Product Summary

RoHS

★ Green Device Available
★ Excellent CdV/dt effect decline
★ Super Low Gate Charge
★ Advanced Trench MOS Technology

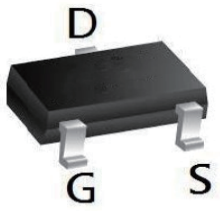
BVDSS	RDSON	ID
40V	30mΩ	5A

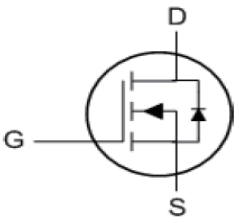
Applications

The2318 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 2318 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOT 23 Pin Configurations





Absolute Maximum Ratings

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	5	A
		T_C = 100℃	3	A
I_{DM}	Pulsed Drain Current note1		20	A
P_D	Power Dissipation	T_C = 25℃	1.6	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		78	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State)1	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case1	---	3.2	℃/W

Electrical Characteristics (T_J =25 °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=250μA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =40V, V_{GS}=0V,	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.2	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=4A	-	30	40	mΩ
		V_{GS}=4.5V, I_D=3A	-	40	60	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1.0MHz	-	435	-	pF
C_{oss}	Output Capacitance		-	58	-	pF
C_{rss}	Reverse Transfer Capacitance		-	35	-	pF
Q_g	Total Gate Charge	V_{DS}=20V, I_D=3A, V_{GS}=10V	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=20V, I_D=4A, R_L=1Ω, R_{GEN}=3Ω, V_{GS}=10V	-	10	-	ns
t_r	Turn-on Rise Time		-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	29	-	ns
t_f	Turn-off Fall Time		-	12	-	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		-	-	20	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=5A	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	T_J=25℃,	-	20	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=5A,dI/dt=100A/μs	-	11	-	nC

Notes:
1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Output Characteristics

