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

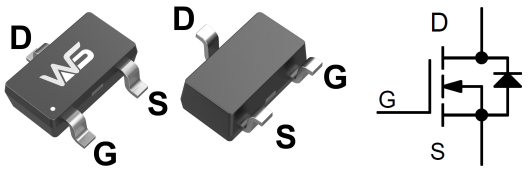
Product Summery

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℃	Continuous Drain Current, V_{GS} @ 10V	3.0	A
I_D@T_c=70℃	Continuous Drain Current, V_{GS} @ 10V	2.1	A
I_{DM}	Pulsed Drain Current	18	A
P_D@T_c=25℃	Total Power Dissipation	1.5	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

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

Electrical Characteristics (T_J=25 ℃, 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℃	---	---	1	uA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	5	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	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℃	---	---	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

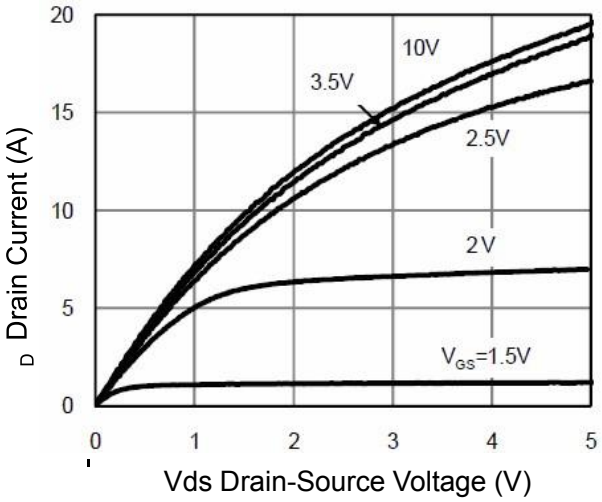


Figure 1 Output Characteristics

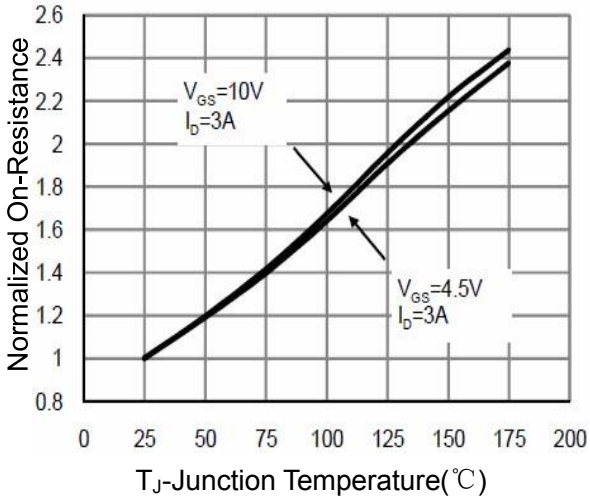


Figure 4 Rdson-Junction Temperature

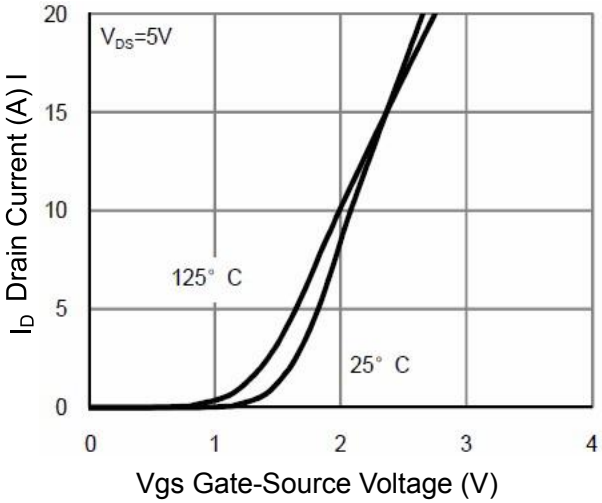


Figure 2 Transfer Characteristics

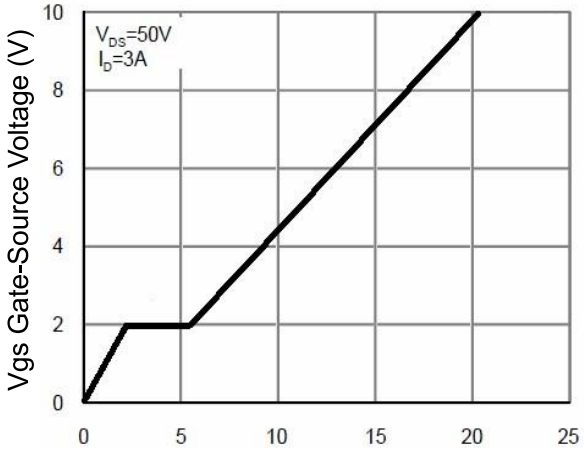


Figure 5 Gate Charge

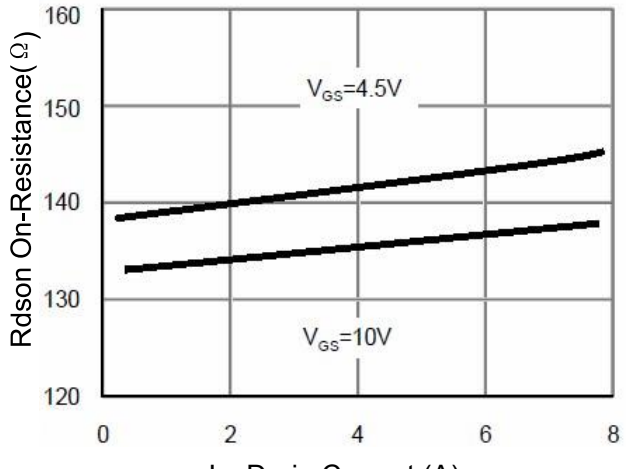


