General Description

The WST2004 is the highest performance trench N-Ch MOSFET with extreme high cell density , which provide excellent R_{DSON} and gate charge for most of the small power switching and load switch applications.

The WST2004 meet the RoHS and Green Product requirement with full function reliability approved.

Product Summery

BV_{DSS}	R_{DSON}	I_D
20V	240mΩ	0.6A

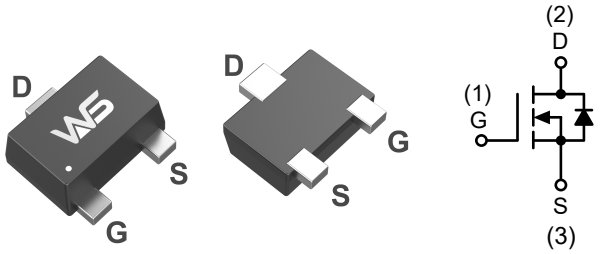
Applications

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Features

- Lead Free Product is Acquired
- Surface Mount Package
- N-Channel Switch with Low R_{DS}(on)
- Operated at Low Logic Level Gate Drive

SOT-723-3L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	600	mA
I_{DM}	Pulsed Drain Current[2]	1.2	A
P_D@T_A=25℃	Total Power Dissipation[3]	0.150	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient (note 1)	823	℃/W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_L	Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	260	℃

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	20	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.05	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=0.4A	---	240	450	mΩ
		V_{GS}=2.5V , I_D=0.3A	---	280	765	
		V_{GS}=1.8V , I_D=0.2A	---	410	850	mΩ
		V_{GS}=1.5V , I_D=0.1A	---	450	950	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.35	0.6	1.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-3.7	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±8V , V_{DS}=0V	---	---	±10	uA
gfs	Forward Transconductance	V_{DS}=5V , I_D=0.1A	---	1.5	---	S
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=6Ω, I_D=0.1A	---	2.9	---	ns
T_r	Rise Time		---	5.8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	9	---	
T_f	Fall Time		---	18	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	88	160	pF
C_{oss}	Output Capacitance		---	15	30	
C_{rss}	Reverse Transfer Capacitance		---	10	22	

Diode Characteristics

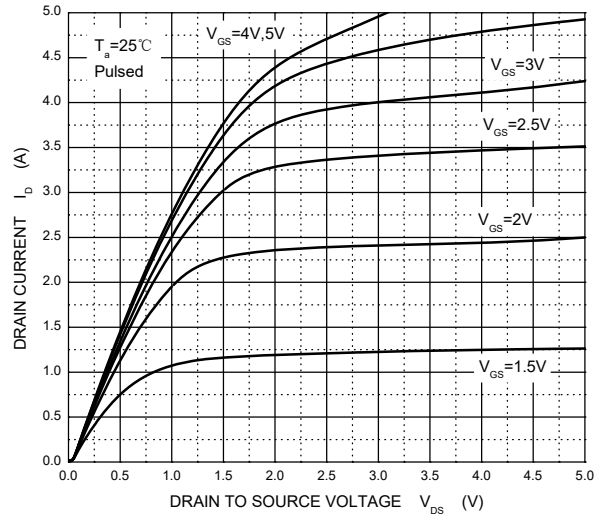
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	0.1	A
I_{SM}	Pulsed Source Current[2,4]		---	---	0.5	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=0.2A , T_J=25℃	---	---	1.2	V

Notes :

