

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	29mΩ@4.5V	4A
	35mΩ@2.5V	

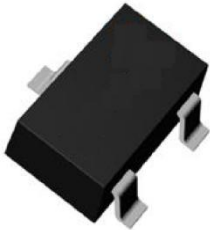
Feature

- Advanced Trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge

Application

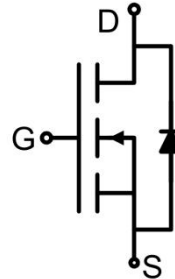
- Load switch
- PWM application
- Power management

Package

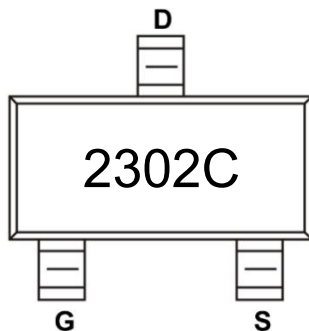


SOT-23

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	4	A
Continuous Drain Current ($T_A=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	2.5	A
Pulsed Drain Current ¹⁾	I_{DM}	16	A
Power Dissipation	P_D	1.2	W
Thermal Resistance Junction to Ambient ²⁾	$R_{\theta JA}$	106	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=20\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 12\text{V}$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5	0.75	1	V
Drain-source on-resistance ³⁾	$R_{DS(on)}$	$V_{GS}=4.5\text{V}, I_D=4\text{A}$		22	29	m Ω
		$V_{GS}=2.5\text{V}, I_D=3\text{A}$		27	35	
Dynamic characteristics⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		455		pF
Output Capacitance	C_{oss}			64		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=2\text{A}$		6		nC
Gate-Source Charge	Q_{gs}			1		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=2\text{A}$ $R_G=3\Omega$		4		nS
Turn-on rise time	t_r			13		
Turn-off delay time	$t_{d(off)}$			65		
Turn-off fall time	t_f			33		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				4	A
Diode Forward voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=4\text{A}$			1.2	V
Reverse Recovery Time	T_{rr}	$I_F=2\text{A}, di/dt=-60\text{A}/\mu\text{s}$		6		nS
Reverse Recovery Charge	Q_{rr}			0.8		nC

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
- 3) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