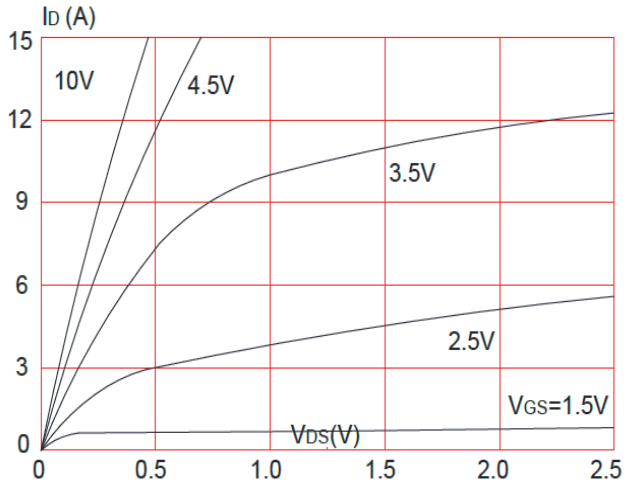


Figure 2: Typical Transfer Characteristics

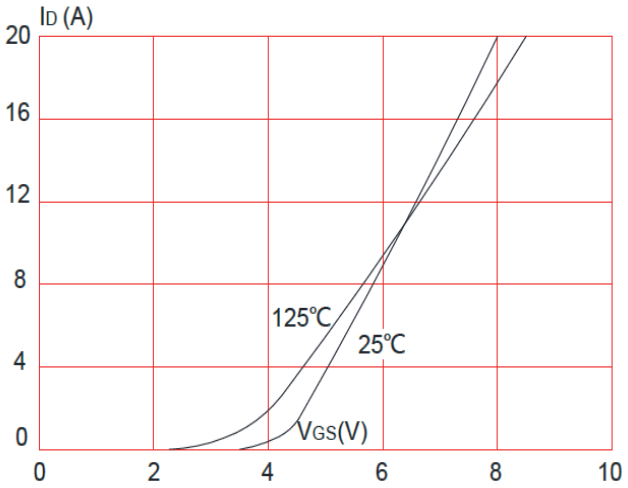


Figure 3:On-resistance vs. Drain Current

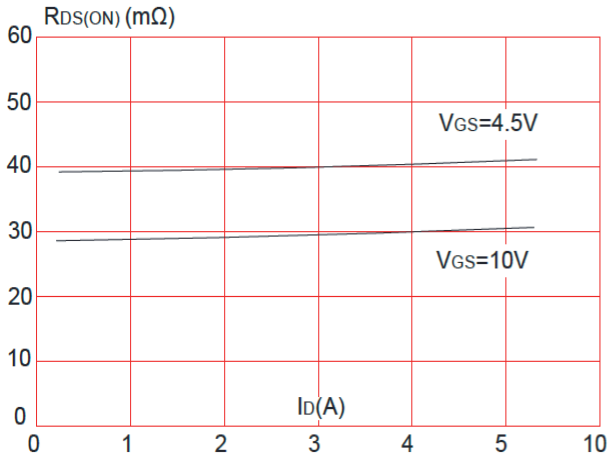


Figure 4: Body Diode Characteristics

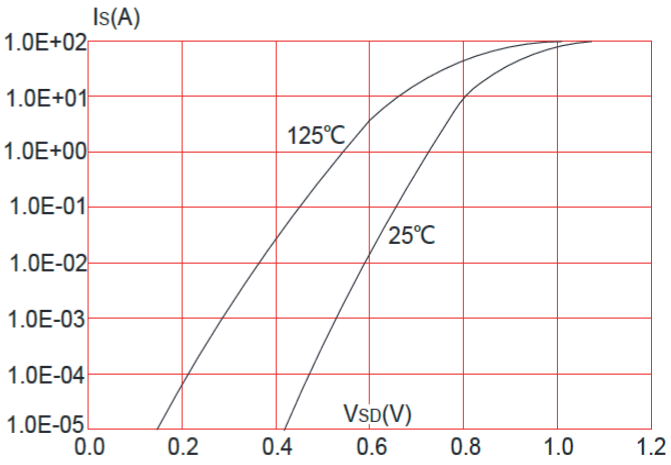


Figure 5: Gate Charge Characteristics

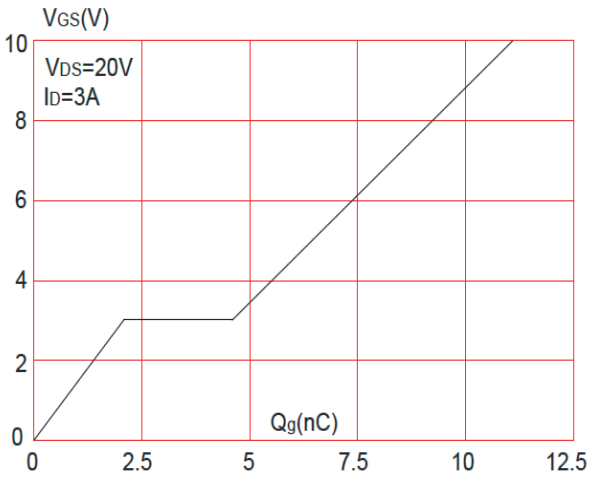
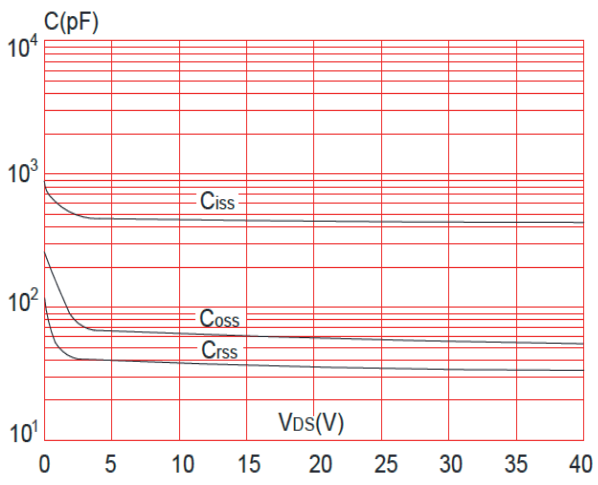


