

**N-Ch 100V Fast Switching MOSFETs**

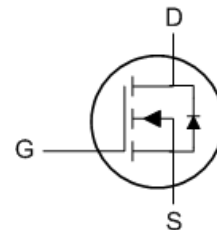
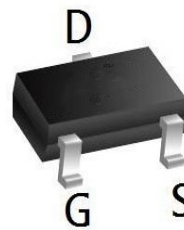
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench technology


**Product Summary**

BVDSS	RDSON	ID
100V	91 mΩ	5 A

**Description**

The XXW5N10 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications. The XXW5N10 meet the RoHS and Green Product requirement with full function reliability approved.

**SOT23 Pin Configuration**

**Absolute Maximum Rating (TA=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	5	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	13.2	A
Power Dissipation	$P_D$	1.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C

**Thermal Characteristics**

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient <sup>2</sup>	$R_{\theta JA}$	83.3	°C/W

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	<b>V<sub>(BR)DSS</sub></b>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	100	-	-	V
Gate-body Leakage Current	<b>I<sub>GSS</sub></b>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	<b>I<sub>DSS</sub></b>	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate Threshold Voltage	<b>V<sub>GS(th)</sub></b>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.65	2.5	V
Drain-Source On-state Resistance <sup>3</sup>	<b>R<sub>DS(on)</sub></b>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A	-	91	130	mΩ
		V <sub>GS</sub> = 6V, I <sub>D</sub> = 2A	-	105	160	
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1A	-	120	190	
<b>Dynamic Characteristics<sup>4</sup></b>						
Input Capacitance	<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 50V, f = 1MHz	-	200	-	pF
Output Capacitance	<b>C<sub>oss</sub></b>		-	35	-	
Reverse Transfer Capacitance	<b>C<sub>rss</sub></b>		-	2.5	-	
<b>Switching Characteristics<sup>4</sup></b>						
Total Gate Charge	<b>Q<sub>g</sub></b>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A	-	4	-	nC
Gate-Source Charge	<b>Q<sub>gs</sub></b>		-	0.6	-	
Gate-Drain Charge	<b>Q<sub>gd</sub></b>		-	1.4	-	
Turn-on Delay Time	<b>t<sub>d(on)</sub></b>	V <sub>DD</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A, R <sub>G</sub> = 3Ω	-	12.5	-	ns
Turn-on Rise Time	<b>t<sub>r</sub></b>		-	19.5	-	
Turn-off Delay Time	<b>t<sub>d(off)</sub></b>		-	20	-	
Turn-off Fall Time	<b>t<sub>f</sub></b>		-	29	-	
<b>Source-Drain Diode characteristics</b>						
Body Diode Voltage <sup>3</sup>	<b>V<sub>SD</sub></b>	I <sub>S</sub> = 3A, V <sub>GS</sub> = 0V	-	-	1.2	V
Continuous Source Current	<b>I<sub>S</sub></b>		-	-	4.5	A

**Notes:**

1. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub> = 150°C.
2. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
4. This value is guaranteed by design hence it is not included in the production test.