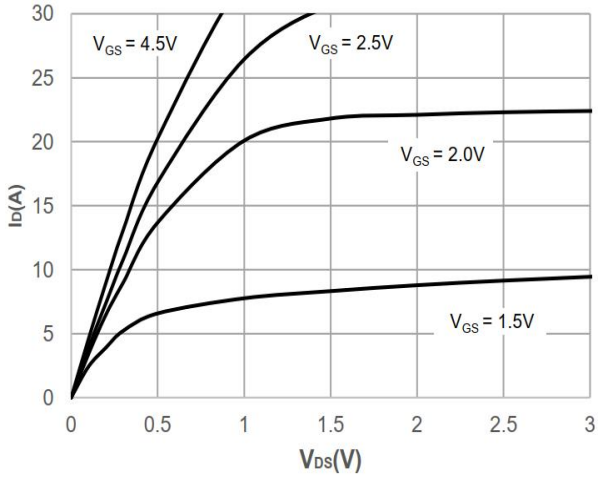


Figure 2: Typical Transfer Characteristics

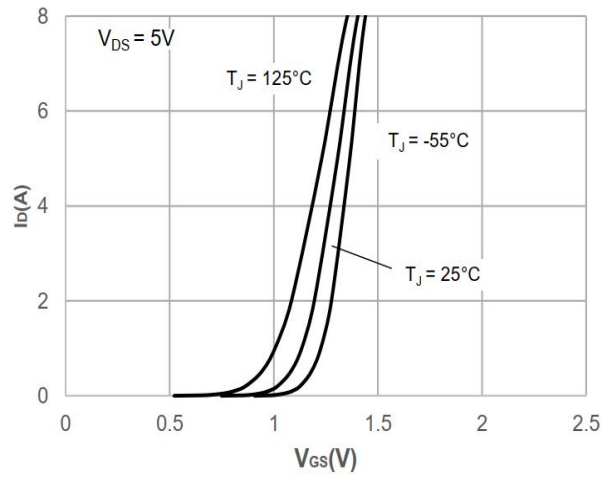


Figure 3: On-resistance vs. Drain Current

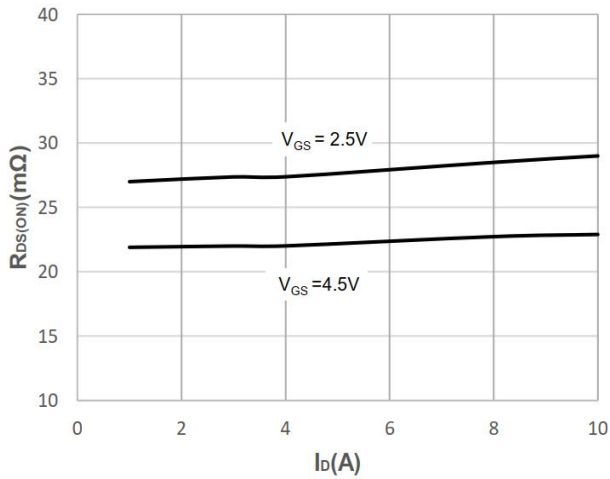


Figure 4: Body Diode Characteristics

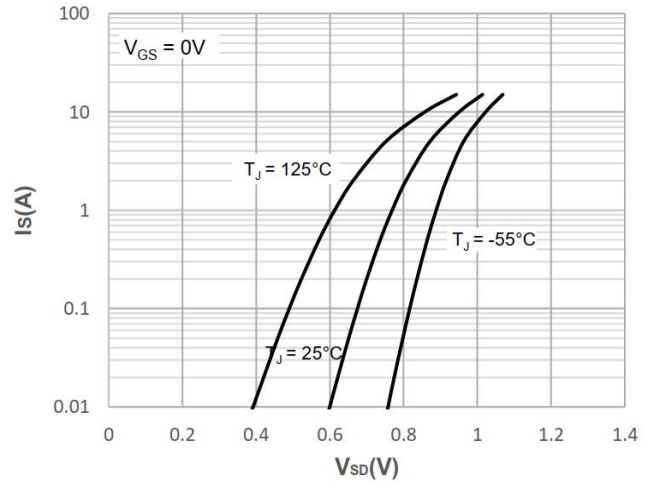


Figure 5: Gate Charge Characteristics

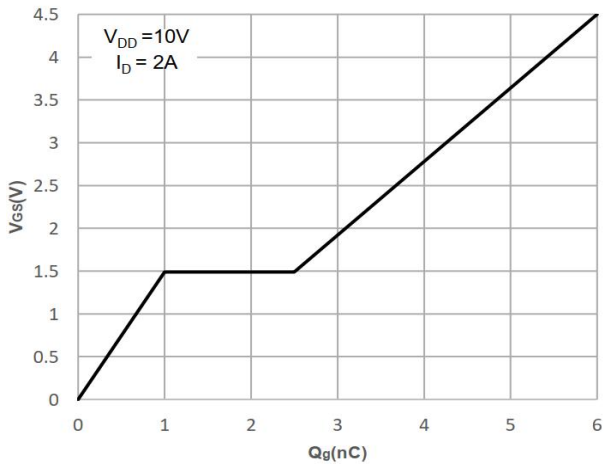
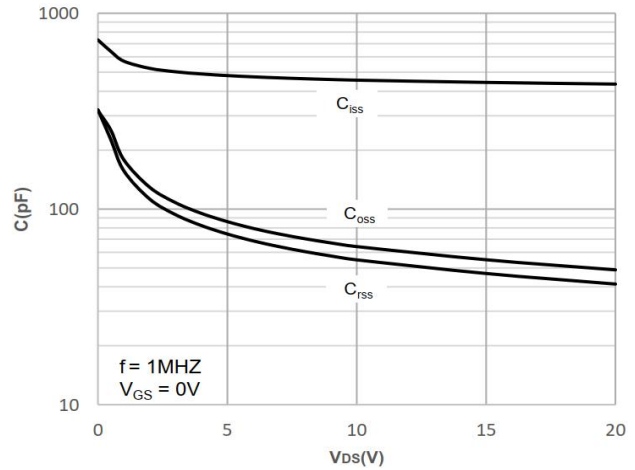


