General Description

The WST05P06 is the highest performance trench P-Ch MOSFET with extreme high cell density , which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications .

The WST05P06 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

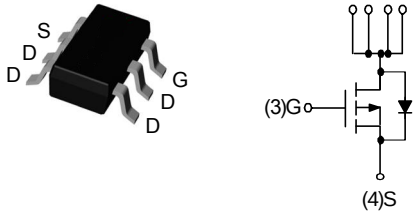
Product Summery

BVDSS	RDSON	ID
-60V	68mΩ	-4.9A

Applications

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

SOT- 23-6L 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_C=25℃	Continuous Drain Current, V_{GS} @ -4.5V[1]	-4.9	A
I_D@T_C=70℃	Continuous Drain Current, V_{GS} @ -4.5V[1]	-3.3	A
I_{DM}	Pulsed Drain Current[2]	-11	A
P_D@T_A=25℃	Total Power Dissipation[3]	1.3	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	125	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	80	℃/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	-60	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.014	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-4.9A	---	68	85	mΩ
		V_{GS}=-4.5V , I_D=-2.5A	---	80	110	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.5	-0.8	-1.2	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3.95	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-48V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-48V , V_{GS}=0V , T_J=55℃	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-2.9A	---	11	---	S
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-30V , V_{GS}=-4.5V , I_D=-2.9A	---	11	15.4	nC
Q_{gs}	Gate-Source Charge		---	1.4	2.1	
Q_{gd}	Gate-Drain Charge		---	2.4	3.2	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-30V , V_{GS}=-4.5V , R_G=3.3Ω, I_D=-2.9A	---	8.5	16	ns
T_r	Rise Time		---	5.8	11	
$T_{d(off)}$	Turn-Off Delay Time		---	36	65	
T_f	Fall Time		---	5.6	11	
C_{iss}	Input Capacitance	V_{DS}=-30V , V_{GS}=0V , f=1MHz	---	430	560	pF
C_{oss}	Output Capacitance		---	41	66	
C_{rss}	Reverse Transfer Capacitance		---	25	35	

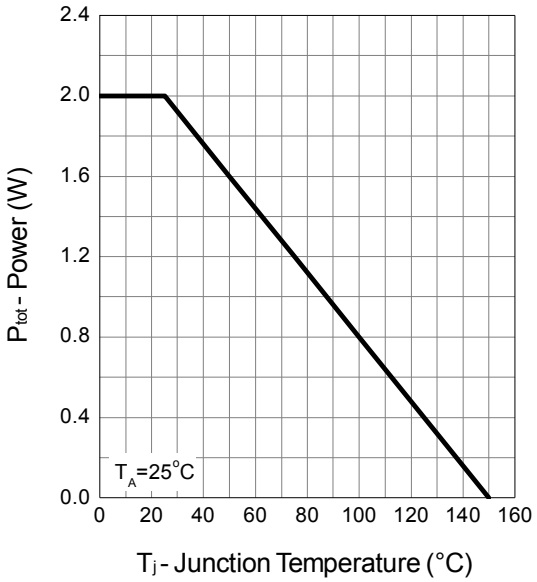
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	-4.9	A
I_{SM}	Pulsed Source Current[2,4]		---	---	-11	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1	V
t_{rr}	Reverse Recovery Time	IF=-2.9A , dI/dt=100A/μs , T_J=25℃	---	20	---	nS
Q_{rr}	Reverse Recovery Charge		---	19	---	nC

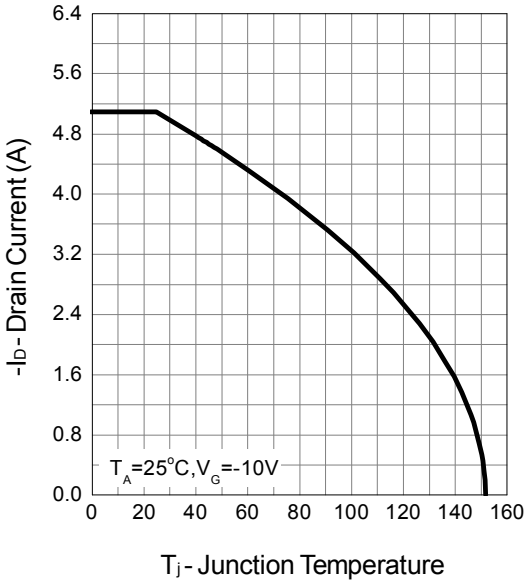
Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper,t<10sec.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The power dissipation is limited by 150℃ junction temperature
4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

