

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	23mΩ@4.5V	6A
	28mΩ@2.5V	

Feature

- Advanced trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

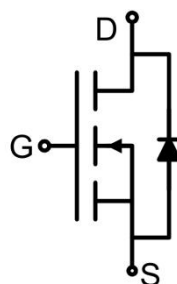
- Battery protection
- Load Switch
- Uninterruptible power supply

Package

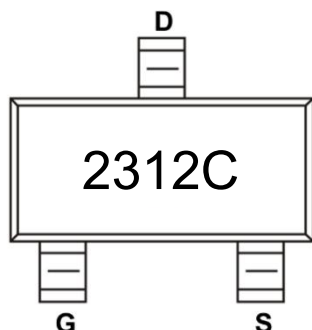


SOT-23

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current ¹⁾ (V _{GS} =4.5V, T _A =25°C)	I _D	6	A
Continuous Drain Current ¹⁾ (V _{GS} =4.5V, T _A =70°C)	I _D (70°C)	3.9	A
Pulsed Drain Current ²⁾	I _{DM}	20	A
Power Dissipation ³⁾ (T _A =25°C)	P _D	1.25	W
Thermal Resistance from Junction to Ambient ¹⁾	R _{θJA}	85	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=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	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.7	1.0	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =4.5V, I _D =4.5A		18	23	mΩ
		V _{GS} =2.5V, I _D =2.5A		24	28	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz		358		pF
Output Capacitance	C _{oss}			69.3		
Reverse Transfer Capacitance	C _{rss}			58.5		
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =3A		5.6		nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1		
Turn-on delay time	t _{d(on)}	V _{DS} =10V, V _{GS} =4.5V, I _D =6A R _G =3Ω		16		nS
Turn-on rise time	t _r			51		
Turn-off delay time	t _{d(off)}			21		
Turn-off fall time	t _f			19		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				6	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =6A			1.2	V

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2) The data tested by pulsed , pulse width ≤300us , duty cycle ≤2%.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