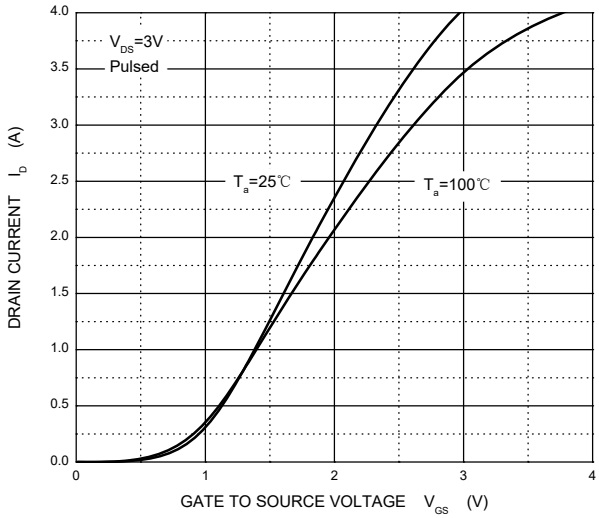
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

Typical Performance Characteristics

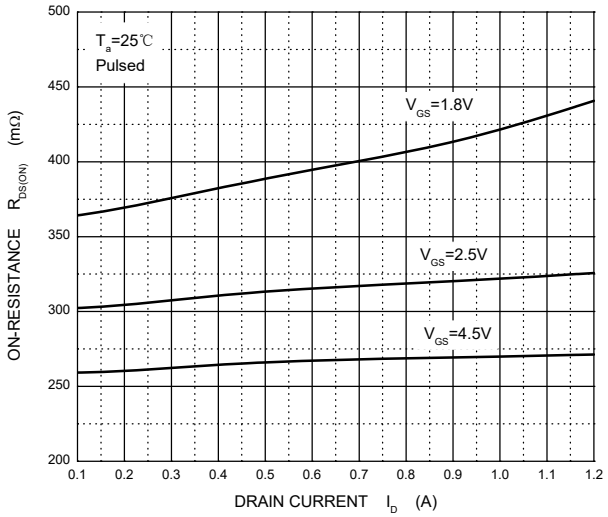
Output Characteristics



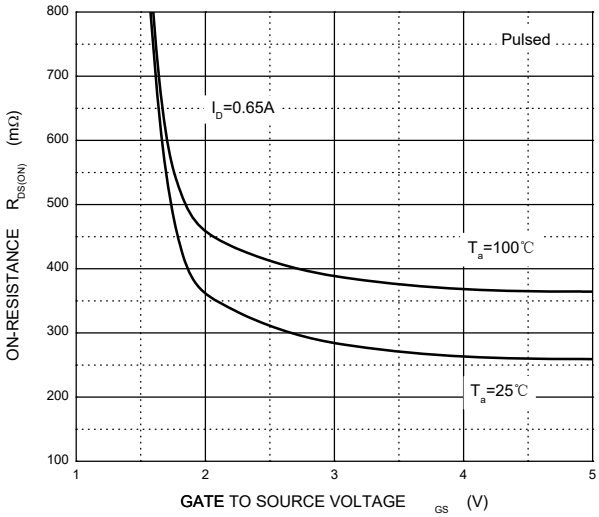
Transfer Characteristics



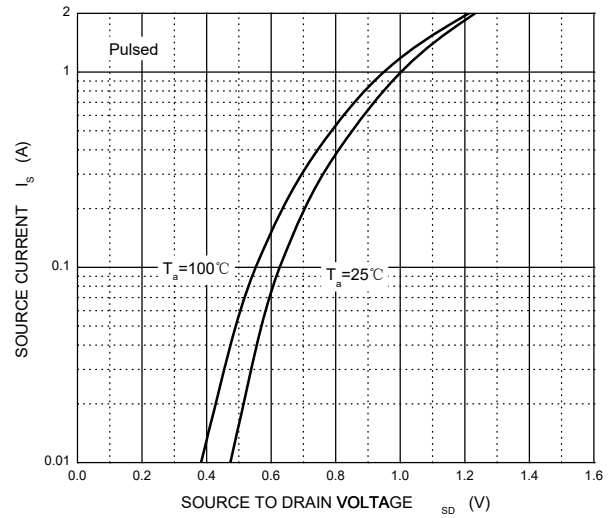
