P-Ch 18V Fast Switching MOSFETs

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

Product Summary

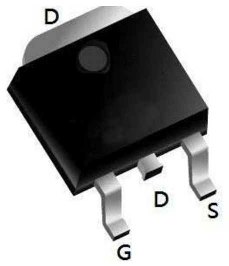
Green

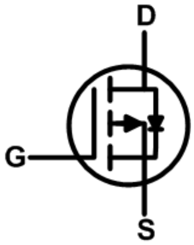
BVDSS	RDSON	ID
-18V	15mΩ	-30 A

Description

The XXW30P02 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.
The XXW30P02 meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-18	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25˚C	Continuous Drain Current, V_{GS} @ -4.5V[1]	-30	A
I_D@T_A=70˚C	Continuous Drain Current, V_{GS} @ -4.5V[1]	-15	A
I_{DM}	Pulsed Drain Current[2]	-38	A
P_D@T_A=25˚C	Total Power Dissipation[3]	3.9	W
T_{STG}	Storage Temperature Range	-55 to 150	˚C
T_J	Operating Junction Temperature Range	-55 to 150	˚C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	45	˚C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	50	˚C/W

Electrical Characteristics (T_J=25℃ 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= -250μA	-15	-18	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -12V, V_{GS}=0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}= -4.5V, I_D= -7A	-	15	25	mΩ
		V_{GS}= -2.5V, I_D= -5A	-	22	30	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -6V, V_{GS}=0V, f=1.0MHz	-	1300	-	pF
C_{oss}	Output Capacitance		-	302	-	pF
C_{rss}	Reverse Transfer Capacitance		-	279	-	pF
Q_g	Total Gate Charge	V_{DS}= -6V, I_D= -7A, V_{GS}= -4.5V	-	19	-	nC
Q_{gs}	Gate-Source Charge		-	4	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -6V, I_D = -4A, V_{GS}= -4.5V, R_{GEN}=2.5Ω	-	11	-	ns
t_r	Turn-on Rise Time		-	36	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	29	-	ns
t_f	Turn-off Fall Time		-	8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-25	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-38	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -7A	-	-0.8	-1.2	V

