

## General Description

The WST2337A is the highest performance trench P-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 WST2337A meet the RoHS and Green Product requirement with full function reliability approved.

## Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent C<sub>dv/dt</sub> effect decline
- Green Device Available

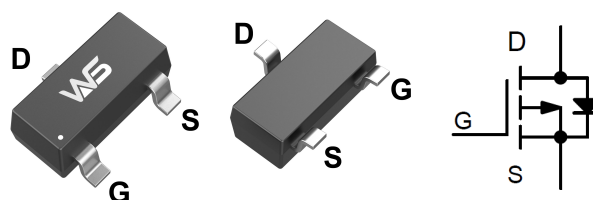
## Product Summary

BVDSS	R <sub>DS(on)</sub>	I <sub>D</sub>
-15V	30mΩ	-4.8A

## Applications

- High Frequency Point-of-Load Synchronous Small power switching for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

## SOT-23 Pin Configuration



## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	-15	V
V <sub>GS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub> @T <sub>c</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup>	-4.8	A
I <sub>D</sub> @T <sub>c</sub> =70°C	Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup>	-3.4	A
I <sub>DM</sub>	Pulsed Drain Current	-24	A
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>3</sup>	1.4	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>	---	125	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-Case <sup>1</sup>	---	80	°C/W

**Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-15	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-4.1A$	---	30	48	m $\Omega$
		$V_{GS}=-2.5V, I_D=-3A$	---	45	65	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.45	-0.7	-1.2	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=-12V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	$\pm 100$	nA
$Q_g$	Total Gate Charge	$V_{DS}=-4V, I_D=-4.1A, V_{GS}=-4.5V$	---	7.8	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.2	---	
$Q_{gd}$	Gate-Drain Charge		---	1.6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-4V, I_D=-3.3A, R_L=-1.2\Omega, V_{GEN}=-4.5V, R_g=1\Omega$	---	12	---	ns
$T_r$	Rise Time		---	35	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
$T_f$	Fall Time		---	10	---	
$C_{ISS}$	Input Capacitance	$V_{DS}=-4V, V_{GS}=0V, F=1.0\text{MHz}$	---	738	1500	pF
$C_{OSS}$	Output Capacitance		---	280	---	
$C_{RSS}$	Reverse Transfer Capacitance		---	190	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	-4.1	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-1.6A, T_J=25^\circ\text{C}$	---	---	-1.2	V

