AS2392-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	140mΩ@10V	3A
	300mΩ@4.5V	

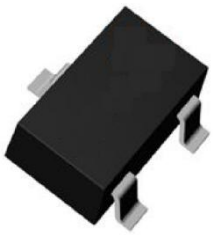
Feature

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Suffix "-Q1" for AEC-Q101

Application

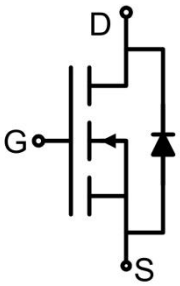
- DC/DC Converter
- Power management functions

Package

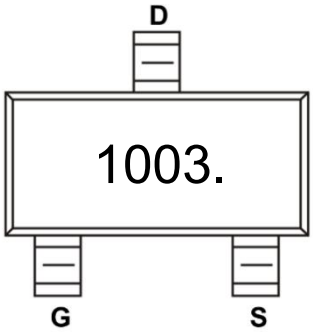


SOT-23

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	3	A
Pulsed Drain Current[1)]	I_{DM}	12	A
Avalanche energy[2)]	E_{AS}	8	mJ
Power Dissipation[3)]	P_D	1.2	W
Thermal Resistance from Junction to Ambient(t≤10S)[4)]	$R_{\theta JA}$	104	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

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	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V,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	1.0	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =3A		110	140	mΩ
		V_{GS} =4.5V, I_D =2A		160	300	
Dynamic characteristics[5)]						
Input Capacitance	C_{iss}	V_{DS} =50V,V_{GS} =0V,f =100KHz		206		pF
Output Capacitance	C_{oss}			28.9		
Reverse Transfer Capacitance	C_{rss}			1.4		
Total Gate Charge	Q_g	V_{DS} =50V,V_{GS} =10V,I_D=3A		4.3		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			1.1		
Reverse Recovery Charge	Q_{rr}	I_F=3A, di/dt=100A/us		39.4		
Reverse Recovery Time	t_{rr}			32.1		nS
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V I_D=3A, R_{GEN}=2Ω		14.7		
Turn-on rise time	t_r			3.5		
Turn-off delay time	$t_{d(off)}$			20.9		
Turn-off fall time	t_f			2.7		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				3	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=3A			1.3	V

Notes:

1) Repetitive rating; pulse width limited by max. junction temperature.

2) V_{DD}=50V, R_G=25Ω, L=0.5mH.

3) Pd is based on max. junction temperature, using ≤10us junction-to-ambient thermal resistance.

4) The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

5) Guaranteed by design, not subject to production testing.

