

General Description

The WST05N10L is the highest performance trench N-Ch MOSFET with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

The WST05N10L meet the RoHS and Green Product requirement with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available

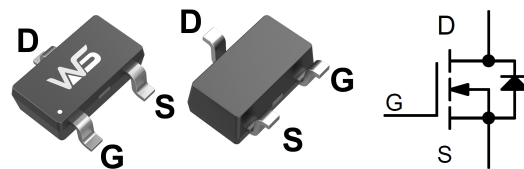
Product Summary

BVDSS	RDSON	ID
100V	120mΩ	3.0A

Applications

- Battery protection
- Uninterruptible power supply
- Load Switch

SOT-23-3L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_c=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	3.0	A
$I_D@T_c=70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	2.1	A
I_{DM}	Pulsed Drain Current	18	A
$P_D@T_c=25^\circ C$	Total Power Dissipation	1.5	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	300	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	150	$^\circ C/W$

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	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =3A	---	120	145	mΩ
		V _{GS} =4.5V, I _D =3A	---	145	170	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.5	1.2	1.7	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	1	uA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	5	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =3A	---	5	---	S
Q _g	Total Gate Charge (10V)	V _{DS} =50V, I _D =3A, V _{GS} =10V	---	20.5	---	nC
Q _{gs}	Gate-Source Charge		---	2.1	---	
Q _{gd}	Gate-Drain Charge		---	3.3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, R _L =19Ω V _{GS} =10V, R _G =3Ω	---	6	---	ns
T _r	Rise Time		---	4	---	
T _{d(off)}	Turn-Off Delay Time		---	20	---	
T _f	Fall Time		---	4	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=1.0MHz	---	650	---	pF
C _{oss}	Output Capacitance		---	25	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	3.0	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V

Notes:

- 1、Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2、Surface Mounted on FR4 Board, t ≤ 10 sec.
- 3、Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4、Guaranteed by design, not subject to productio