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

Typical Characteristics

Figure 1: Switching Test Circuit

Figure 2: Switching Waveforms

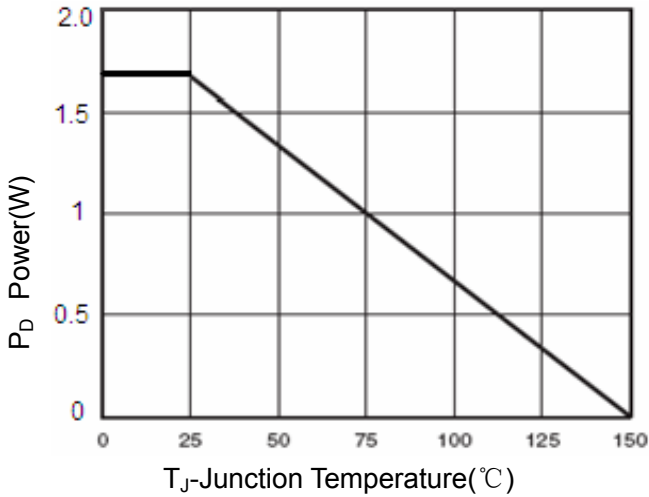


Figure 3 Power Dissipation

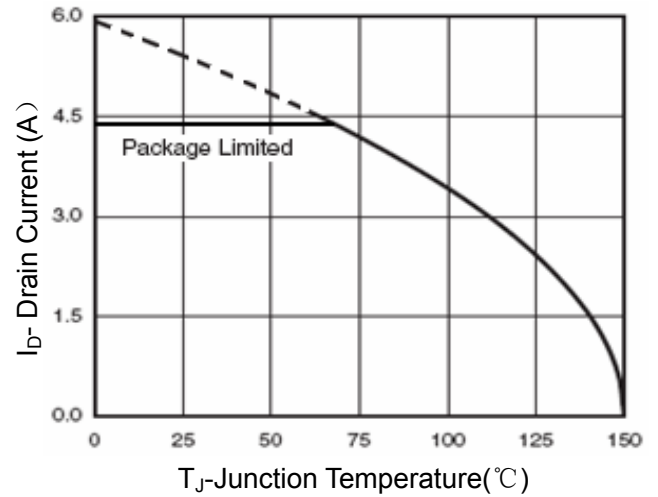


Figure 4 Drain Current

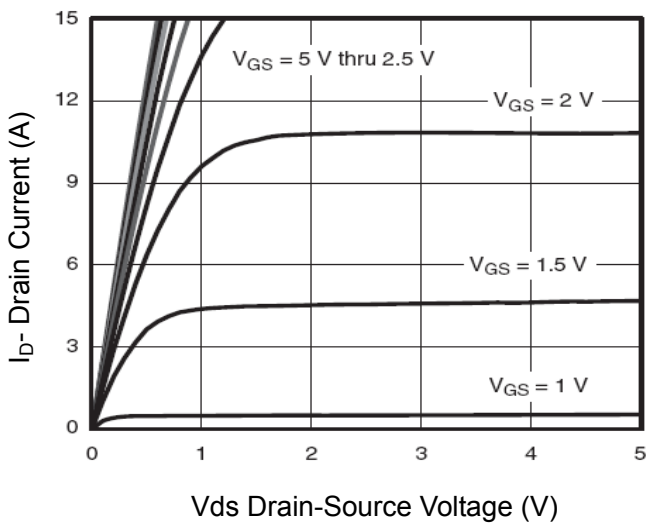


Figure 5 Output Characteristics

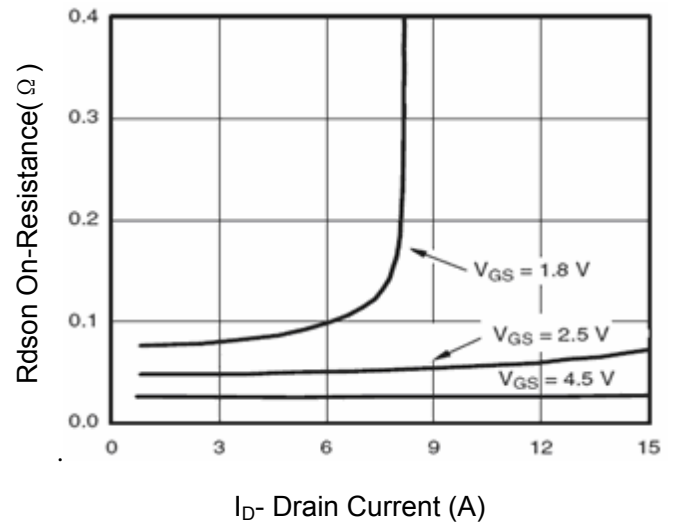
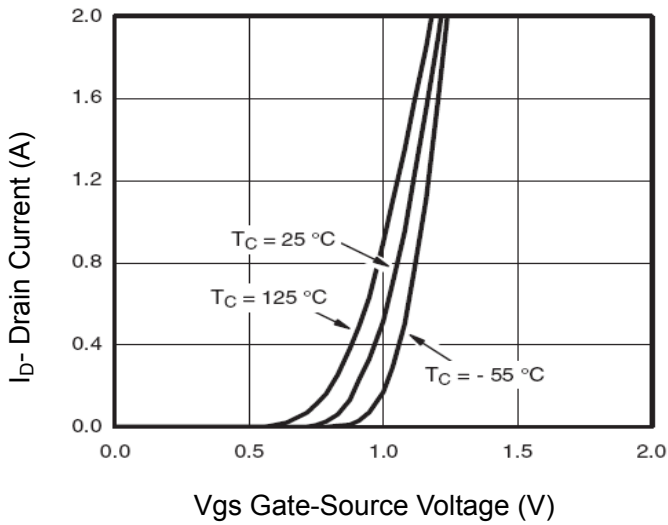
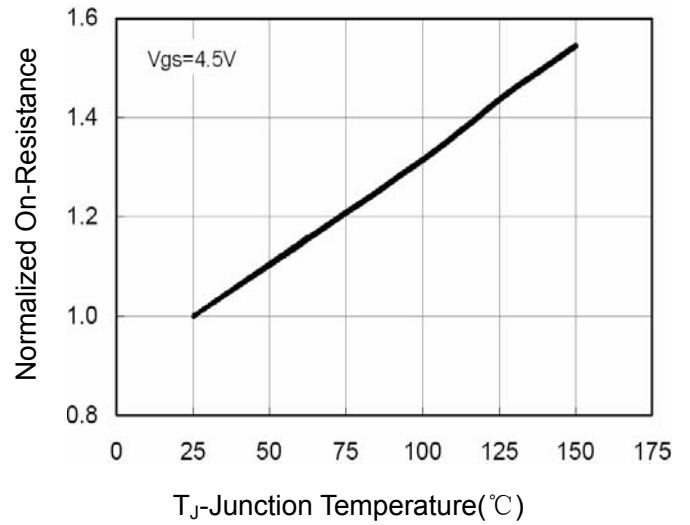


