FS2309

P-Channel SMD MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	190mΩ@-10V	-1.6A
	250mΩ@-4.5V	

Feature

- Advanced trench process technology
- High density cell design for ultra low on-resistance

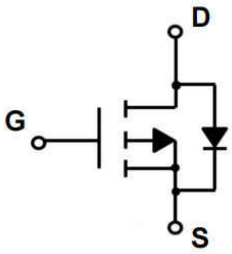
Application

- Load Switch for Portable Devices
- DC/DC Converter

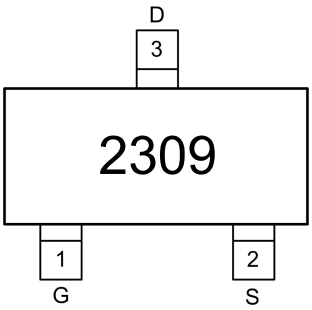
Package

SOT-23

Circuit diagram



Marking



Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-1.6	A
Pulsed Drain Current	I_{DM}	-8	A
Power Dissipation	P_D	1.5	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =–60V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	-1.4		-2.5	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-1.5A			190	mΩ
		V_{GS} =-4.5V, I_D =-1.0A			250	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-30V,V_{GS} =0V,f =1MHz		370		pF
Output Capacitance	C_{oss}			32		
Reverse Transfer Capacitance	C_{rss}			5		
Total Gate Charge	Q_g	V_{DS} =-30V,V_{GS} =-10V, I_D =-1.5A		14.5		nC
Gate-Source Charge	Q_{gs}			2.3		
Gate-Drain Charge	Q_{gd}			3.3		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V, V_{GS} =-10V, R_{GEN}=3Ω		40		nS
Turn-on rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			15		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				-1.6	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-1.5A			-1.2	V

Notes: (1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%. (2) Guaranteed by design, not subject to production testing.

