



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

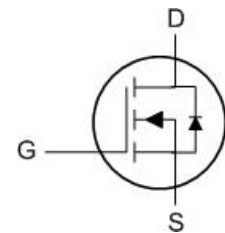
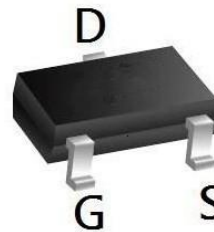
Product Summary

BVDSS	R _{DS(on)}	I _D
60V	41mΩ	5 A

Description

The XXW5N06 is the high cell density trenched N-ch MOSFETs, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

The XXW5N06 meet the RoHS and Green Product

SOT23 Pin Configuration

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	60	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C = 25°C	5
		T _C = 100°C	3.8
I _{DM}	Pulsed Drain Current ^{note1}	30	A
P _D	Power Dissipation	T _C = 25°C	3
R _{θJC}	Thermal Resistance, Junction to Case	73	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°C

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

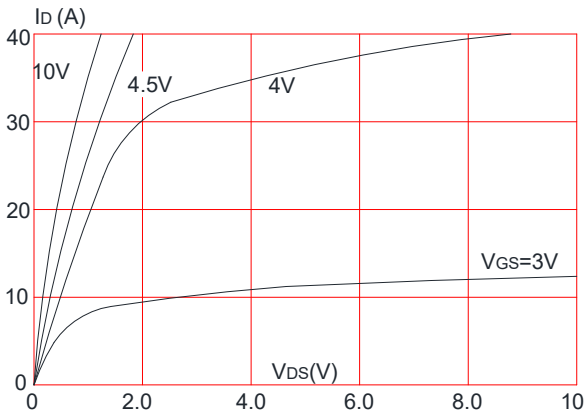
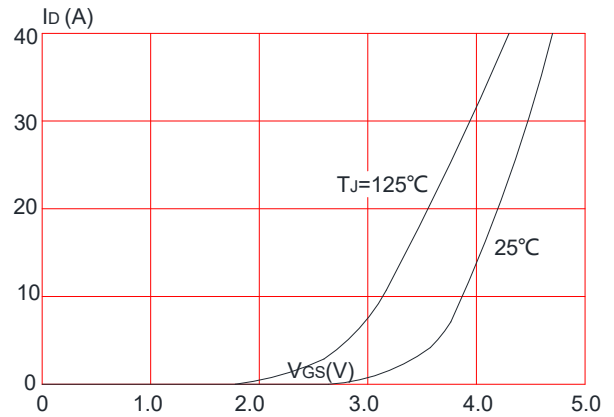
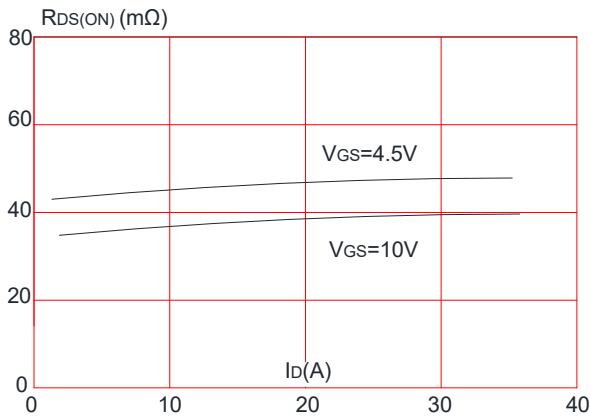
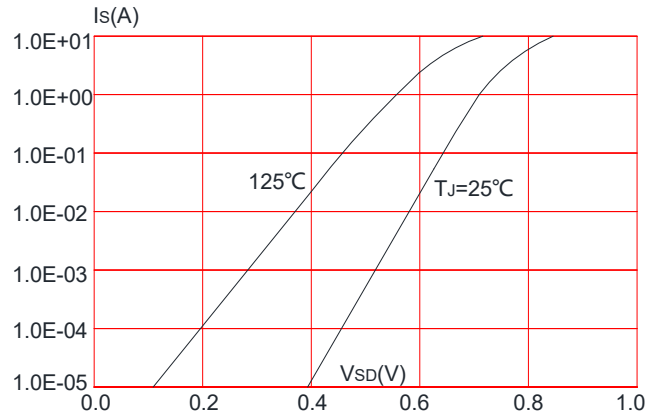
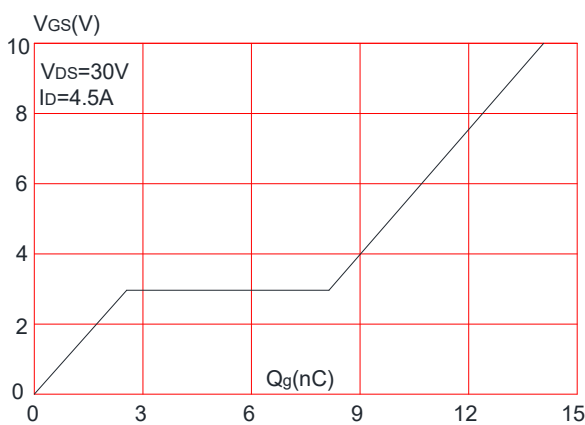
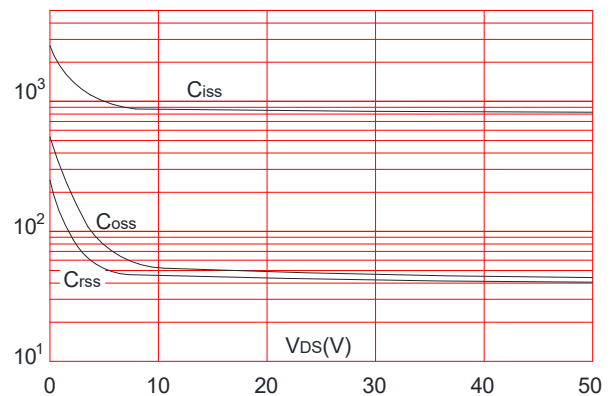
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V,$	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=15A$	-	41	49	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	45	63	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	825	-	pF
C_{oss}	Output Capacitance		-	49	-	pF
C_{rss}	Reverse Transfer Capacitance		-	41	-	pF
Q_g	Total Gate Charge	$V_{DS}=30V, I_D=4.5A,$ $V_{GS}=10V$	-	14	-	nC
Q_{gs}	Gate-Source Charge		-	2.9	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	5.2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=30V, I_D=2A,$ $R_L=6.7\Omega, R_G=3\Omega,$ $V_{GS}=10V$	-	5	-	ns
t_r	Turn-on Rise Time		-	2.6	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	16.1	-	ns
t_f	Turn-off Fall Time		-	2.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	30	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=15A$	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	$T_J=25^\circ\text{C}, I_F=15A,$ $di/dt=100A/\mu s$	-	35	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	53	-	nC