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

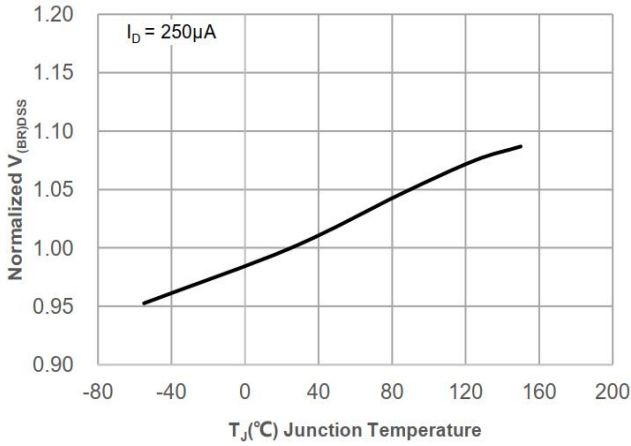


Figure 8: Normalized on Resistance vs. Junction Temperature

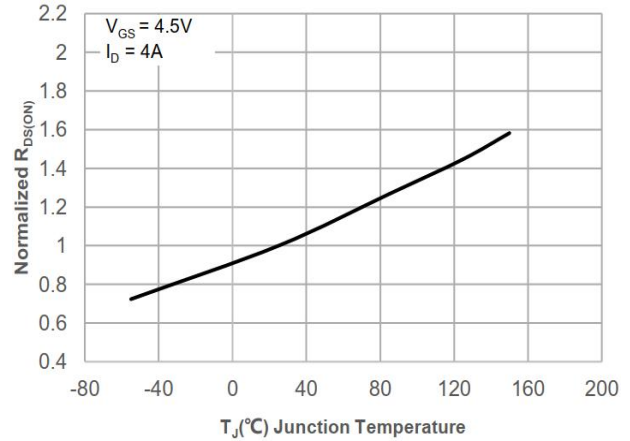


Figure 9: Maximum Safe Operating Area

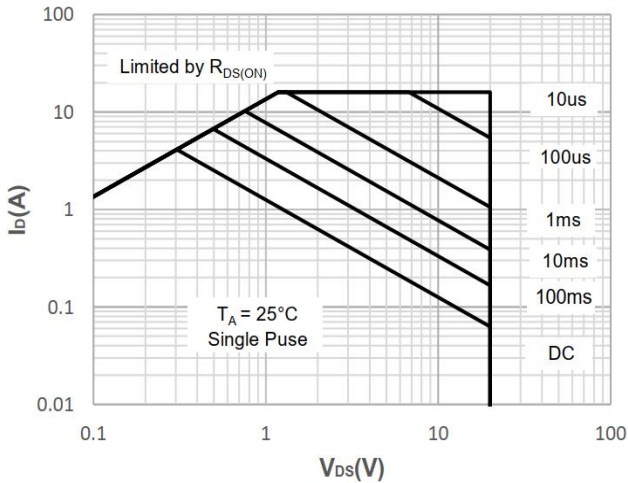


Figure 10: Maximum Continuous Driant Current vs. Ambient Temperature

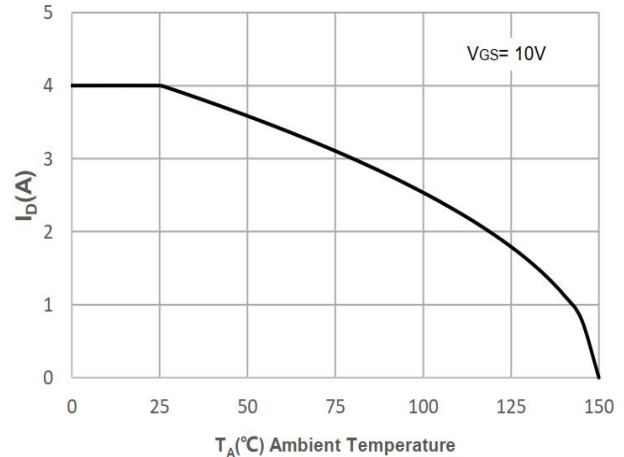


Figure 11: Normalized Maximum Transient Thermal Impedance