Typical Characteristics

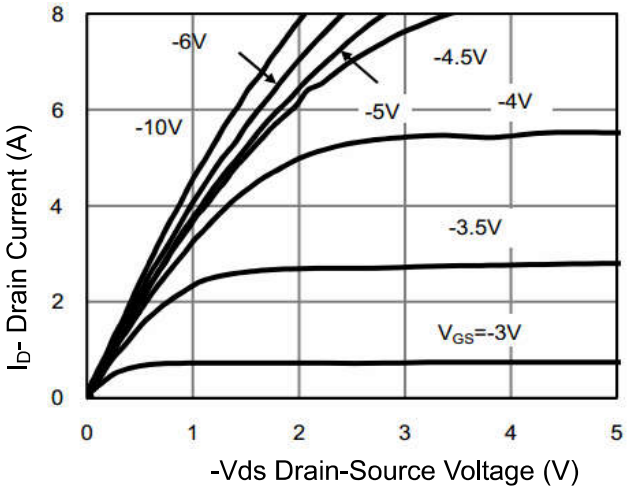


Figure 1 Output Characteristics

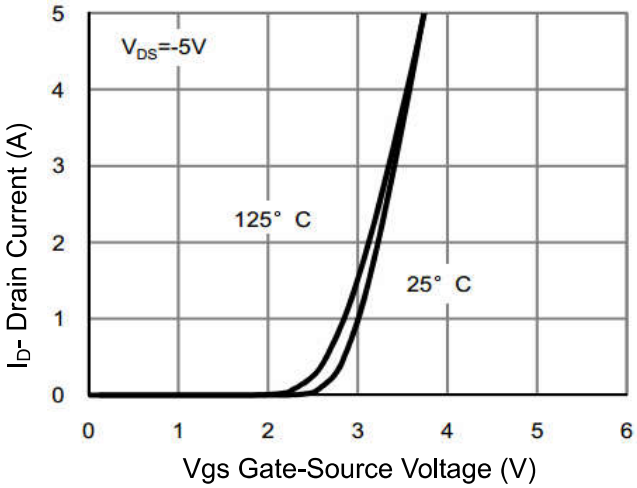


Figure 2 Transfer Characteristics

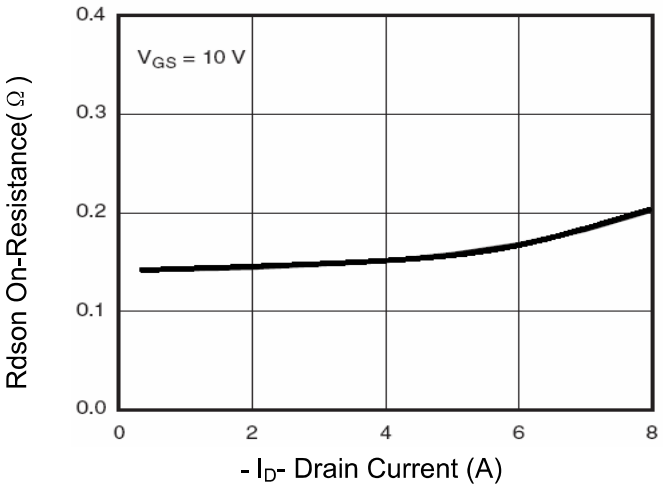


Figure 3 Rdson- Drain Current

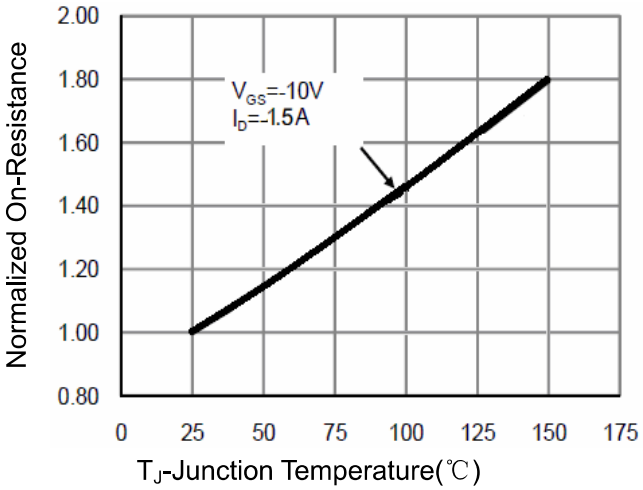


Figure 4 Rdson-Junction Temperature

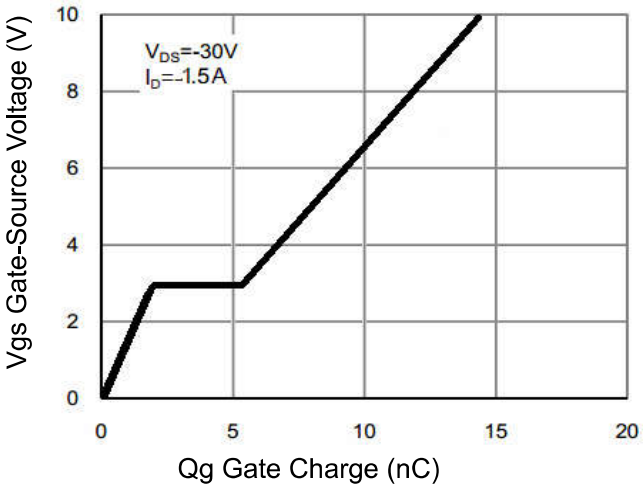


Figure 5 Gate Charge

