N-Ch 40V Fast Switching MOSFETs

★ 100% EAS Guaranteed
★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

Product Summary

Green

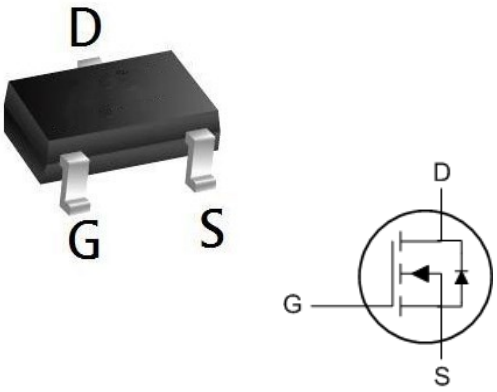
BVDSS	RDSON	ID
40V	30mΩ	5 A

Description

The XR2318 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 XR2318 meets the RoHS and Green Product requirements, 100% EAS guaranteed with full function reliability approved.

SOT 23 Pin Configurations



Absolute Maximum Ratings (T_A=25 °C, unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current (Tc=25°C)	5	A
	Continuous Drain Current(Tc=100°C)	3	A
I_{DM}	Pulsed Drain Current(Note1)	20	A
P_D	Maximum Power Dissipation(T_C=25°C)	1.6	W
T_J T_{STG}	Operation Junction and Storage Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	78	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	---	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characterisitics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=4A,	---	30	40	mΩ
		V_{GS}=4.5V , I_D=3A,	---	40	60	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.5	2.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V , T_J=25℃	---	----	1	uA
		V_{DS}=-40V, V_{GS}=0V , T_J=55℃	---	---	---	
I_{GSS}	Gate-Source Leakage Current	V_{GS}＝±20V , V_{DS}=0V	---	---	±100	nA
Switching Characteristics						
Q_g	Total Gate Charge	V_{GS}=10V , V_{DS}=20V , I_D=3A	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate-Drain Charge		---	2.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=20V,R_{GEN}=3R, R_L=1R, V_{GS}=10V,I_D=4A	---	10	---	ns
T_r	Rise Time		---	8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	29	---	
T_f	Fall Time		---	12	---	
trr	Body Diode Reverse Recovery Time	I_F=5A ,T_J=25°C dI/dt=100A/us	---	20	---	ns
Qrr	Body Diode Recerse Recovery Charge		---	11	---	nC
Dynamic Characterisitics						
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , f=1MHz	---	435	---	pF
C_{oss}	Output Capacitance		---	58	---	
C_{rss}	Reverse Transfer Capacitance		---	35	---	
Rg	Gate Resistance	V_{GS}=0V , V_{DS} Open	---	---	---	Ω

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current(Body Diode)	Tc==25°C	---	---	5	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, Is=5A	---	---	1.2	V
Ism	Maximum Pulsed Drain to Source Diode Forward Current		---	---	20	A