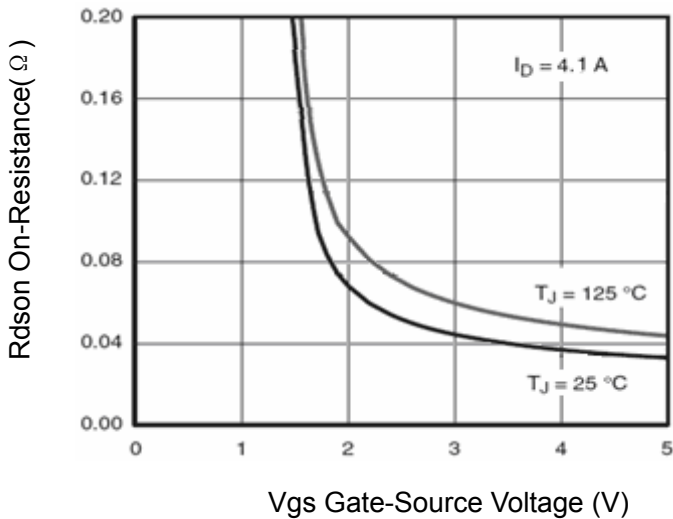
Figure 6 Drain-Source On-Resistance



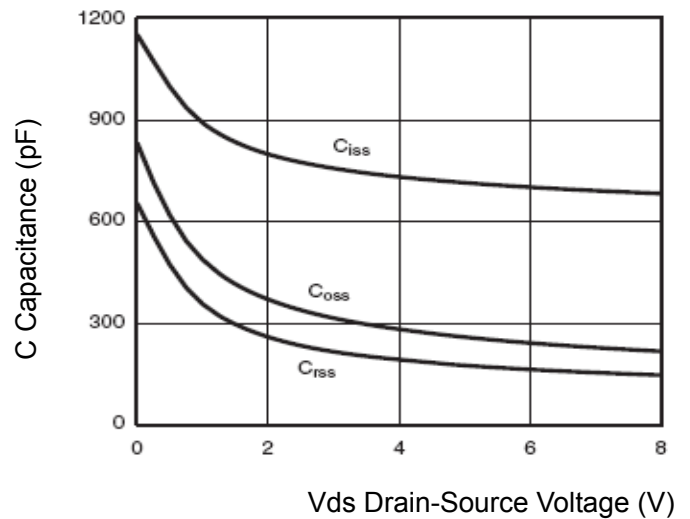
**Figure 7 Transfer Characteristics**



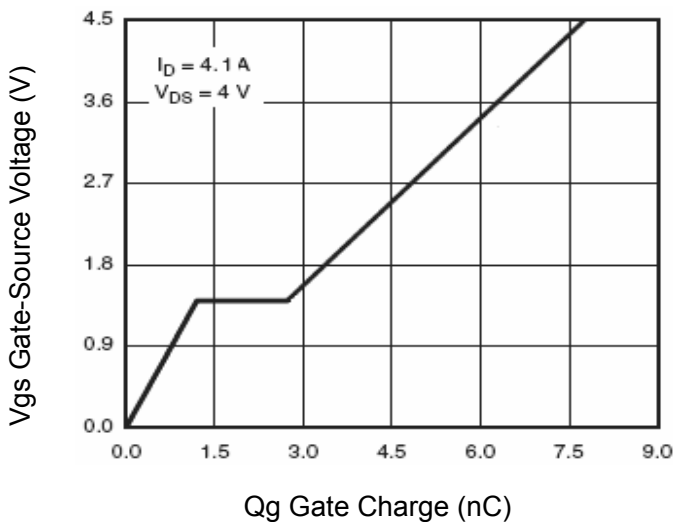
**Figure 8 Drain-Source On-Resistance**



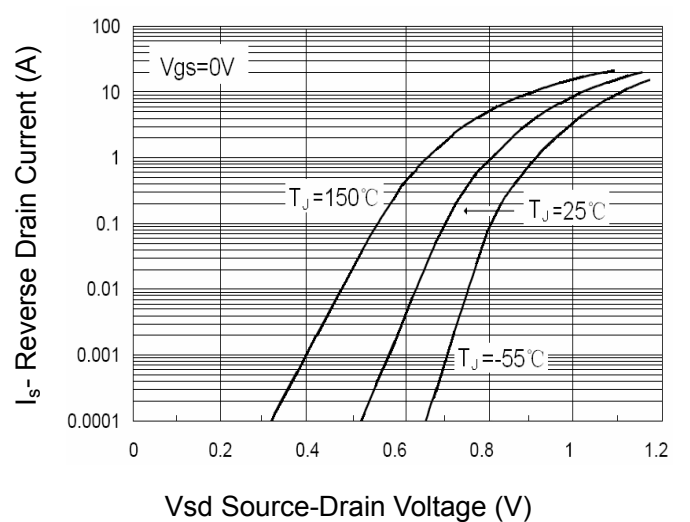
**Figure 9 Rdson vs Vgs**



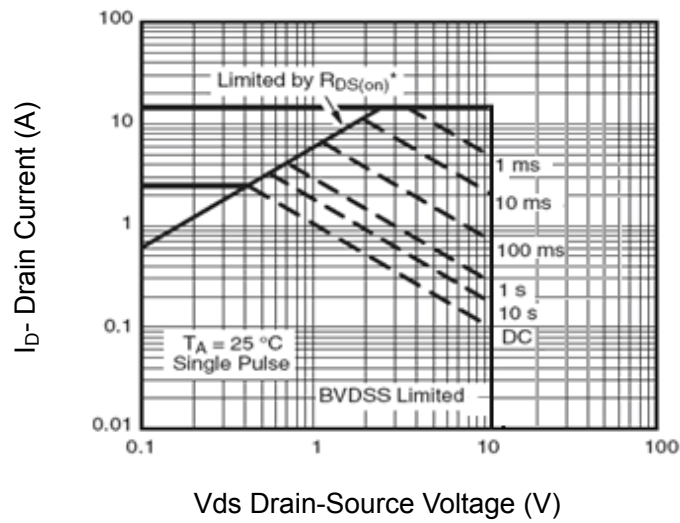