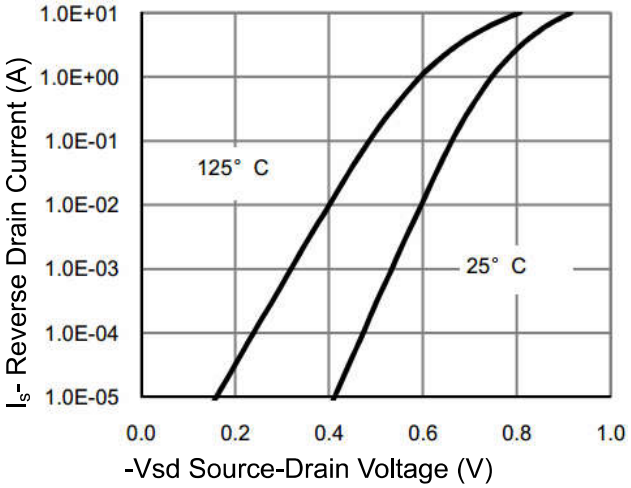


Figure 6 Source- Drain Diode Forward

Typical Characteristics

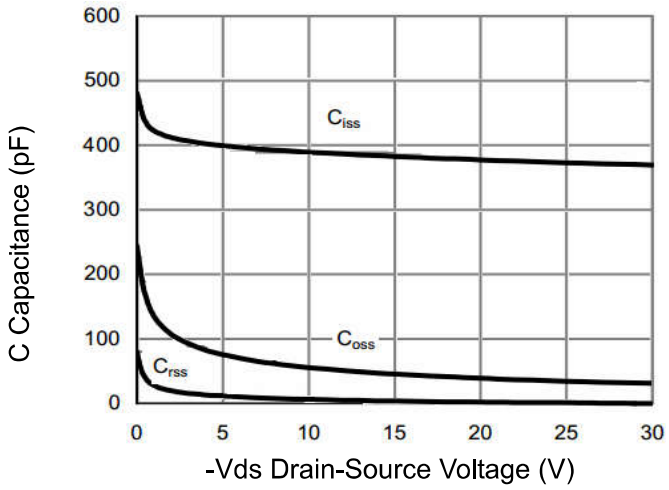


Figure 7 Capacitance vs Vds

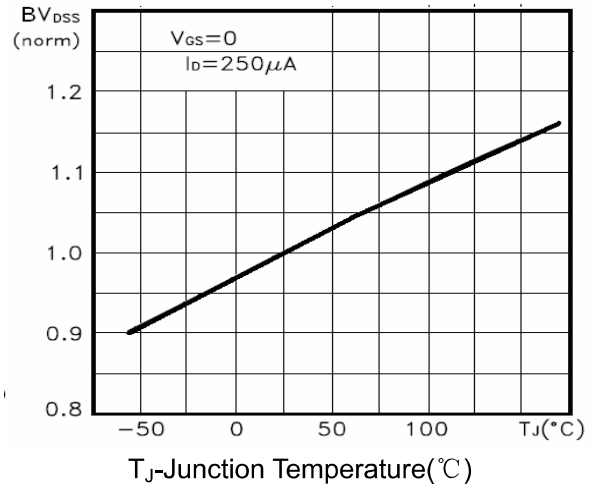


Figure 9 BV_{DSS} vs Junction Temperature

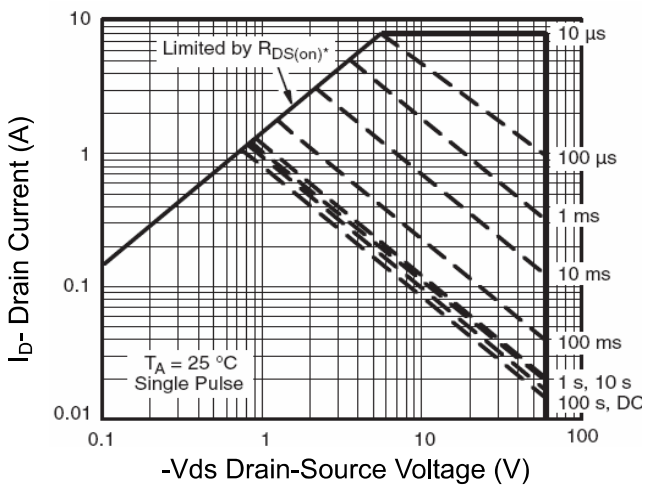


Figure 8 Safe Operation Area

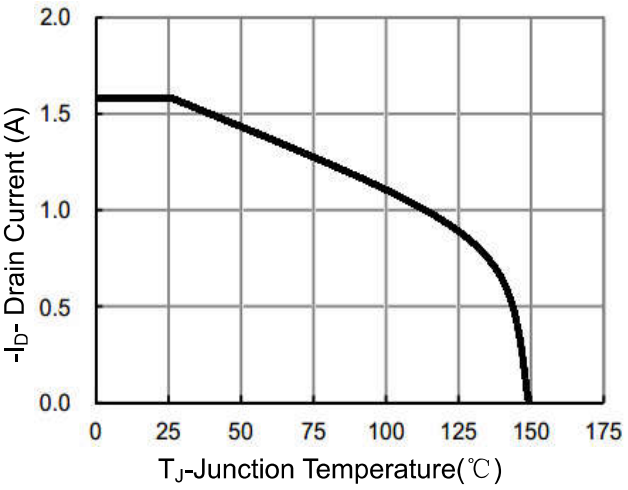