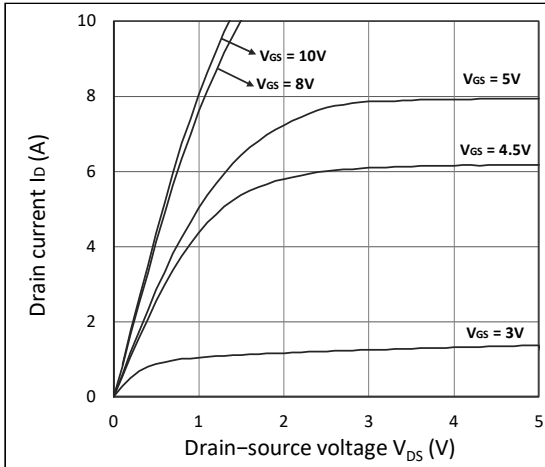
**Typical Characteristics**


Figure 1. Output Characteristics

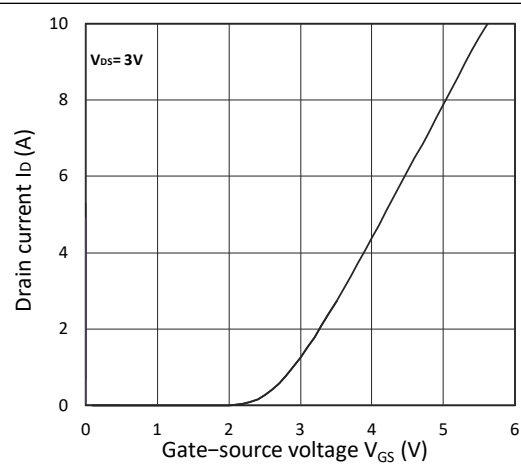


Figure 2. Transfer Characteristics

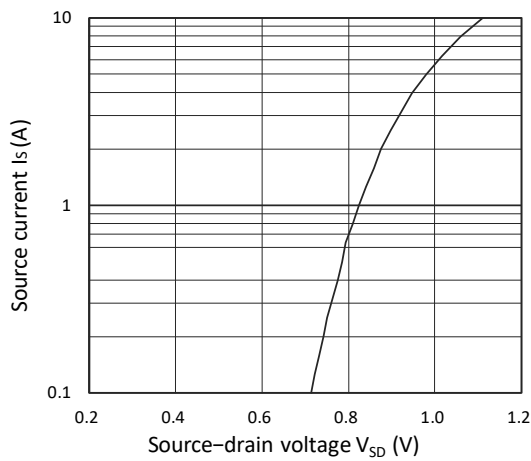
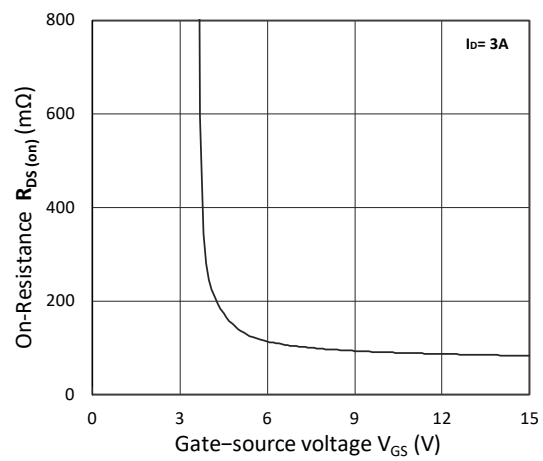
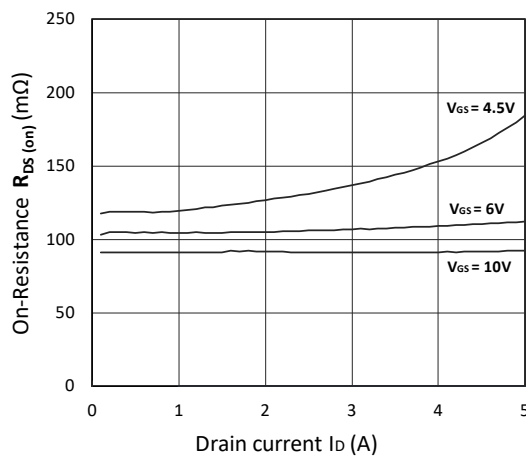
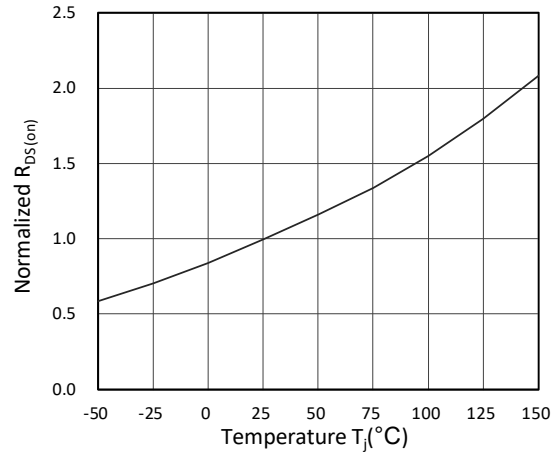
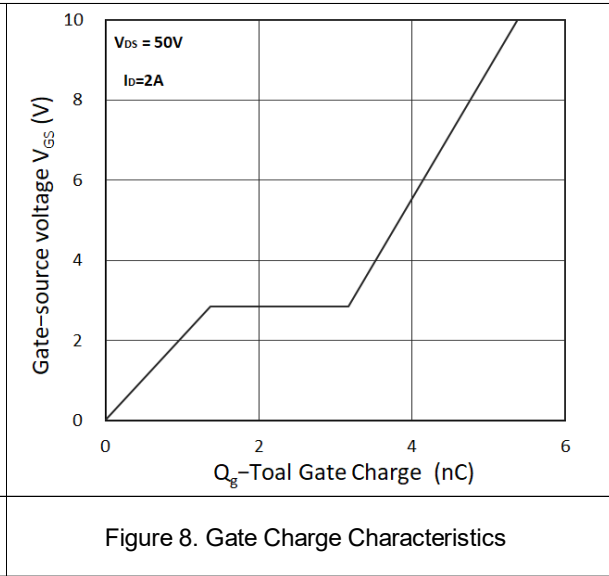