Typical Characteristics

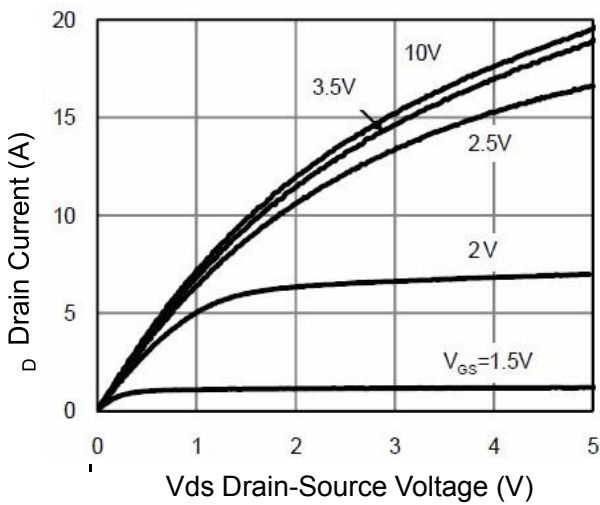


Figure 1 Output Characteristics

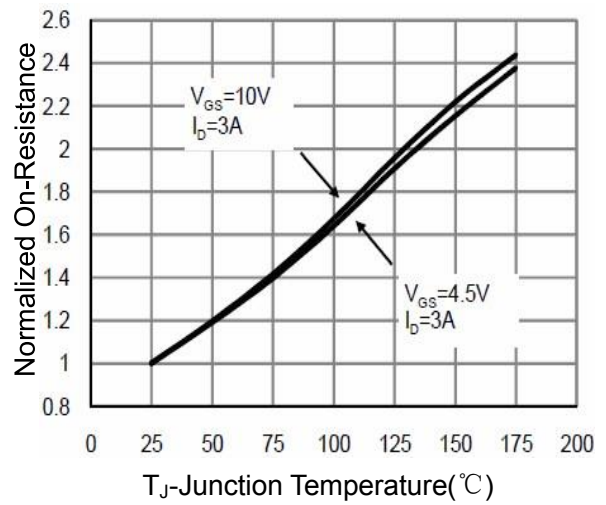


Figure 4 Rdson-Junction Temperature

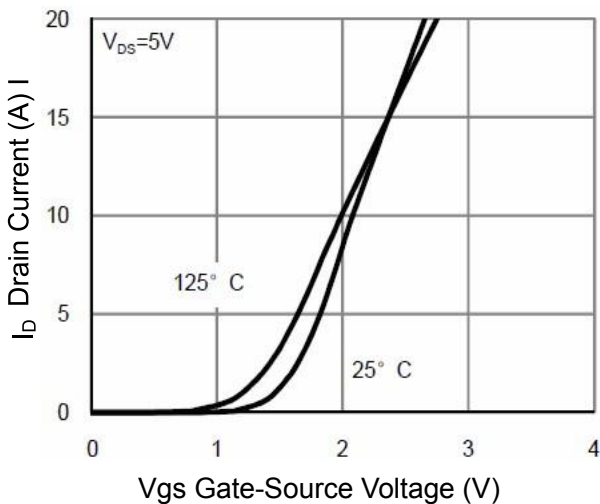


Figure 2 Transfer Characteristics

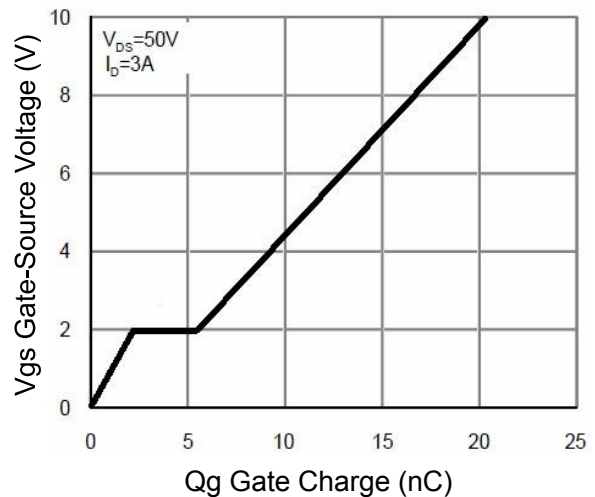


Figure 5 Gate Charge

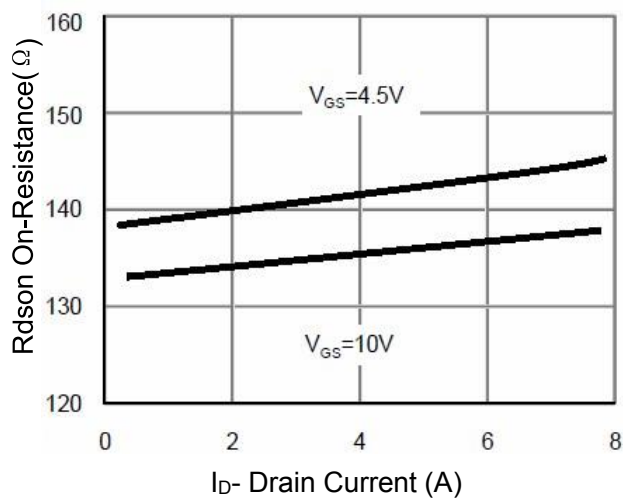


Figure 3 Rdson- Drain Current

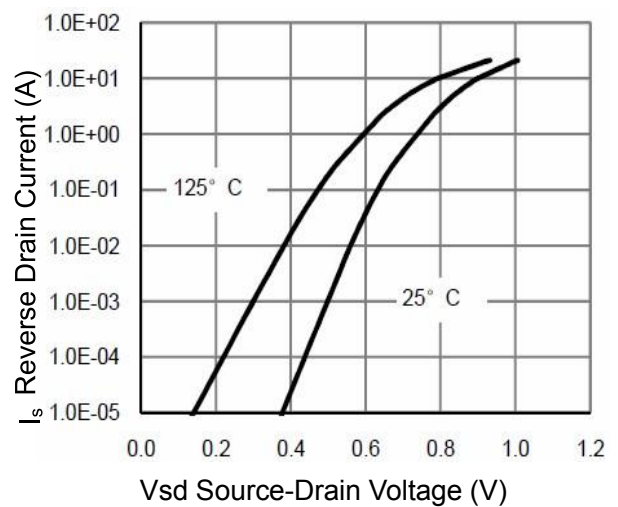
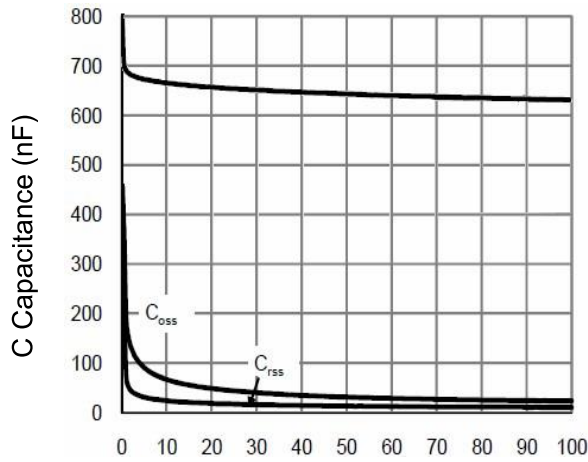
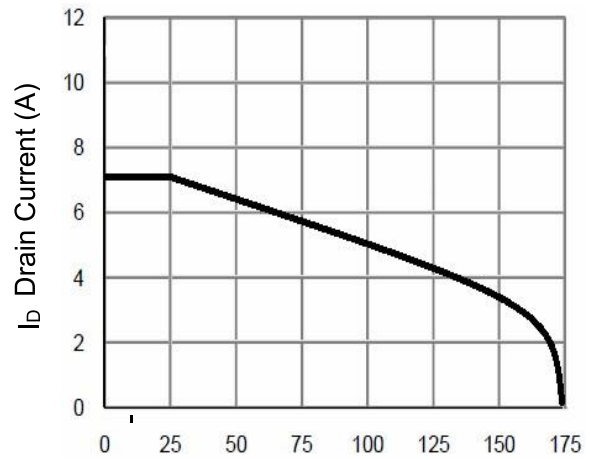