Figure 6:Capacitance Characteristics



Typical Performance Characteristics

Figure 7:Normalized Breakdown Voltage

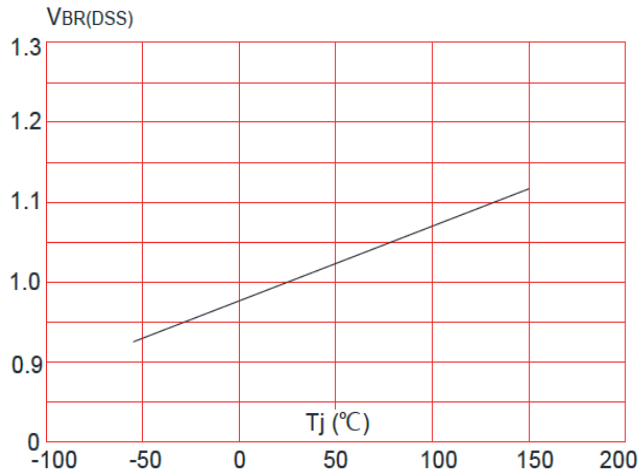


Figure 8: Normalized on Resistance vs.

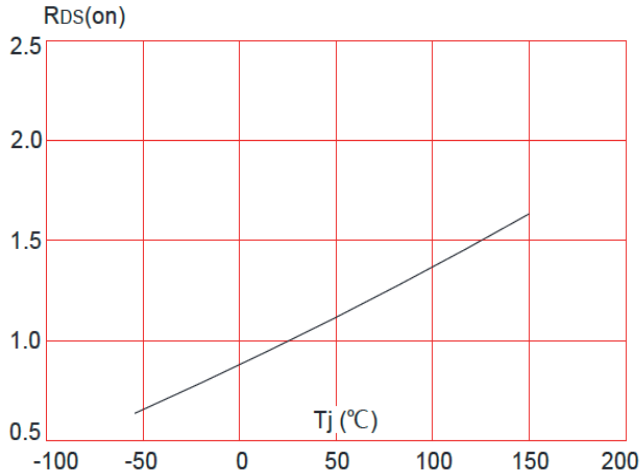


Figure 9:Maximum Safe Operating Area

