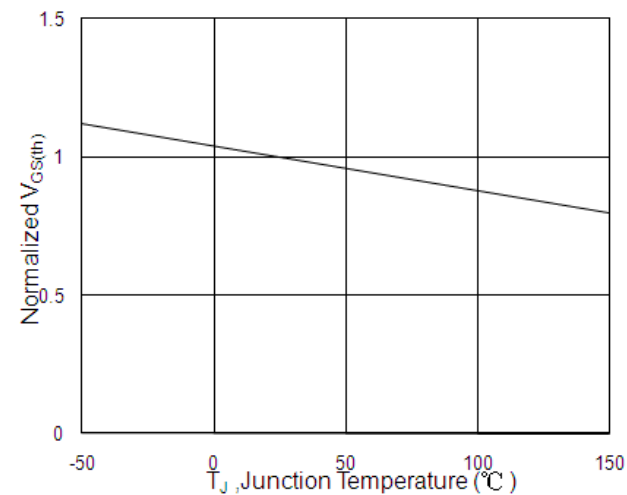
**Fig.2 On-Resistance vs. Gate-Source Voltage**



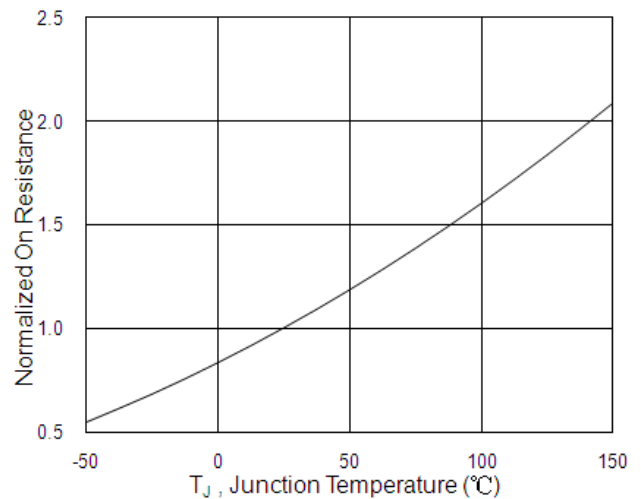
**Fig.3 Forward Characteristics of Reverse**



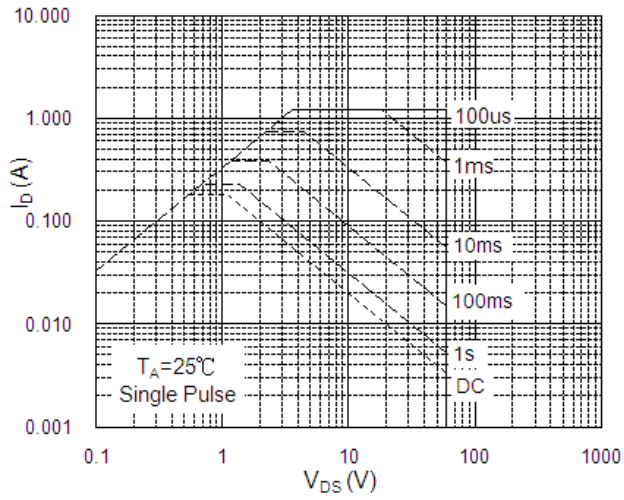
**Fig.4 Capacitance**



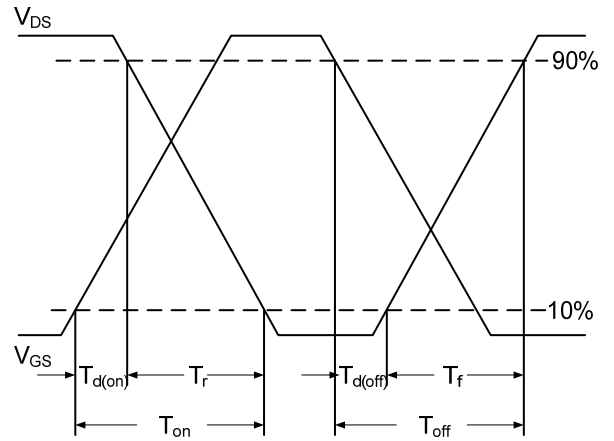
**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**



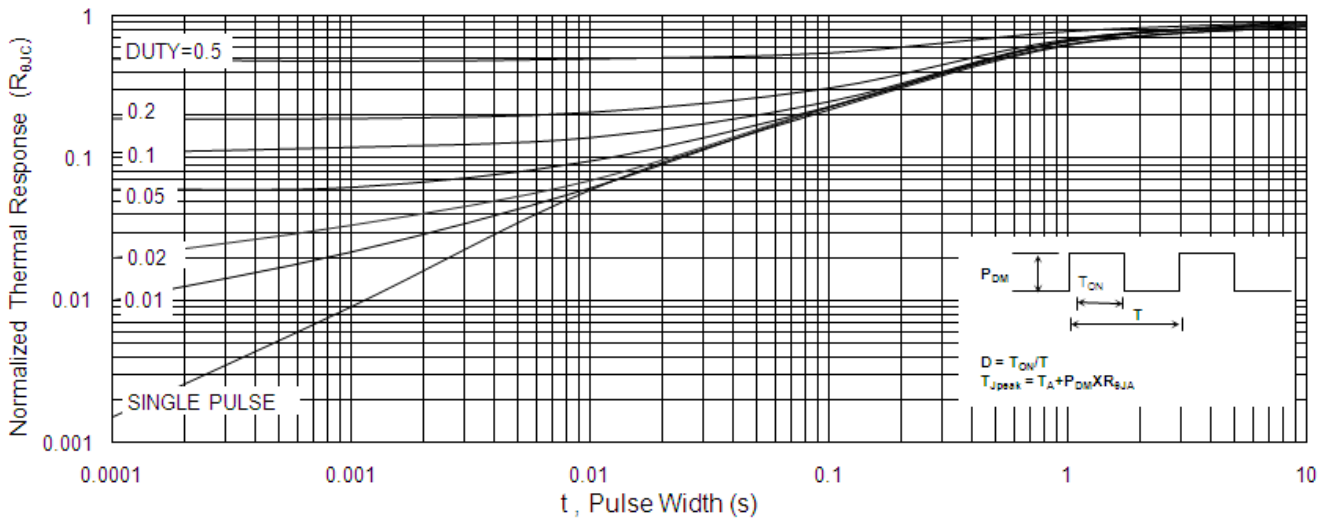
**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**



**Fig.8 Safe Operating Area**



**Fig.10 Switching Time Waveform**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



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