Figure 6 Source- Drain Diode Forward



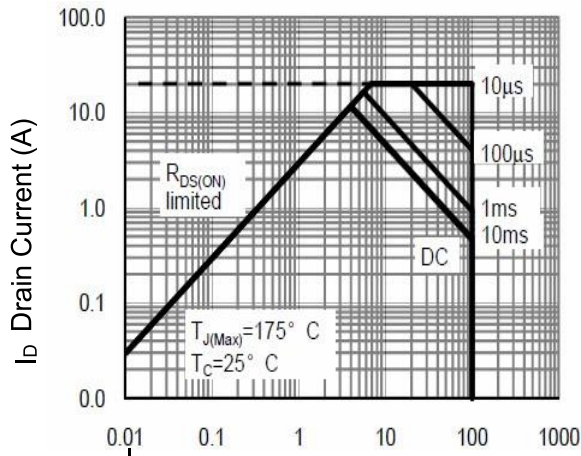
Vds Drain-Source Voltage (V)

Figure 7 Capacitance vs Vds



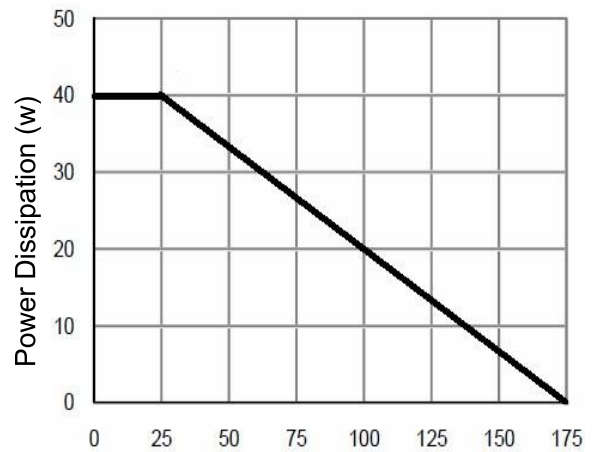
T_J-Junction Temperature(°C)

Figure 9 BV_{DSS} vs Junction Temperature



Vds Drain-Source Voltage (V)

Figure 8 Safe Operation Area



T_J-Junction Temperature(°C)

Figure 10 Power De-rating

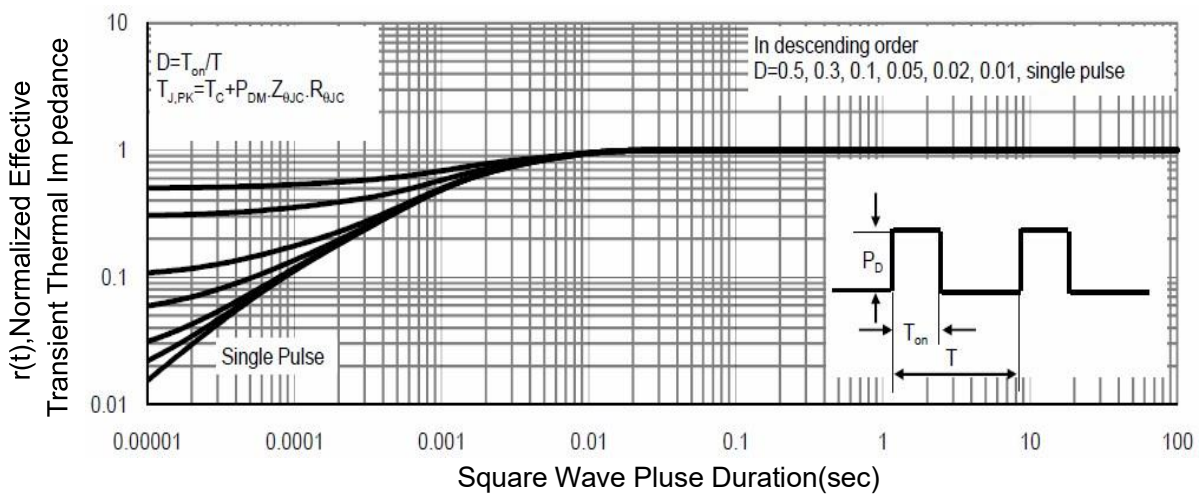


Figure 11 Normalized Maximum Transient Thermal Impedance

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