Typical Characteristics

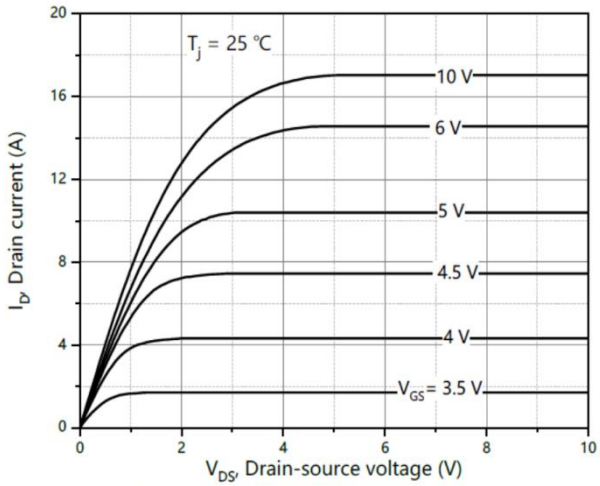


Figure1. Output Characteristics

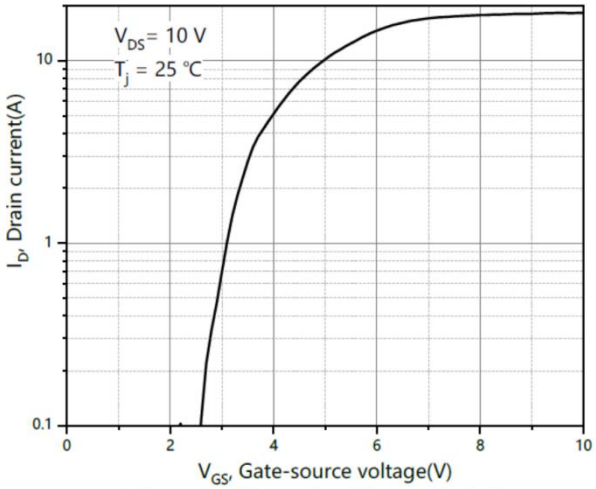


Figure2. Transfer Characteristics

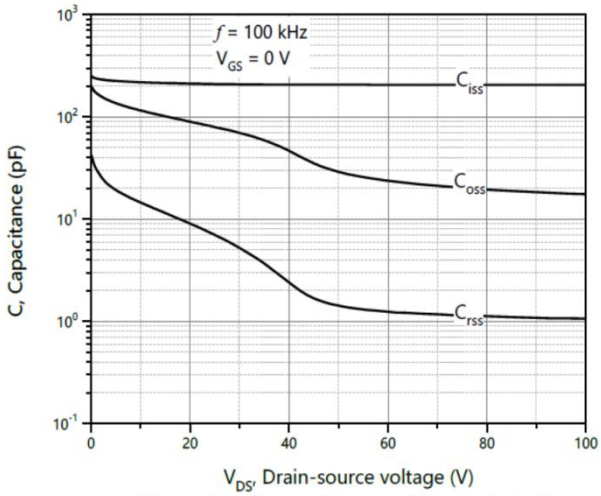


Figure3. Capacitance Characteristics

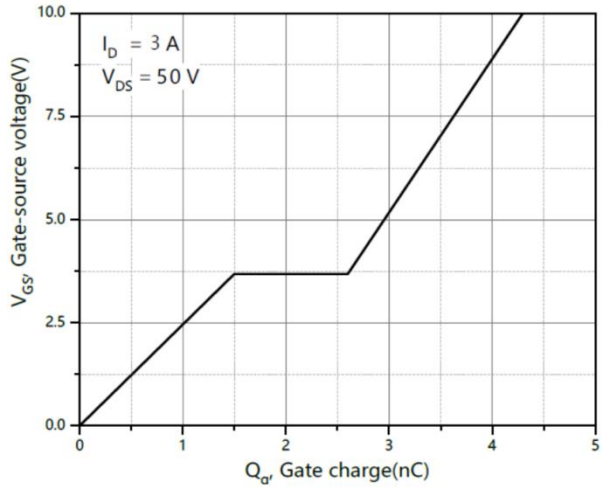


Figure4. Gate Charge

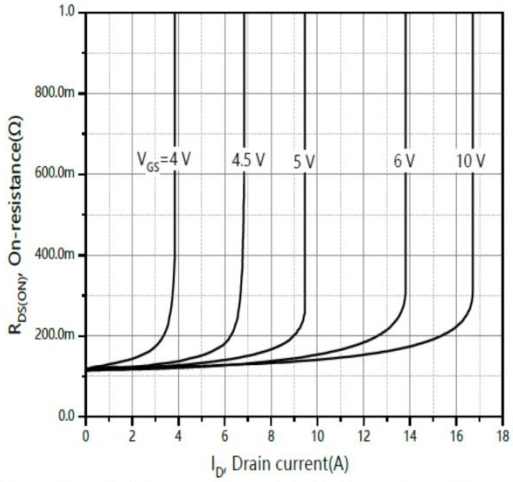