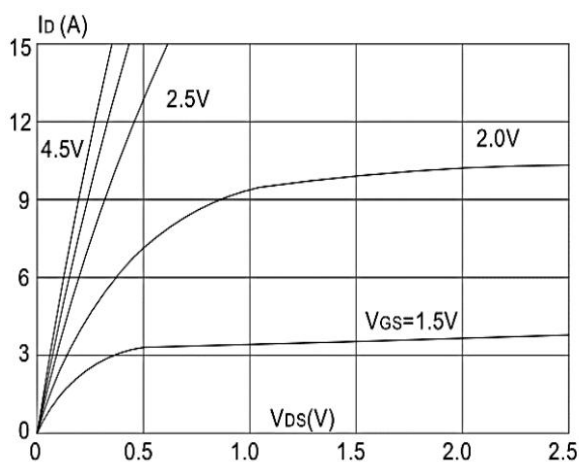


Figure 1: Output Characteristics

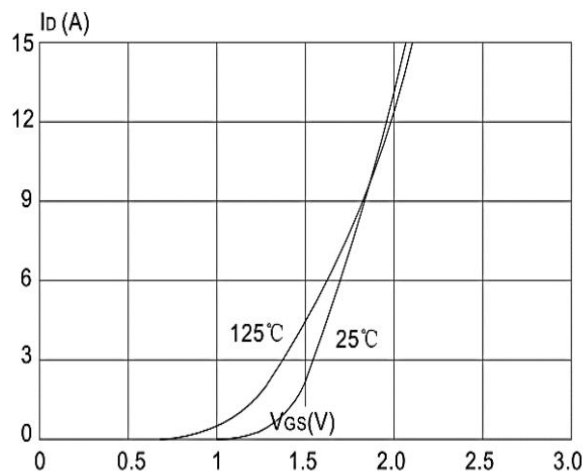


Figure 2: Typical Transfer Characteristics

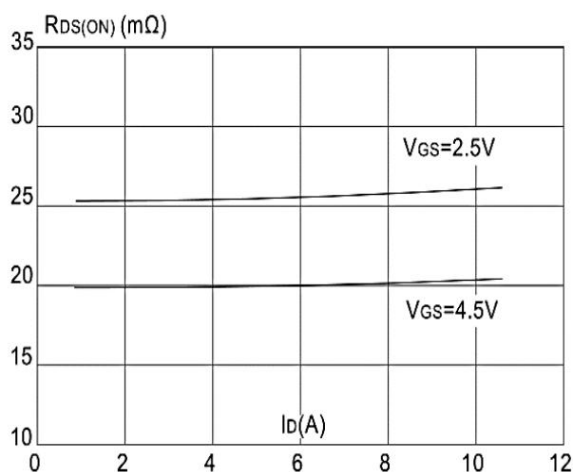


Figure 3: On-resistance vs. Drain Current

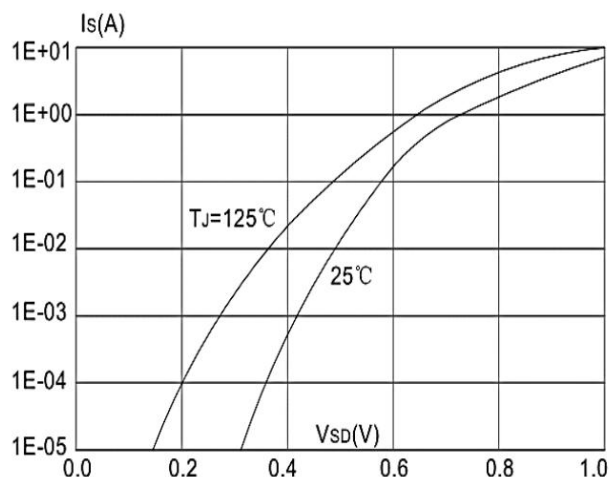


Figure 4: Body Diode Characteristics

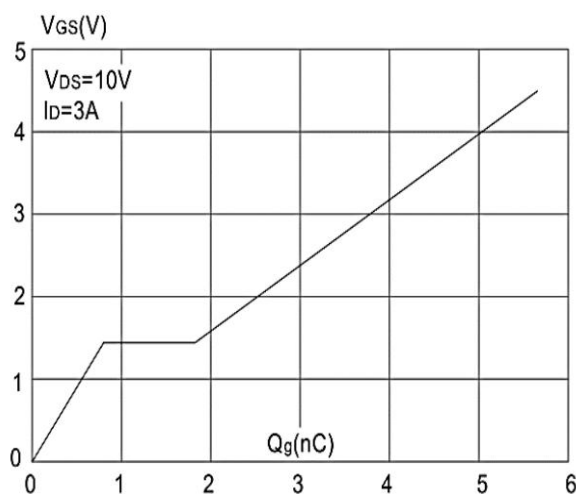


Figure 5: Gate Charge Characteristics

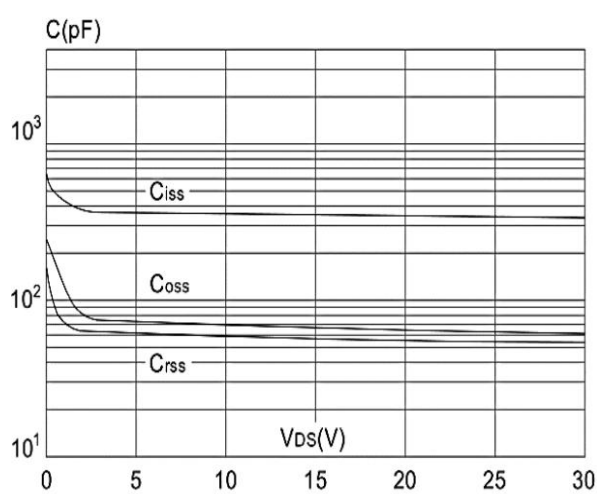


Figure 6: Capacitance Characteristics

Typical Characteristics