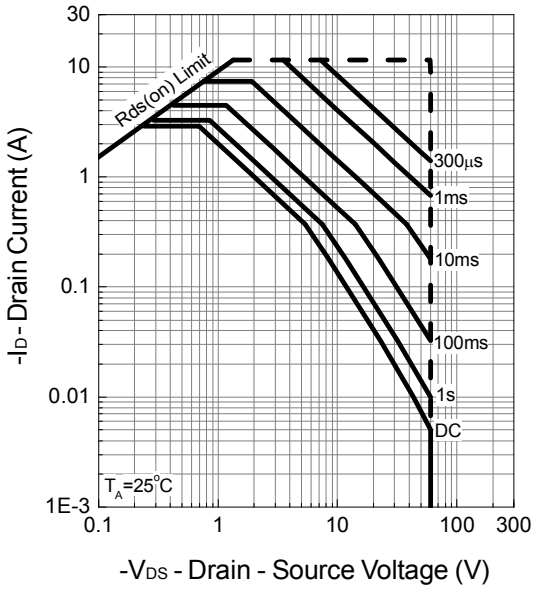
Power Dissipation



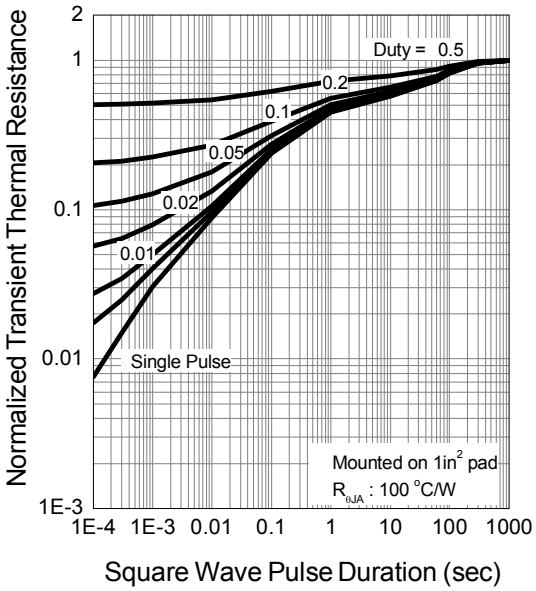
Drain Current



Safe Operation Area

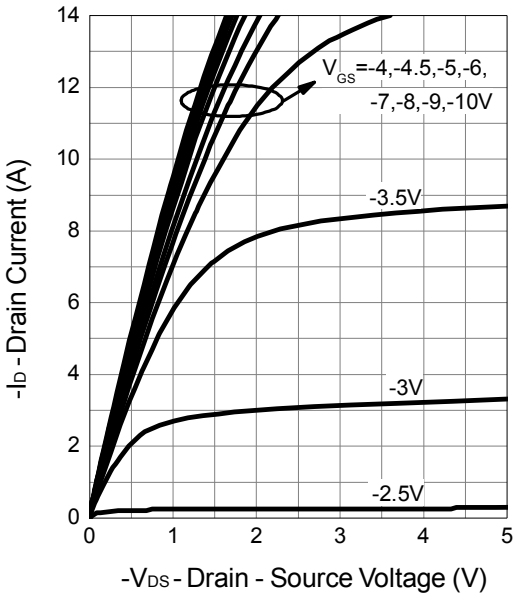


Thermal Transient Impedance

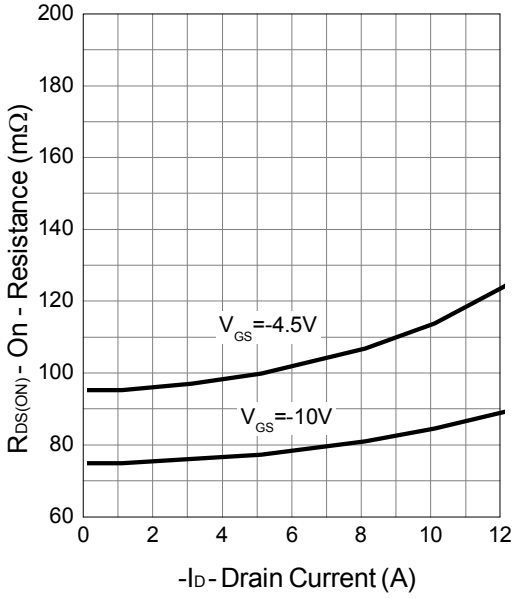


Typical Characteristics