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

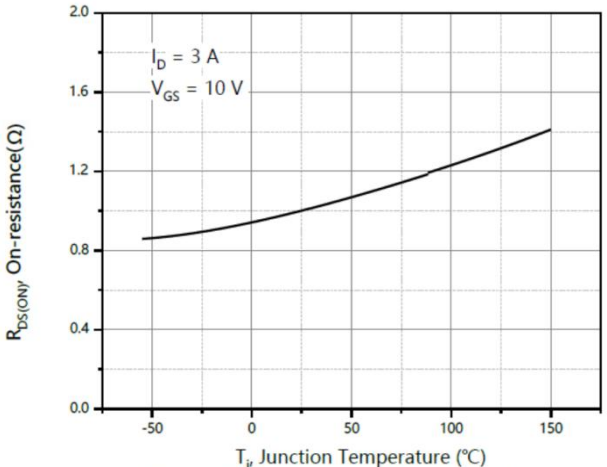


Figure6.Normalized On-Resistance

Typical Characteristics

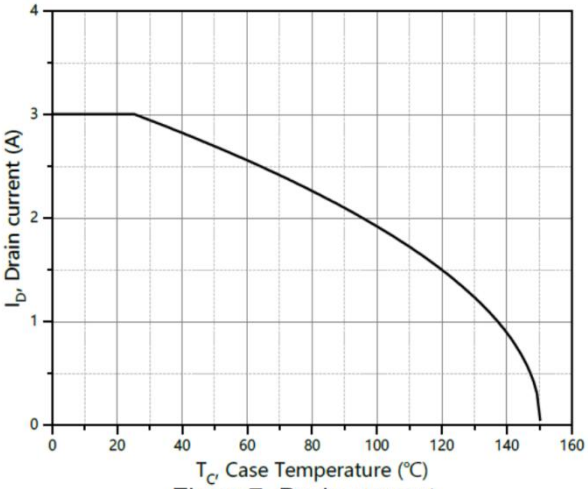


Figure7. Drain current

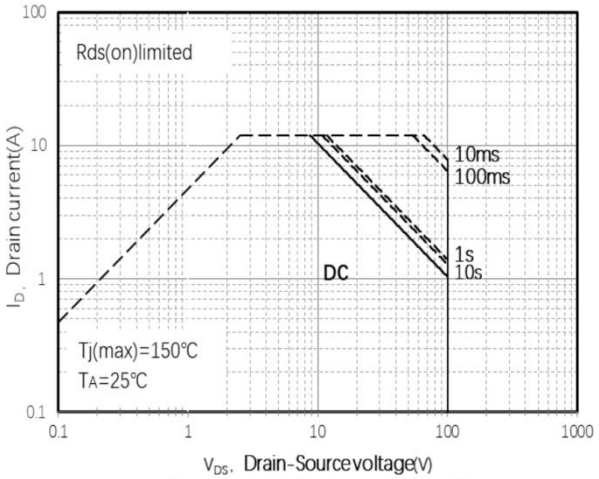


Figure8.Safe Operation Area

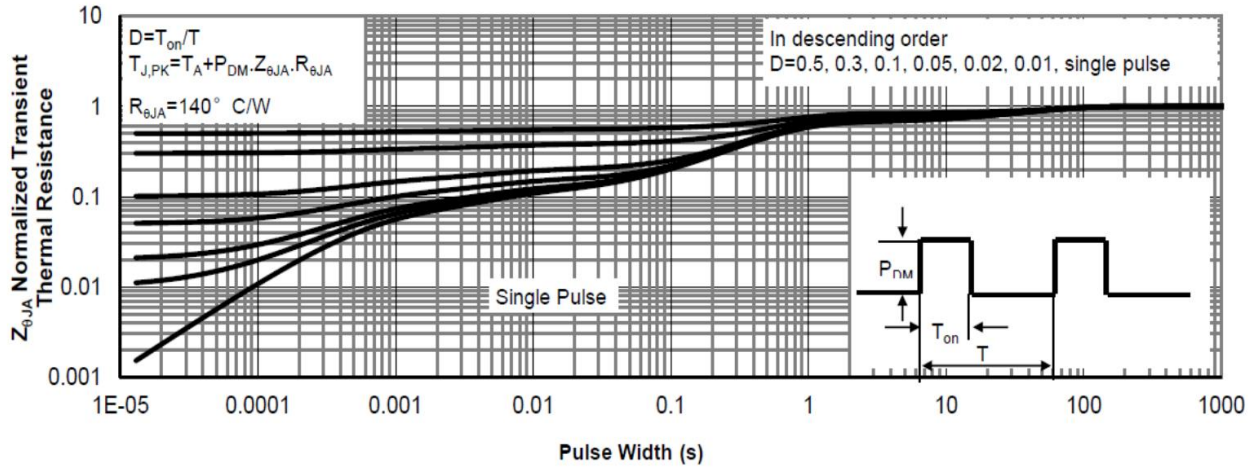


Figure9.Normalized Maximum Transient thermal impedance