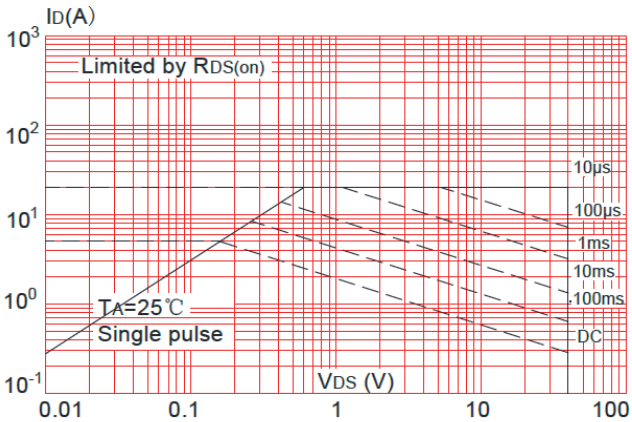


Figure 10: Maximum Continuous Drain

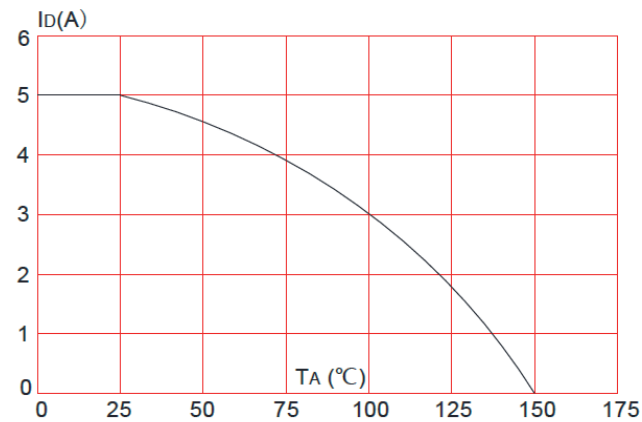
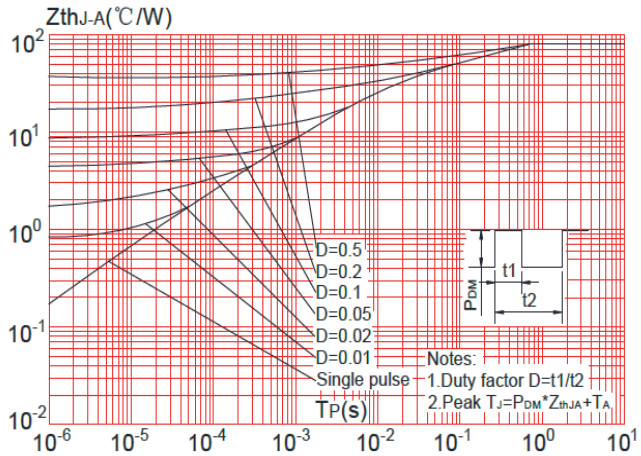
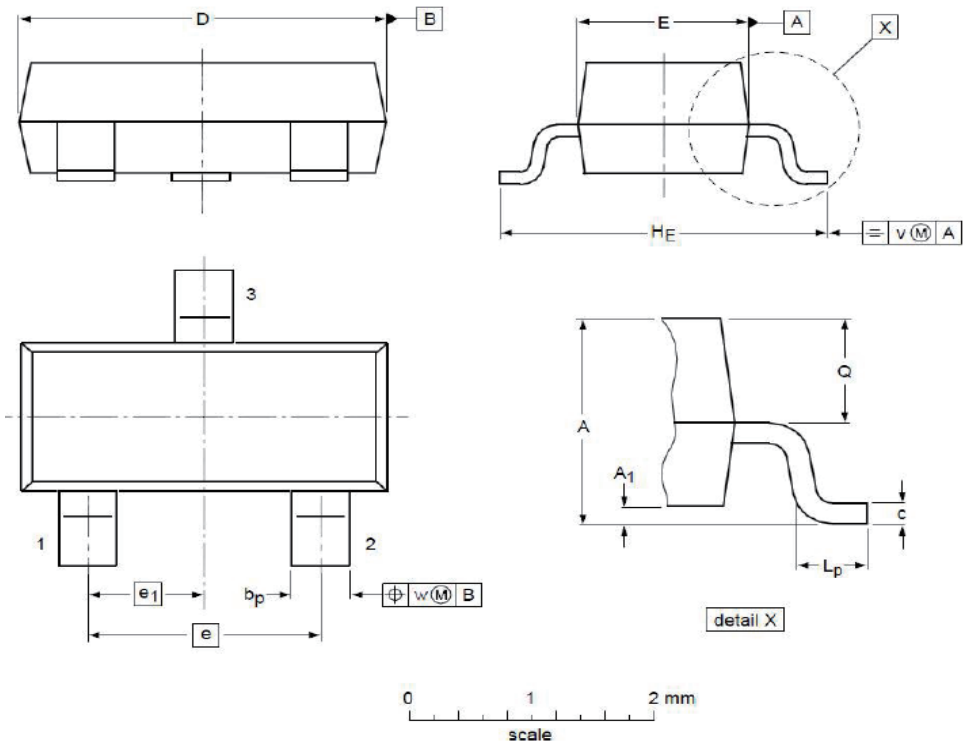


Figure 11:Maximum Effective



SOT23 Mechanical tData



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	--				