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

ypical Performance Characteristics

Figure1: Output Characteristics

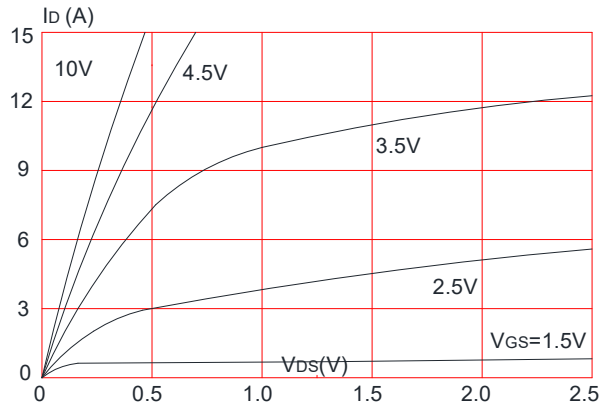


Figure 2: Typical Transfer Characteristics

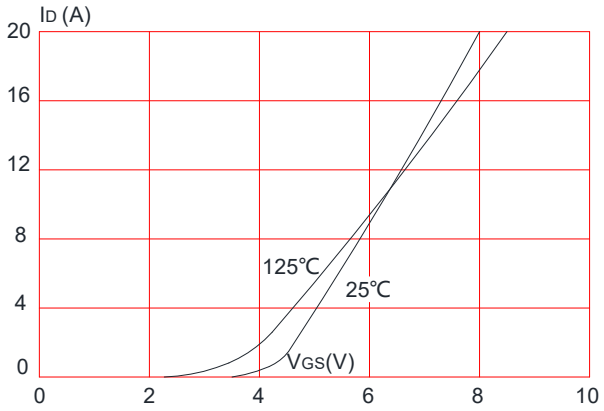


Figure 3: On-resistance vs. Drain Current

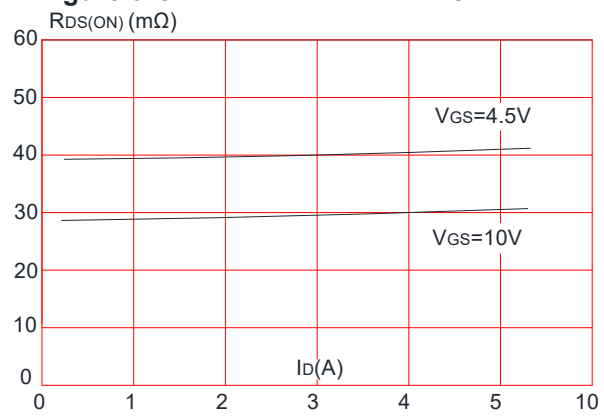


Figure 4: Body Diode Characteristics