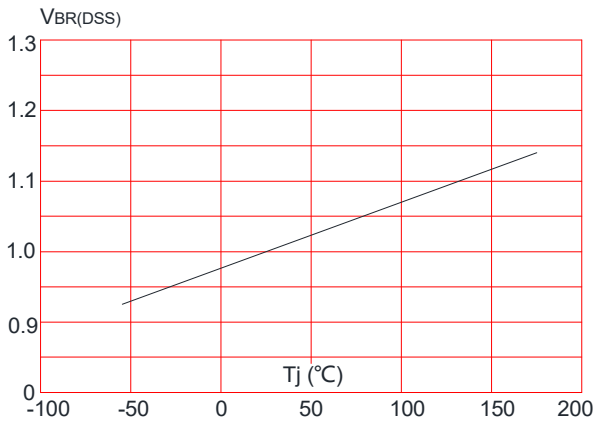
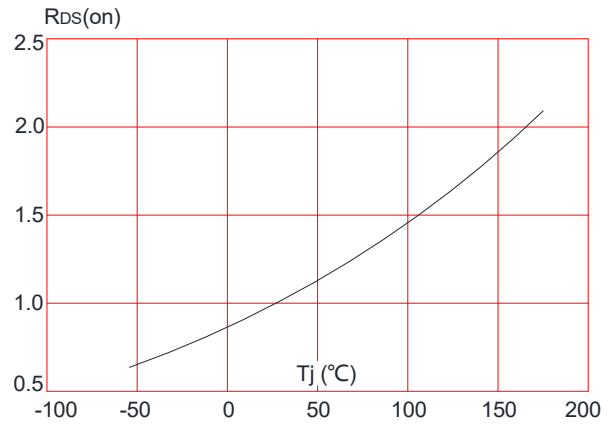
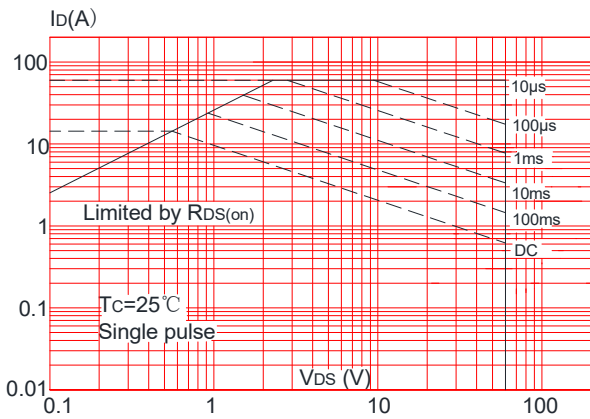
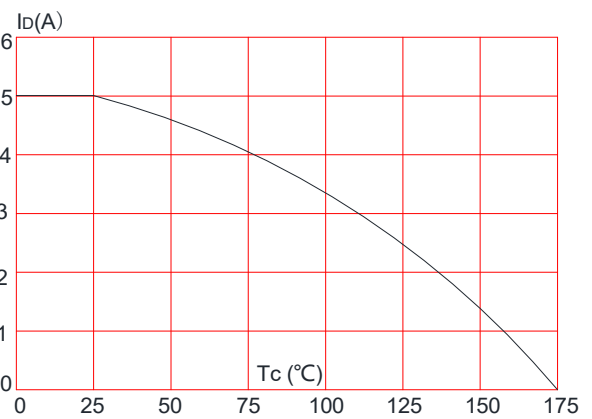
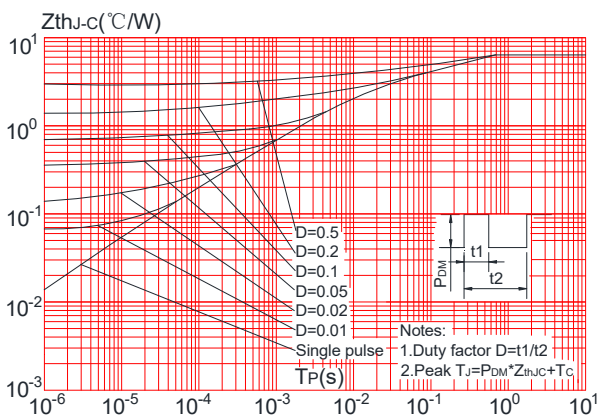
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