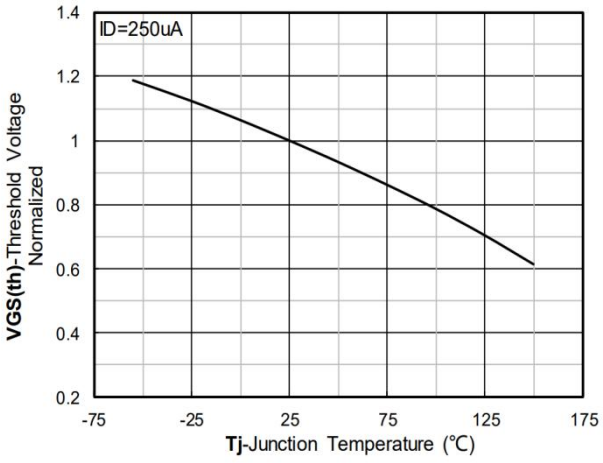
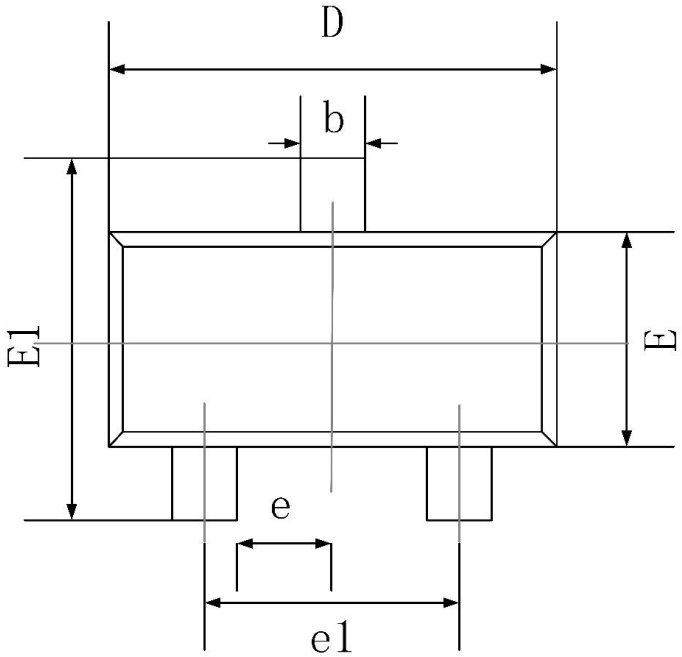
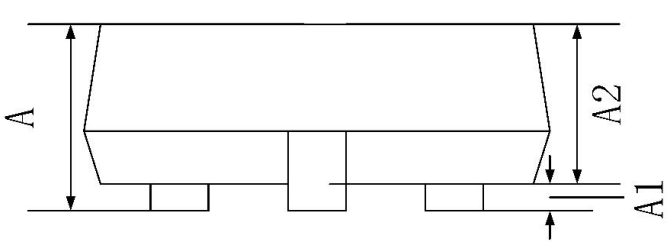
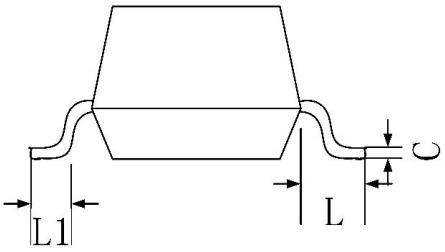


Figure10. Normalized Threshold voltage

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	0.200	0.003	0.008
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	0.300	0.500	0.012	0.020