Figure 10 ID Current De-rating

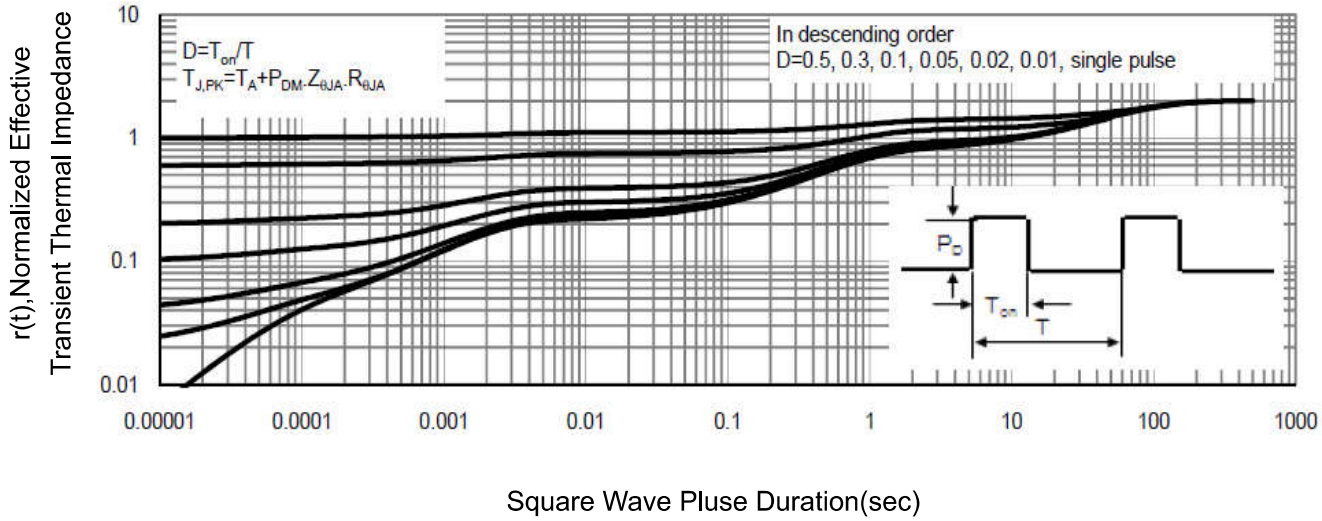
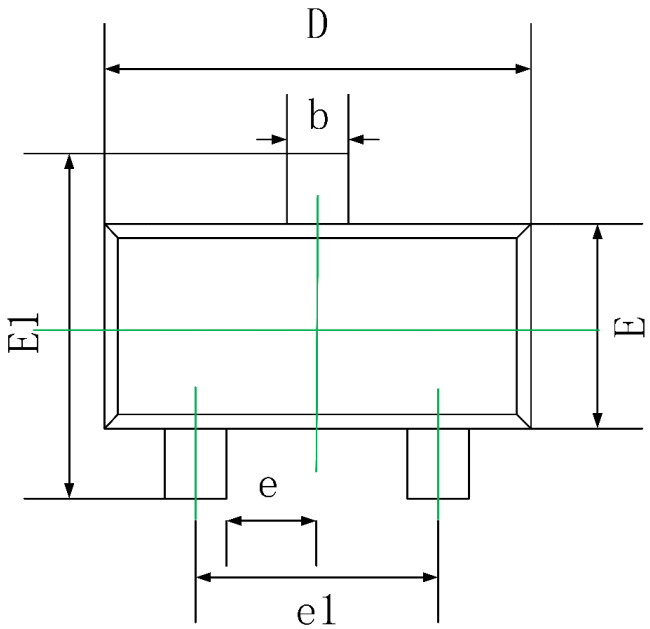
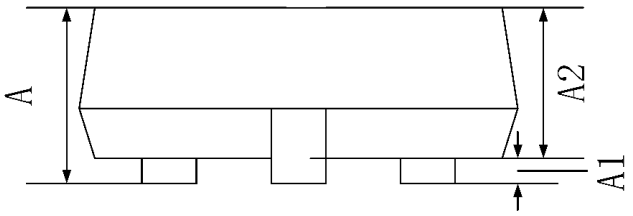
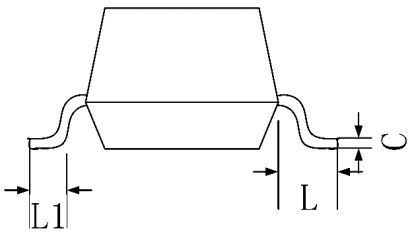


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT-23 Package Information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055

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