$R_{DS(ON)}$ —— I_D



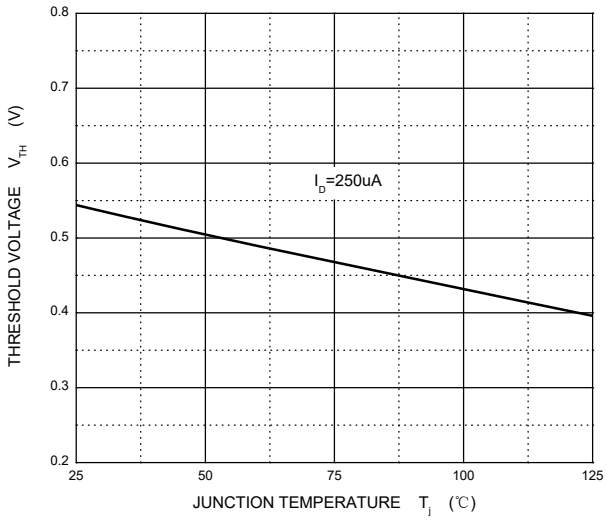
$R_{DS(ON)}$ —— V_{GS}



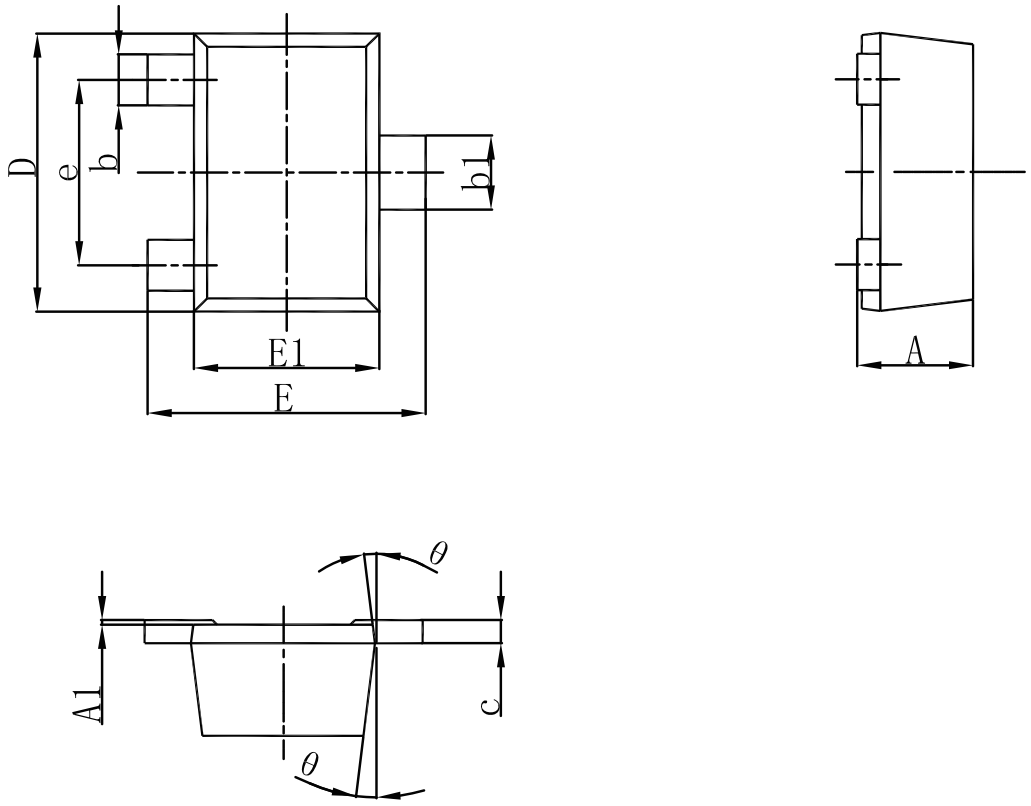
I_S —— V_{SD}



Threshold Voltage



Packaging information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

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