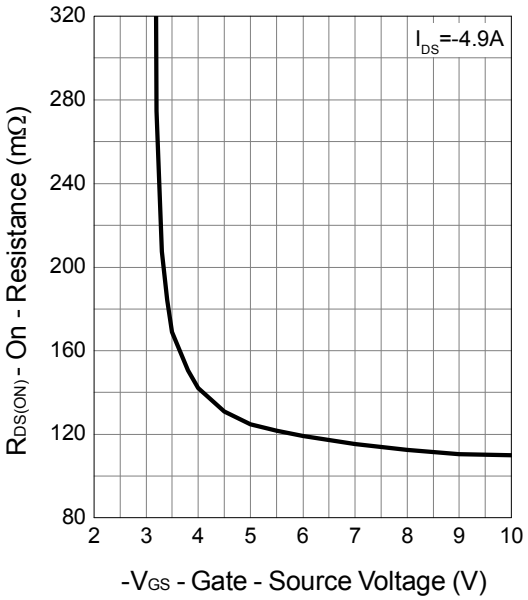
Output Characteristics



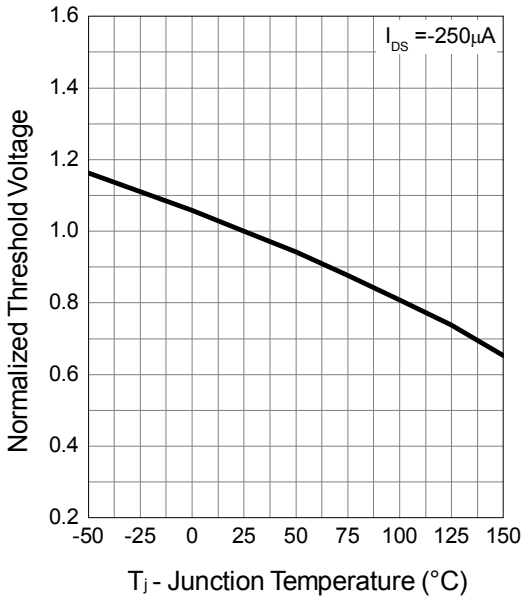
Drain-Source On Resistance



Gate-Source On Resistance

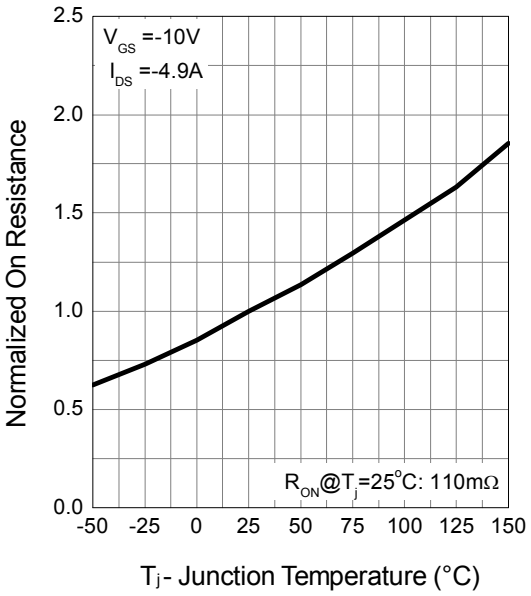


Gate Threshold Voltage

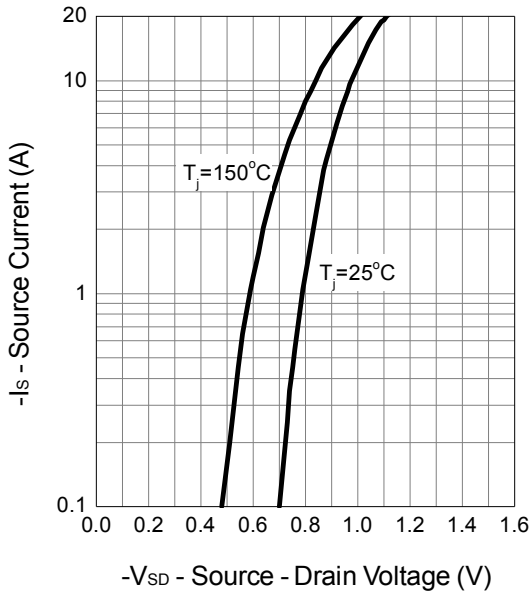


Typical Characteristics