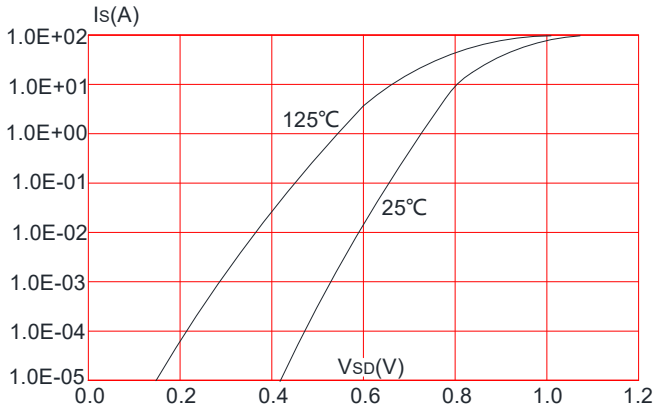


Figure 5: Gate Charge Characteristics

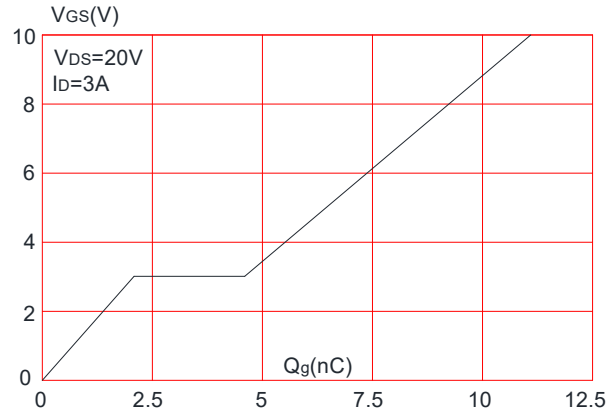


Figure 6: Capacitance Characteristics

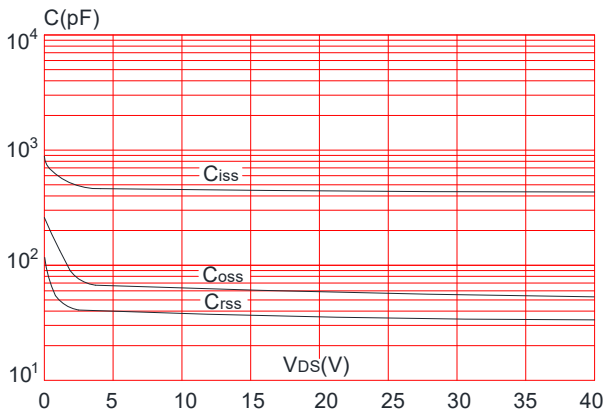


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

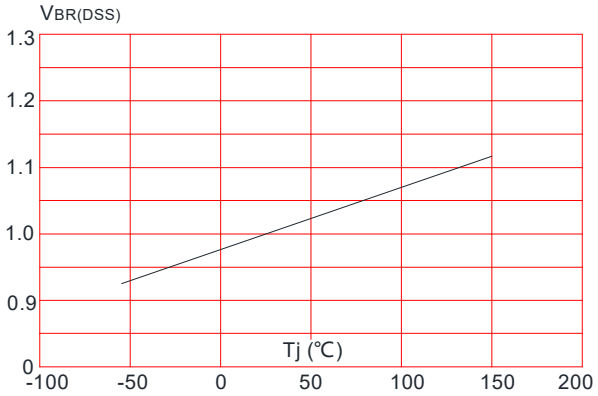


Figure 8: Normalized on Resistance vs. Junction Temperature

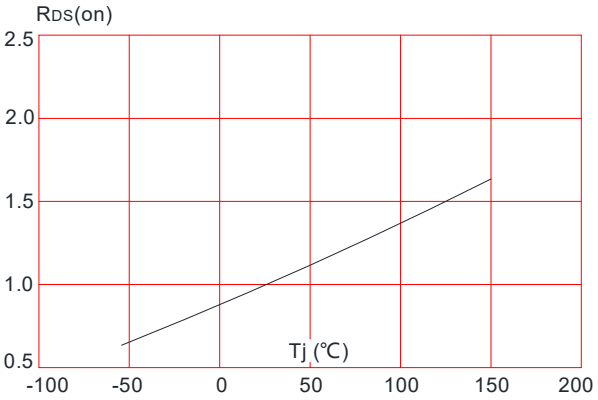