**Figure 10 Capacitance vs Vds**



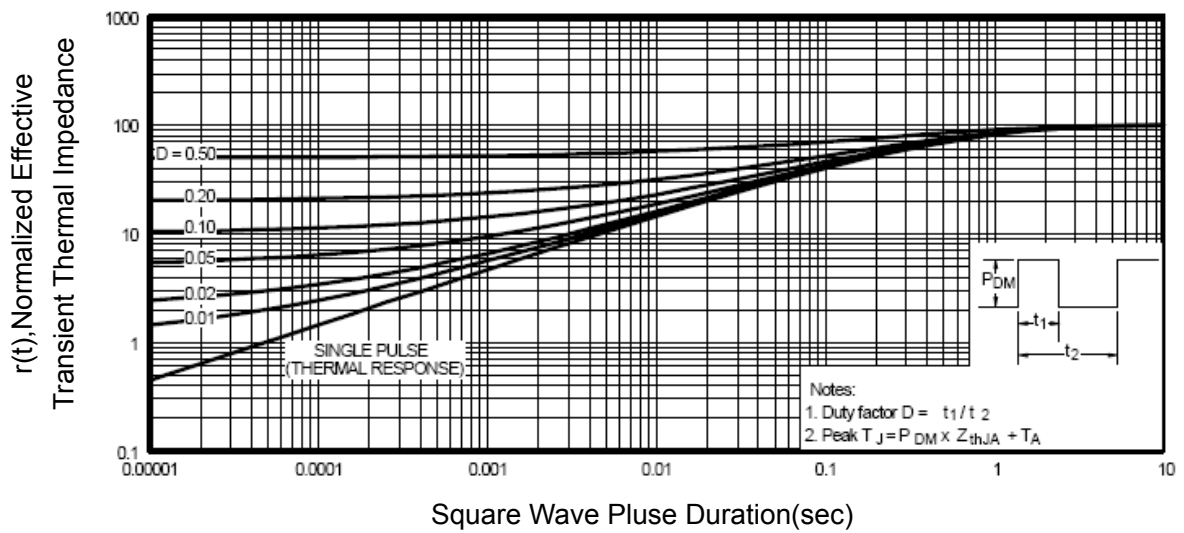
**Figure 11 Gate Charge**



**Figure 12 Source-Drain Diode Forward**



Vds Drain-Source Voltage (V)  
**Figure 13 Safe Operation Area**



Square Wave Pulse Duration(sec)  
**Figure 14 Normalized Maximum Transient Thermal Impedance**



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