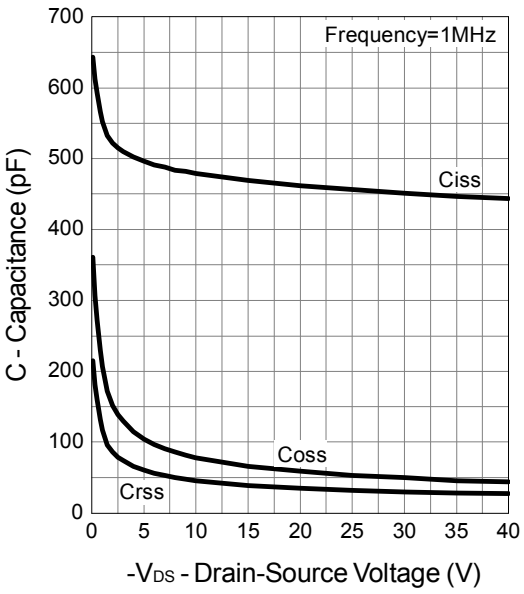
Drain-Source On Resistance



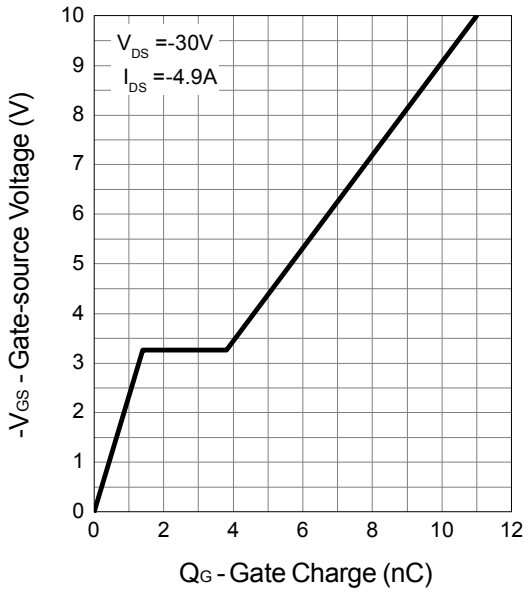
Source-Drain Diode Forward



Capacitance

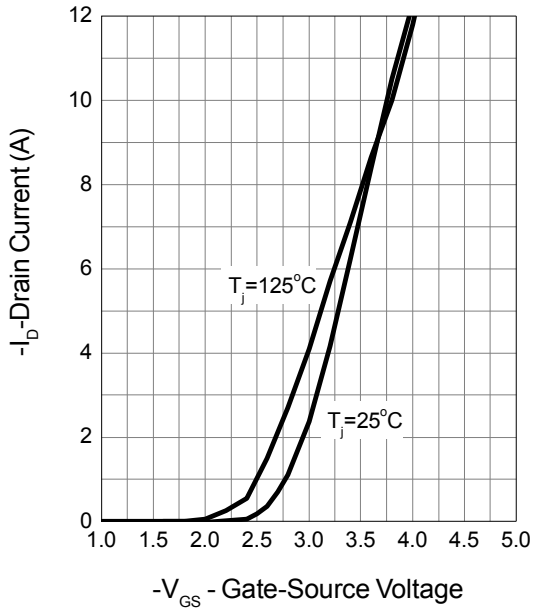


Gate Charge



Typical Characteristics

Transfer Characteristics



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