AS2010L-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	23mΩ@-4.5V	-10A
	26mΩ@-2.5V	
	34mΩ@-1.8V	

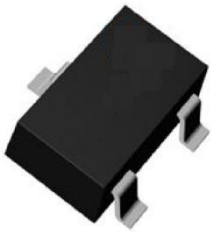
Feature

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching
- Suffix "-Q1" for AEC-Q101

Application

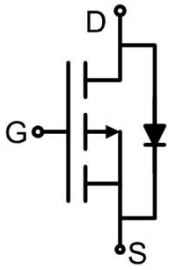
- Battery protection
- Load switch
- Power management

Package

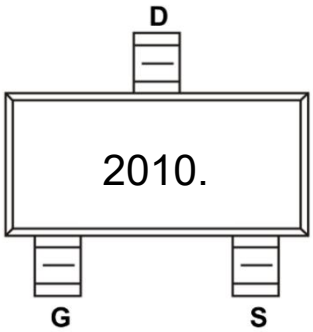


SOT-23-3L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current(Tc=25℃)	I_D	-10	A
Continuous Drain Current(Tc=70℃)	I_D(70℃)	-8	A
Pulsed Drain Current[1)]	I_{DM}	-32	A
Power Dissipation	P_D	2.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	50	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	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	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V,Tc =25℃			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4	-0.62	-1.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-6A		15	23	mΩ
		V_{GS} =-2.5V, I_D =-6A		18	26	
		V_{GS} =-1.8V, I_D =-4A		24	34	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-10V,V_{GS} =0V,f =1MHz		2992		pF
Output Capacitance	C_{oss}			330		
Reverse Transfer Capacitance	C_{rss}			272		
Total Gate Charge	Q_g	V_{DS} =-15V,V_{GS} =-10V, I_D =-9.1A		72.8		nC
Gate-Source Charge	Q_{gs}			6.6		
Gate-Drain Charge	Q_{gd}			10.1		
Turn-on delay time	$t_{d(on)}$	V_{DS}=-15V, V_{GS} =-10V, I_D =-6A, R_{GEN}=2.5Ω		7		nS
Turn-on rise time	t_r			33		
Turn-off delay time	$t_{d(off)}$			130		
Turn-off fall time	t_f			132		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-10	A
Diode Forward Voltage	V_{SD}	V_{GS} =0V, I_S=-10A			-1.2	V
Reverse Recovery Charge	Q_{rr}	I_F=-6A,di/dt=100A/μs		34		nC
Reverse Recovery Time	t_{rr}			67		nS

Notes:

1) Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

2) Guaranteed by design, not subject to production.