Figure 3 Rdson- Drain Current

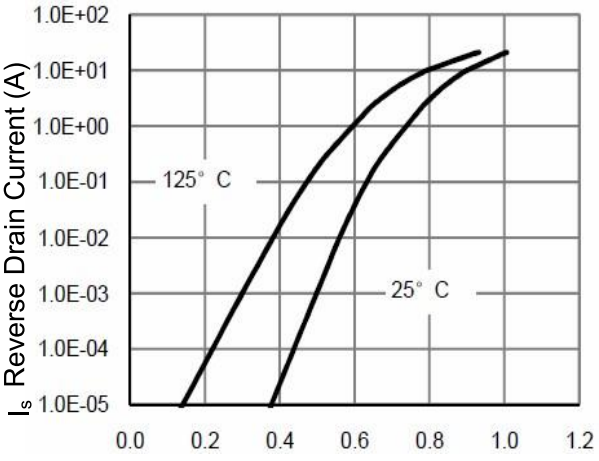


Figure 6 Source- Drain Diode Forward

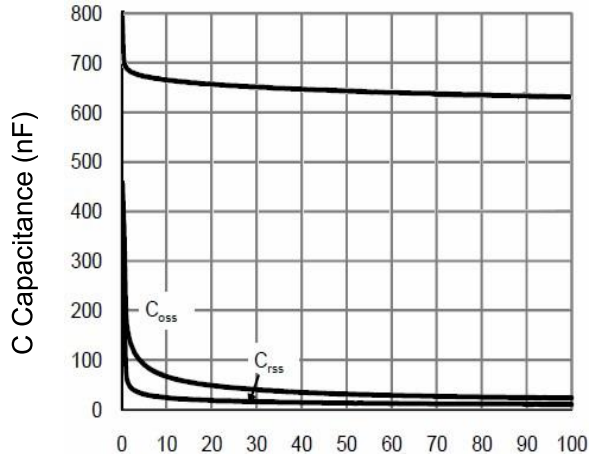


Figure 7 Capacitance vs Vds

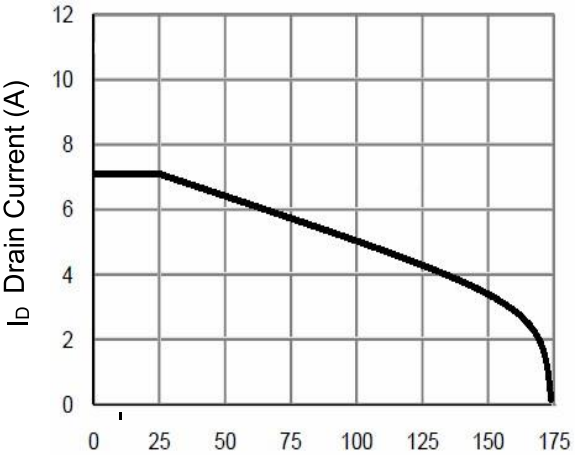


Figure 9 BV_{DSS} vs Junction Temperature

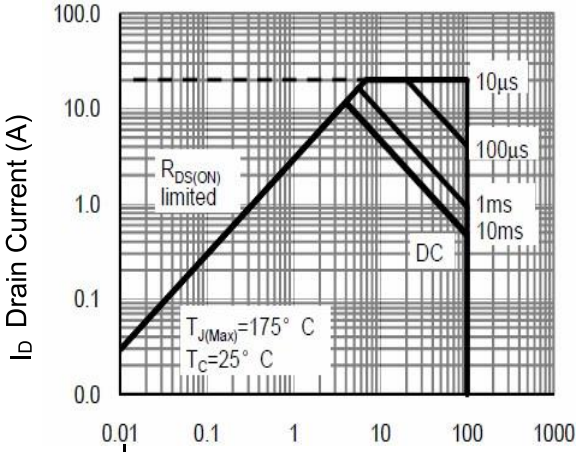


Figure 8 Safe Operation Area

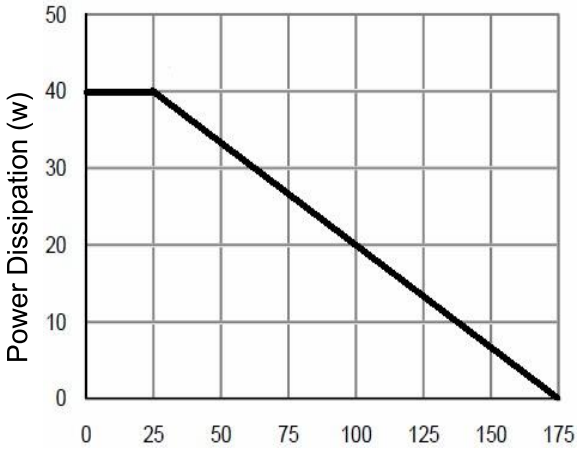


Figure 10 Power De-rating

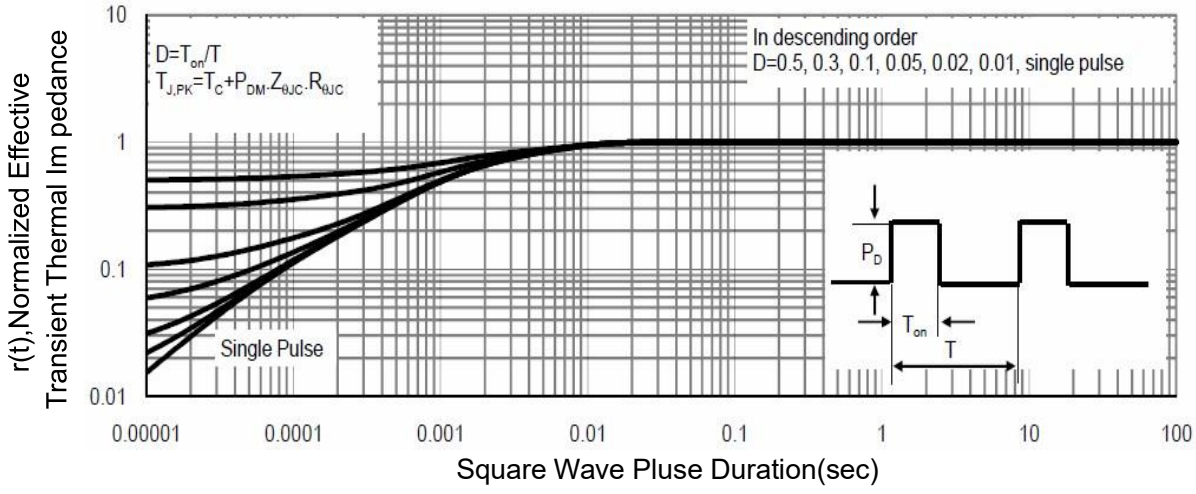


Figure 11 Normalized Maximum Transient Thermal Impedance

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