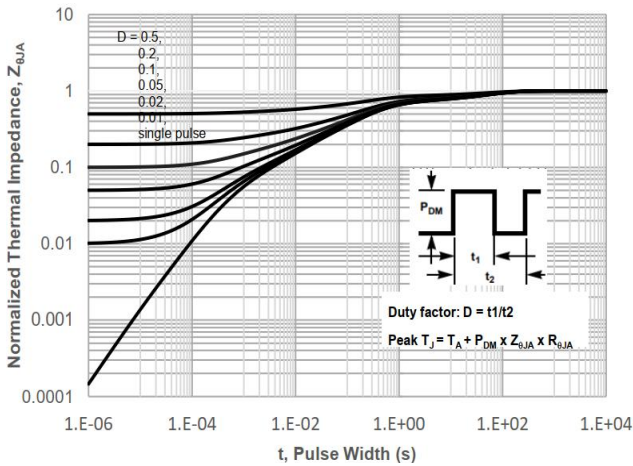
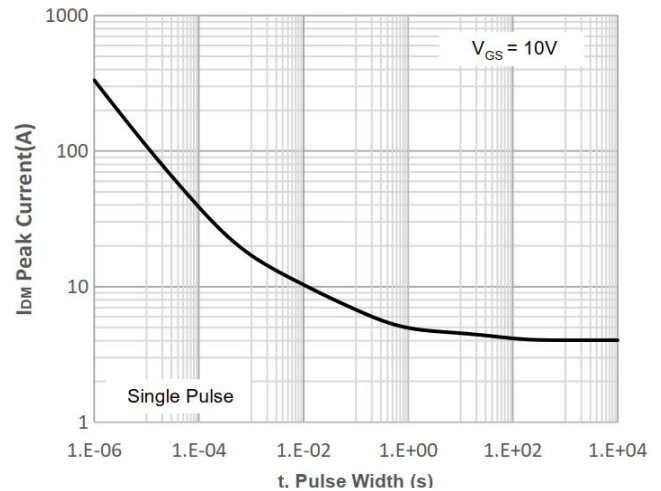
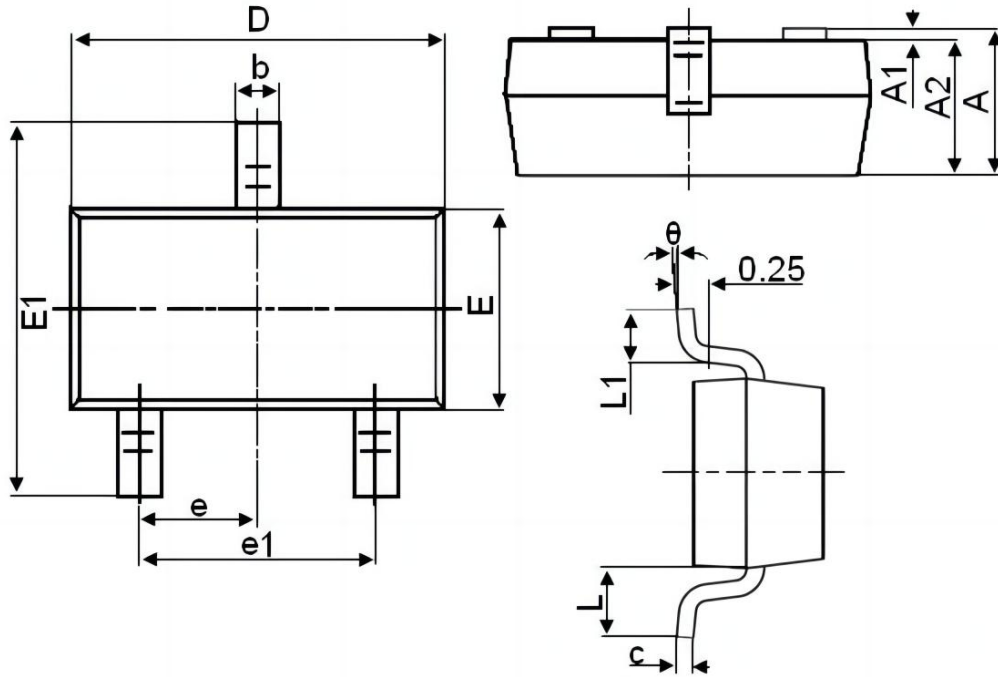


Figure 12: Peak Current Capacity



SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.043
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	2.300	2.500	0.091	0.098
e	0.950 BSC.		0.037 BSC.	
e1	1.900 REF.		0.075 REF.	
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	10°	0°	10°