Typical Characteristics

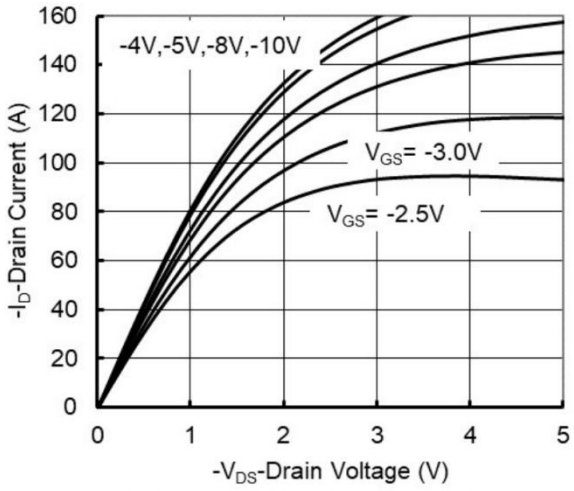


Figure 1. Output Characteristics

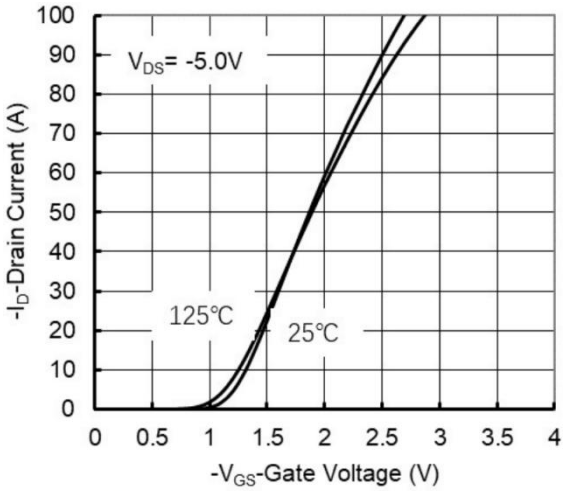


Figure 2. Transfer Characteristics

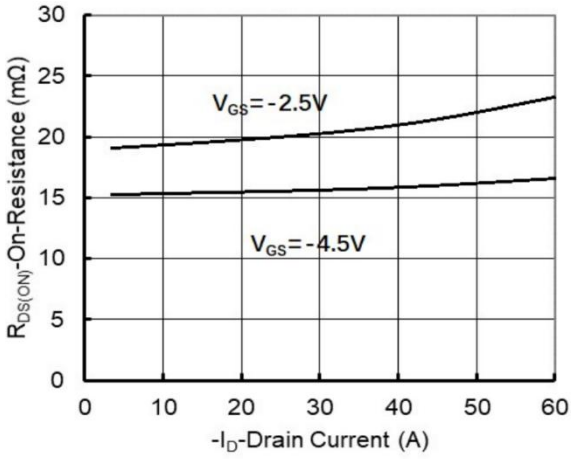


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

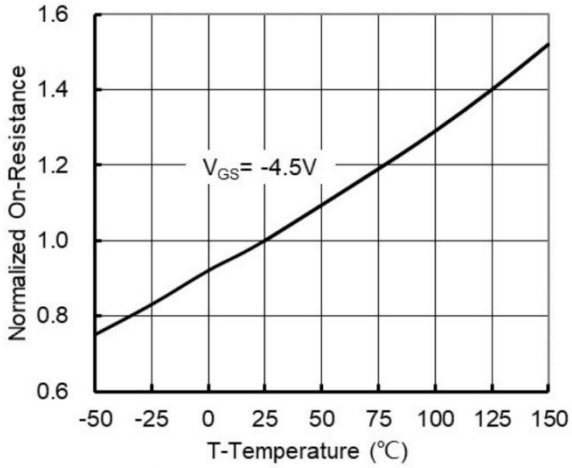


Figure 4. On-Resistance vs. Junction Temperature