Figure 9: Maximum Safe Operating Area

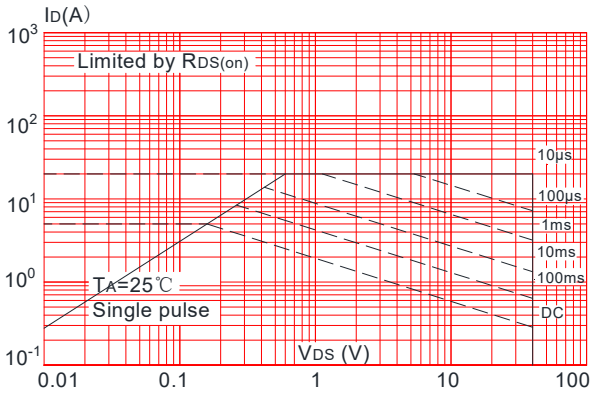


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

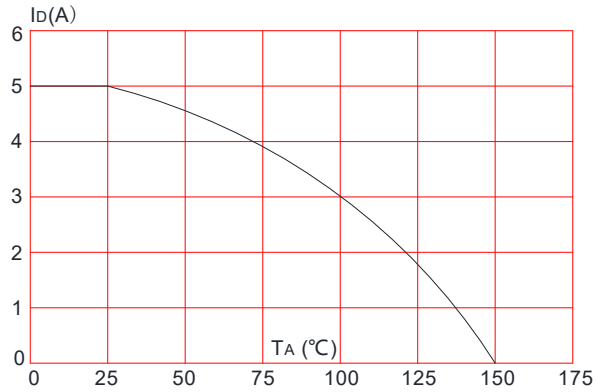
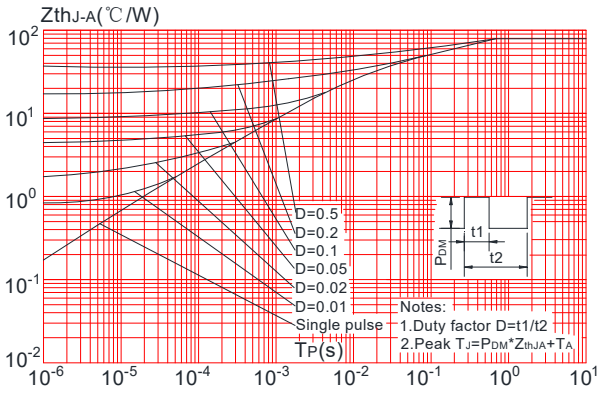
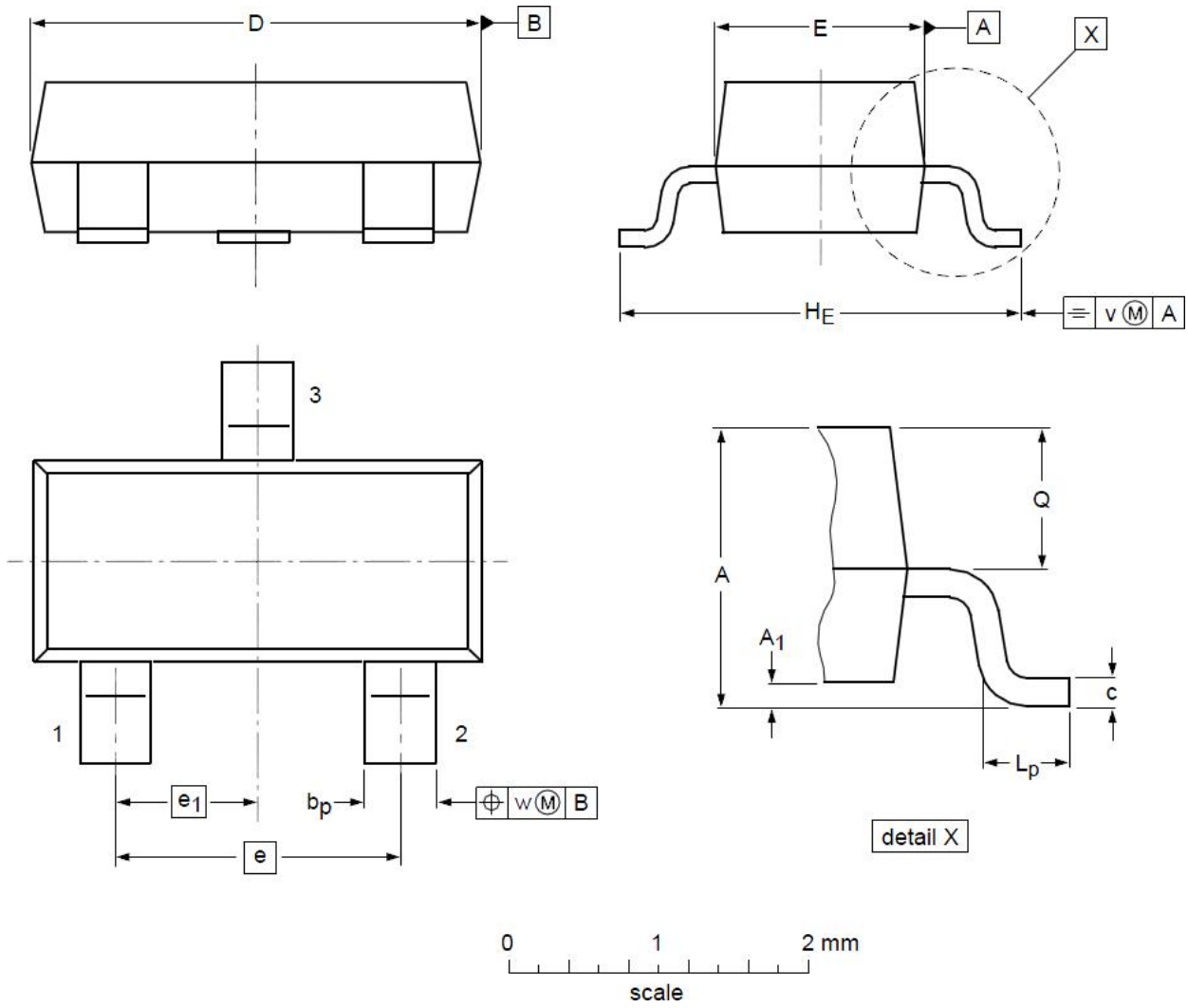


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT23 Mechanical Data



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	--				