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

Figure1: Output Characteristics

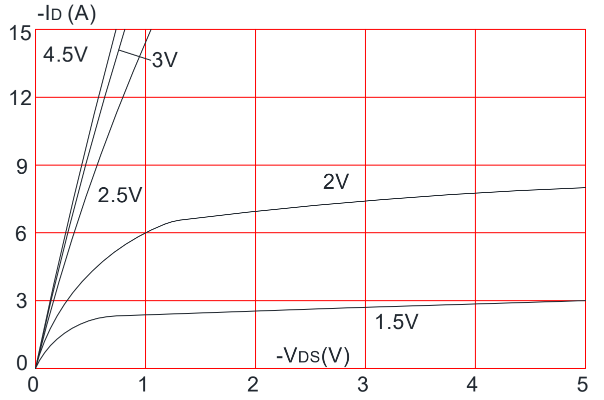


Figure 2: Typical Transfer Characteristics

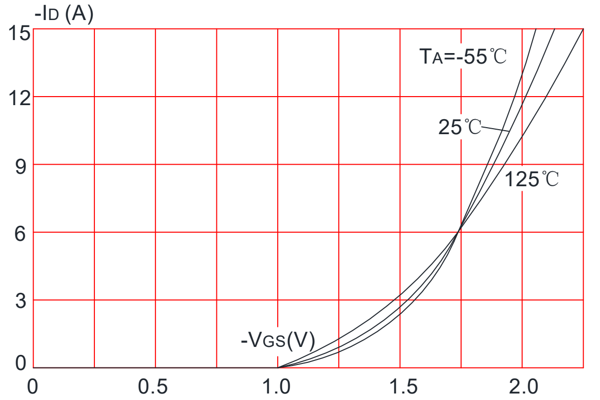


Figure 3: On-resistance vs. Drain Current

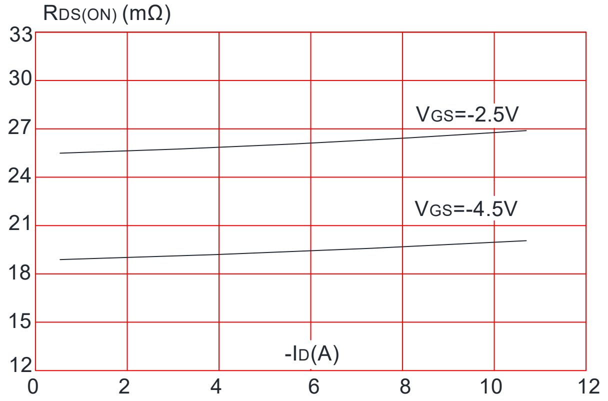


Figure 4: Body Diode Characteristics

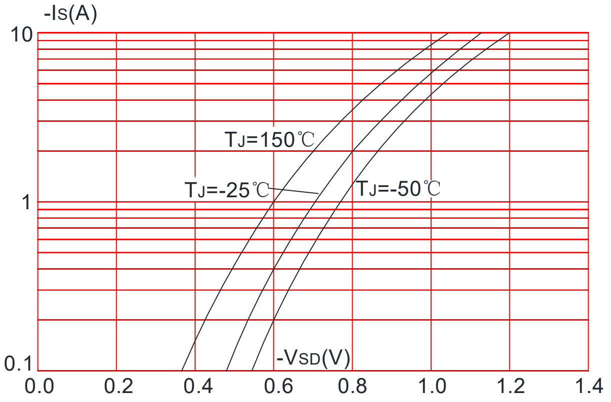


Figure 5: Gate Charge Characteristics

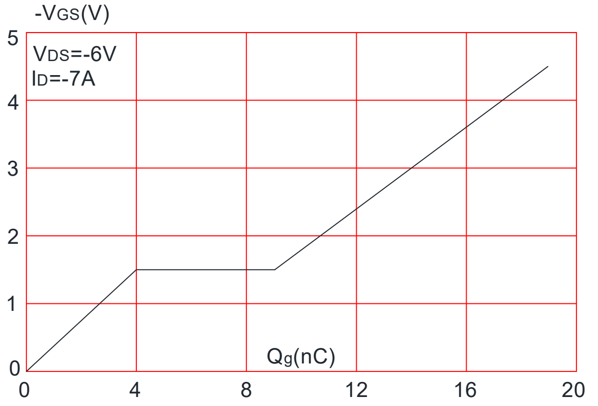


Figure 6: Capacitance Characteristics

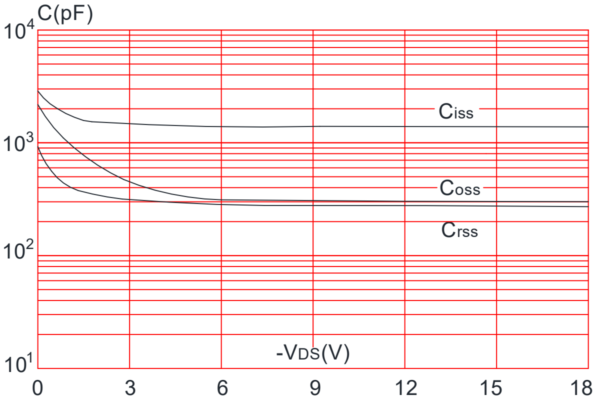


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

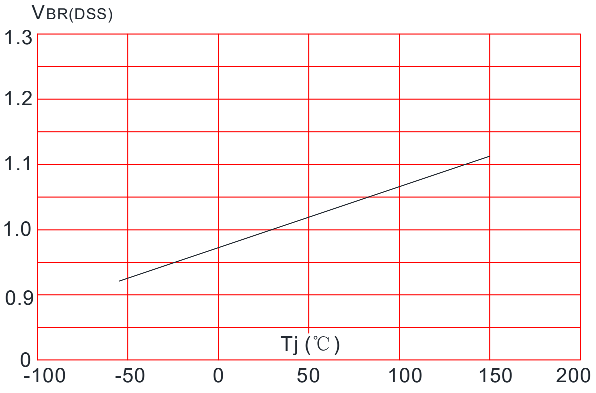


Figure 8: Normalized on Resistance vs. Junction Temperature

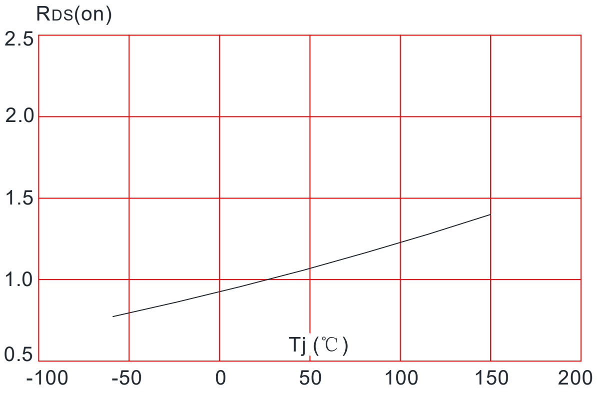