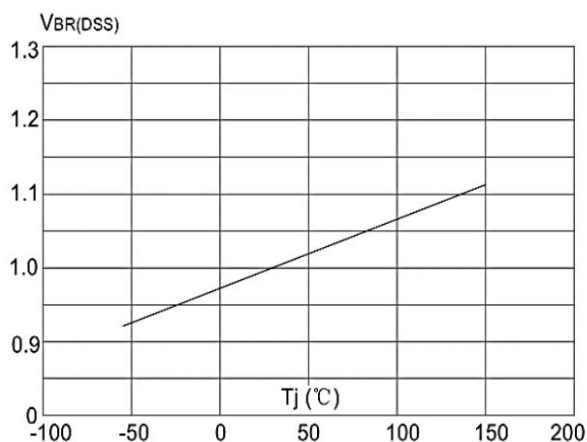


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

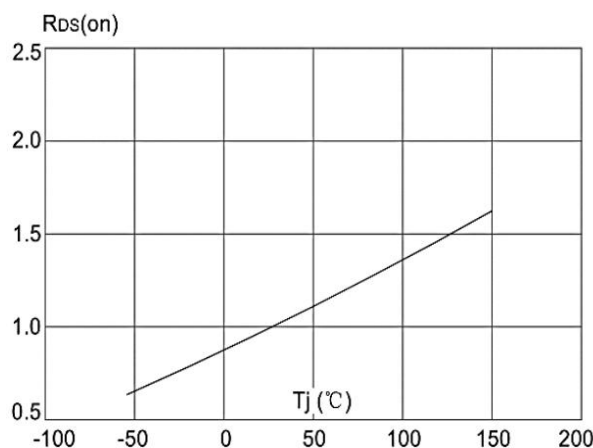


Figure 8: Normalized on Resistance vs. Junction Temperature

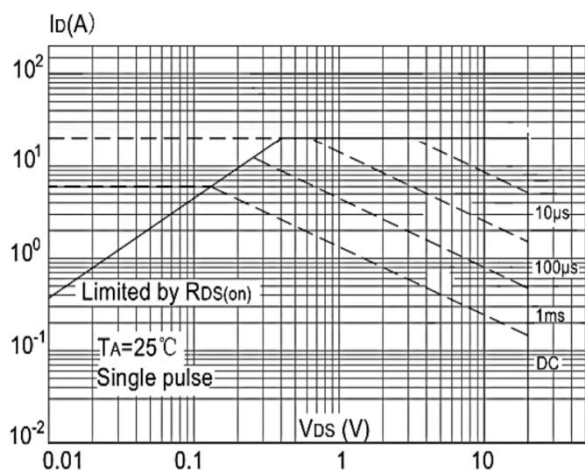


Figure 9: Maximum Safe Operating Area

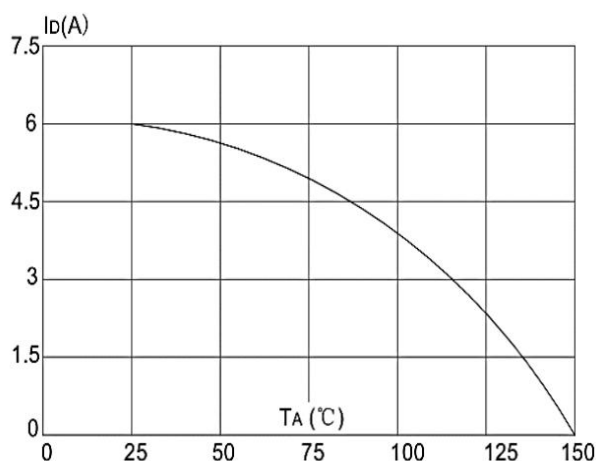


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

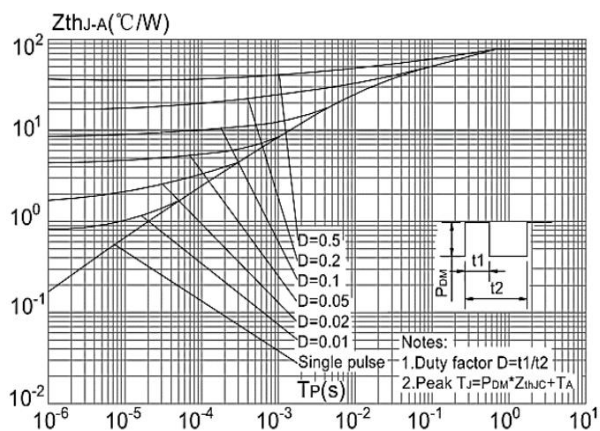
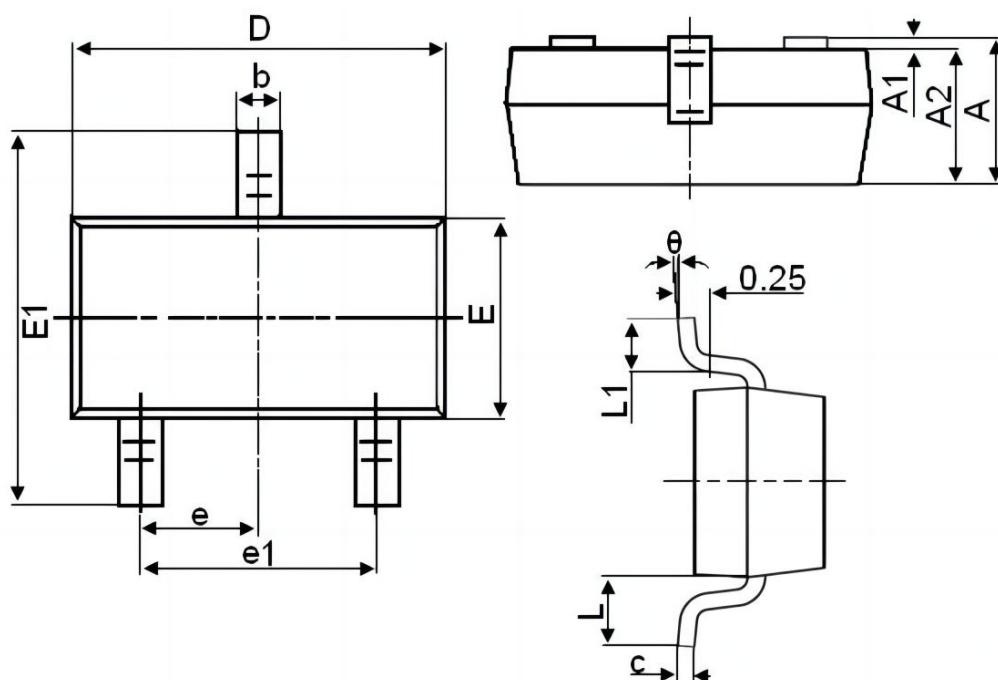


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.200	0.500	0.008	0.020
θ	0°	8°	0°	8°