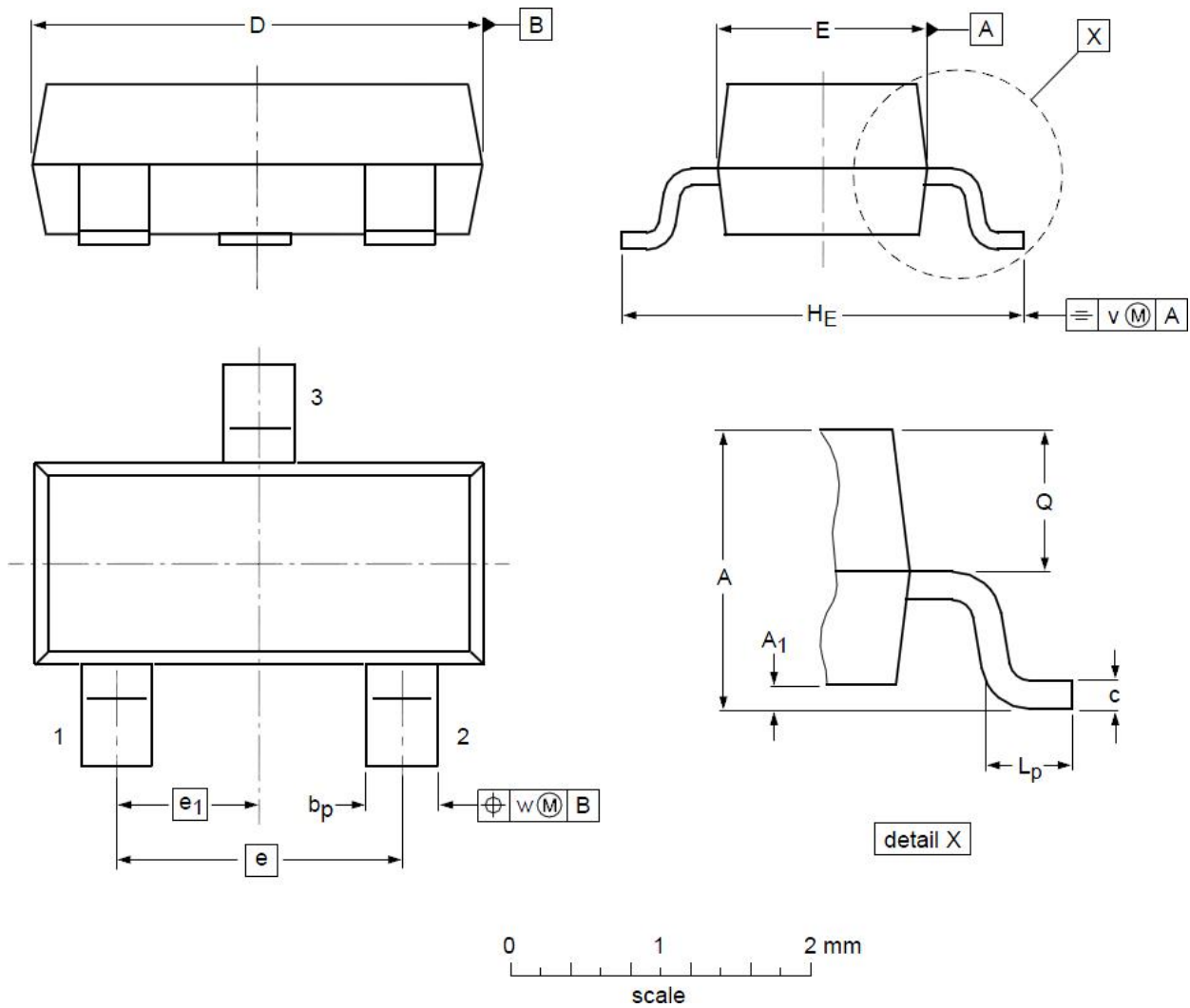
 2. EAS condition : $T_J=25^\circ\text{C}, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=6.1A$

 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

Figure 2: Typical Transfer Characteristics

Figure 3: On-resistance vs. Drain Current

Figure 4: Body Diode Characteristics

Figure 5: Gate Charge Characteristics

Figure 6: Capacitance Characteristics


N-Ch 60V Fast Switching MOSFETs
Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

Figure 8: Normalized on Resistance vs. Junction Temperature

Figure 9: Maximum Safe Operating Area

Figure 10: Maximum Continuous Drain Current vs. Case Temperature

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case


Package Mechanical Data-SOT-23

DIMENSIONS (unit : mm)

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