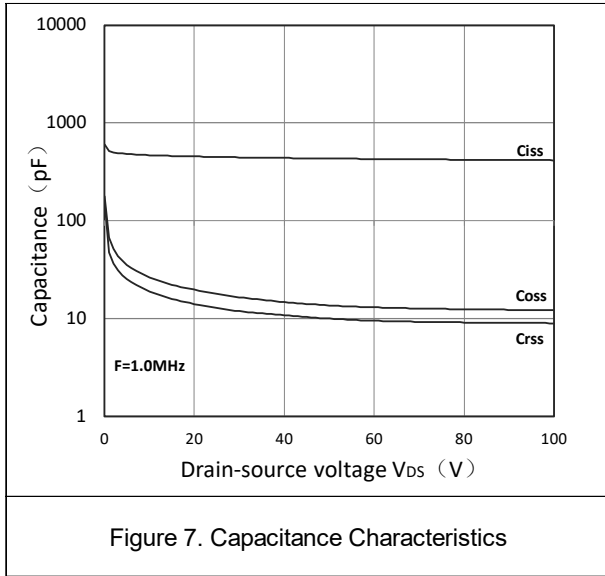
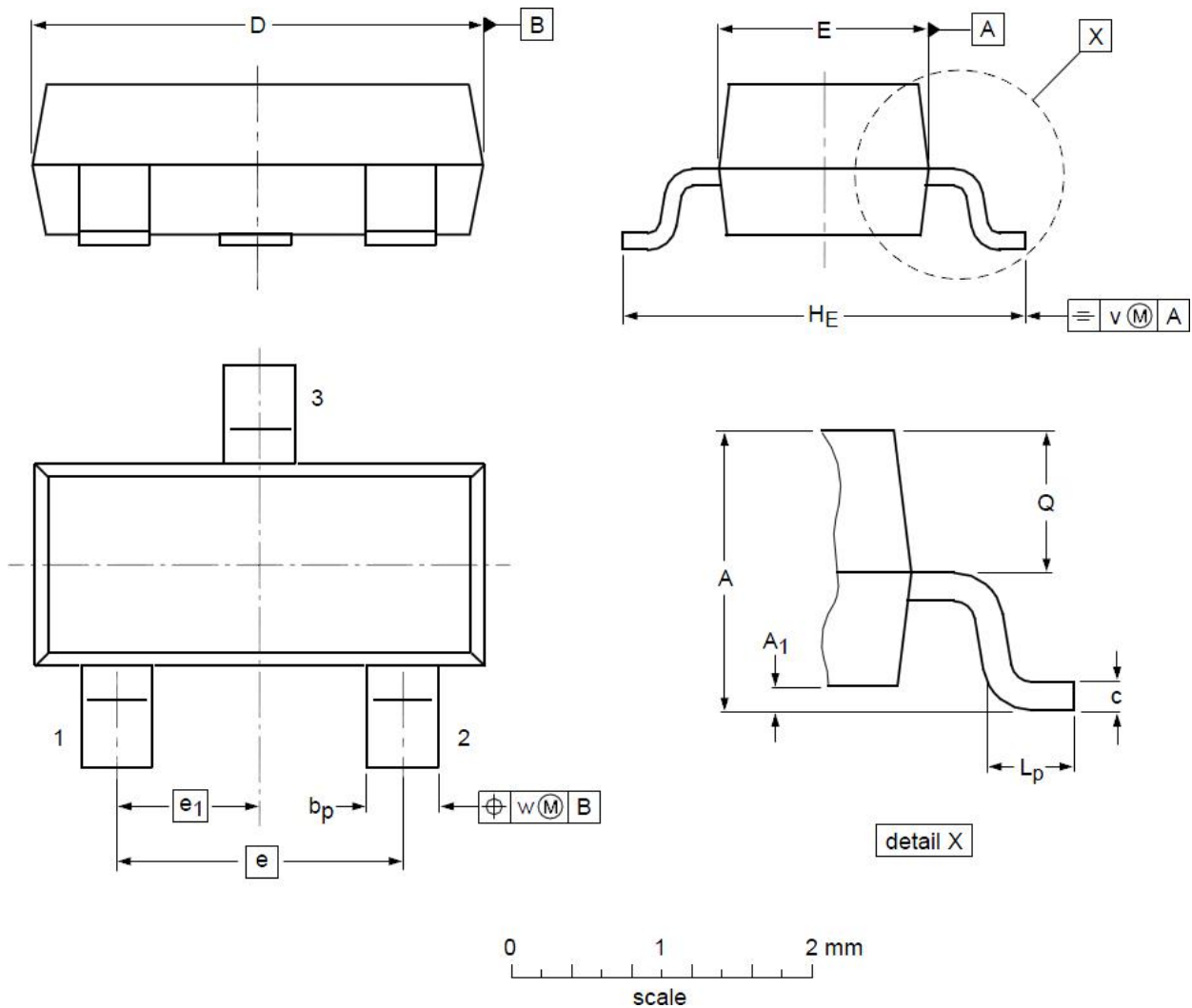


Figure 3. Forward Characteristics of Reverse


 Figure 4.  $R_{DS(ON)}$  vs.  $V_{GS}$ 

 Figure 5.  $R_{DS(ON)}$  vs.  $I_D$ 

 Figure 6. Normalized  $R_{DS(ON)}$  vs. Temperature

**N-Ch 100V Fast Switching MOSFETs**



**SOT23 Mechanical Data**

**DIMENSIONS ( unit : mm )**

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
<b>A</b>	0.90	1.01	1.15	<b>A<sub>1</sub></b>	0.01	0.05	0.10
<b>b<sub>p</sub></b>	0.30	0.42	0.50	<b>c</b>	0.08	0.13	0.15
<b>D</b>	2.80	2.92	3.00	<b>E</b>	1.20	1.33	1.40
<b>e</b>	--	1.90	--	<b>e<sub>1</sub></b>	--	0.95	--
<b>H<sub>E</sub></b>	2.25	2.40	2.55	<b>L<sub>p</sub></b>	0.30	0.42	0.50
<b>Q</b>	0.45	0.49	0.55	<b>v</b>	--	0.20	--
<b>w</b>	--	0.10	--				