Figure 9: Maximum Safe Operating Area

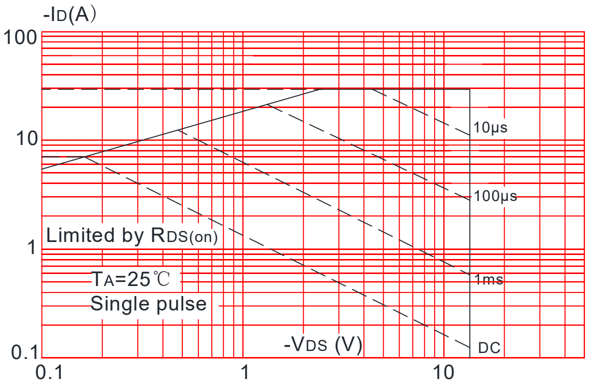


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

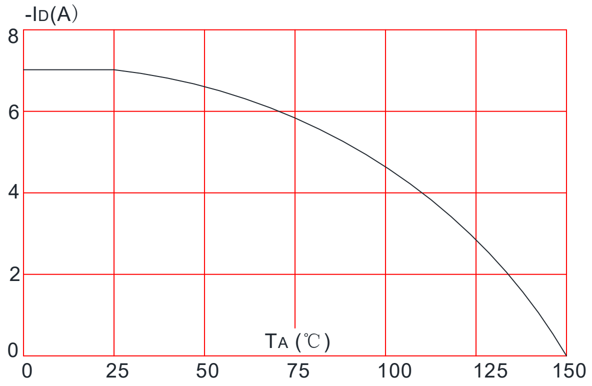
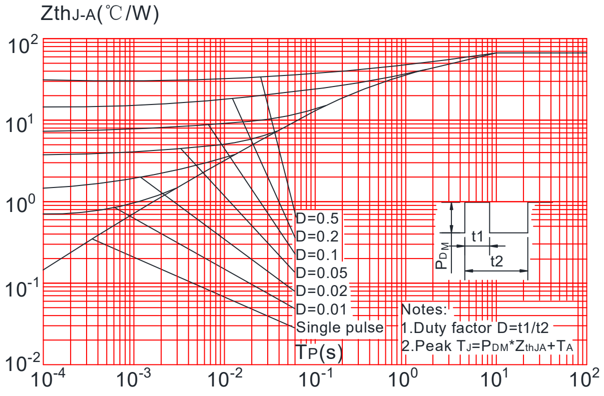
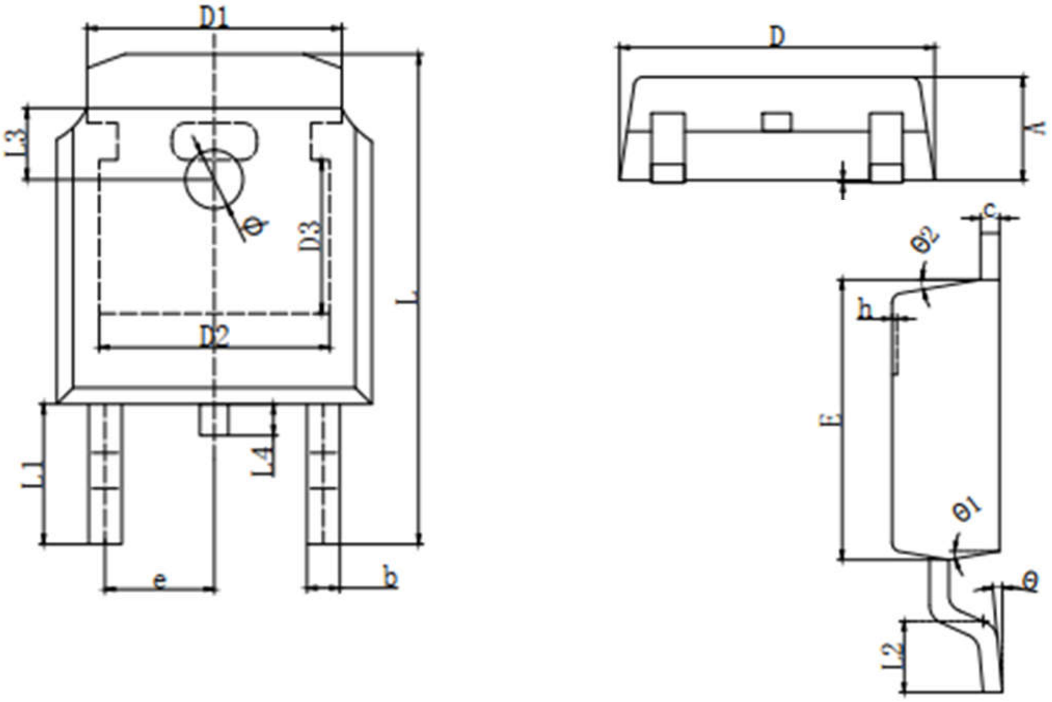


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



TO-252 Package outline



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	MIN	MAX		MIN	MAX
A	2. 200	2. 400	h	0. 000	0. 200
A1	0. 000	0. 127	L	9. 900	10. 30
b	0. 640	0. 740	L1	2. 888 REF	
c	0. 460	0. 580	L2	1. 400	1. 700
D	6. 500	6. 700	L3	1. 600 REF	
D1	5. 334 REF		L4	0. 600	1. 000
D2	4. 826 REF		ϕ	1. 100	1. 300
D3	3. 166 REF		θ	0°	8°
E	6. 000	6. 200	θ 1	9° TYP2	
e	2. 286 TYP		θ 2	9° TYP	