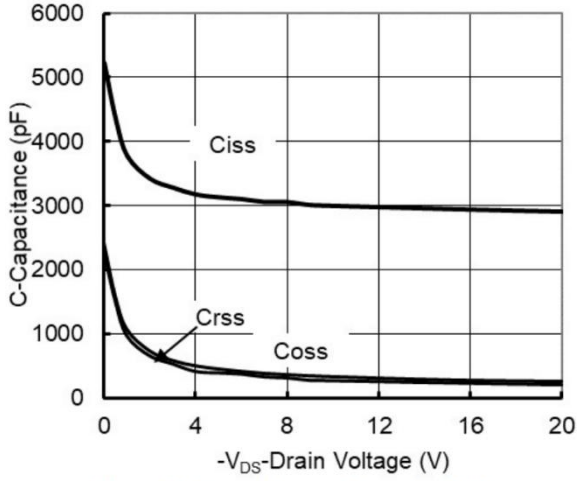


Figure 5. Capacitance Characteristics

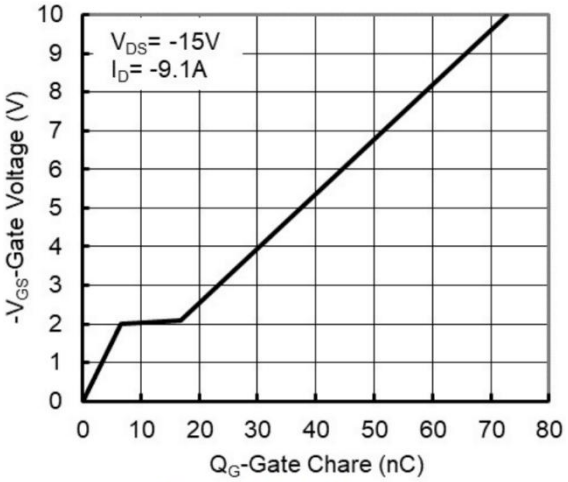


Figure 6. Gate Charge

Typical Characteristics

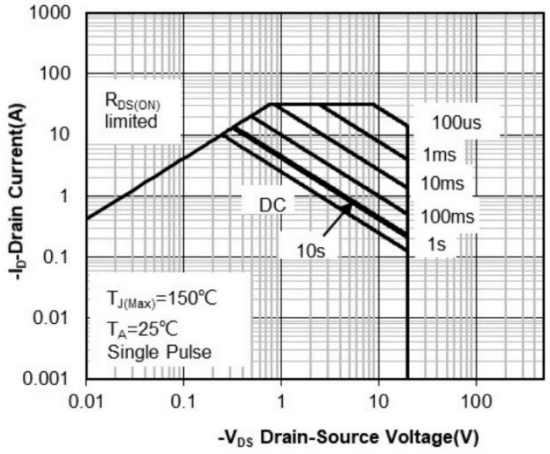


Figure 7. Safe Operation Area

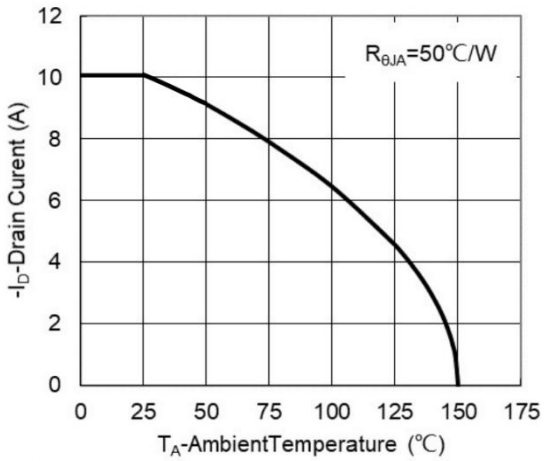
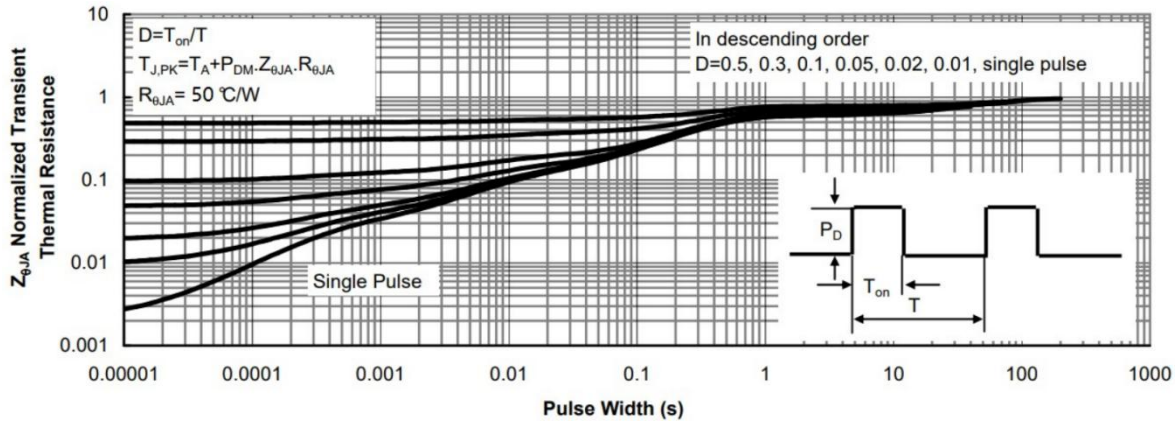
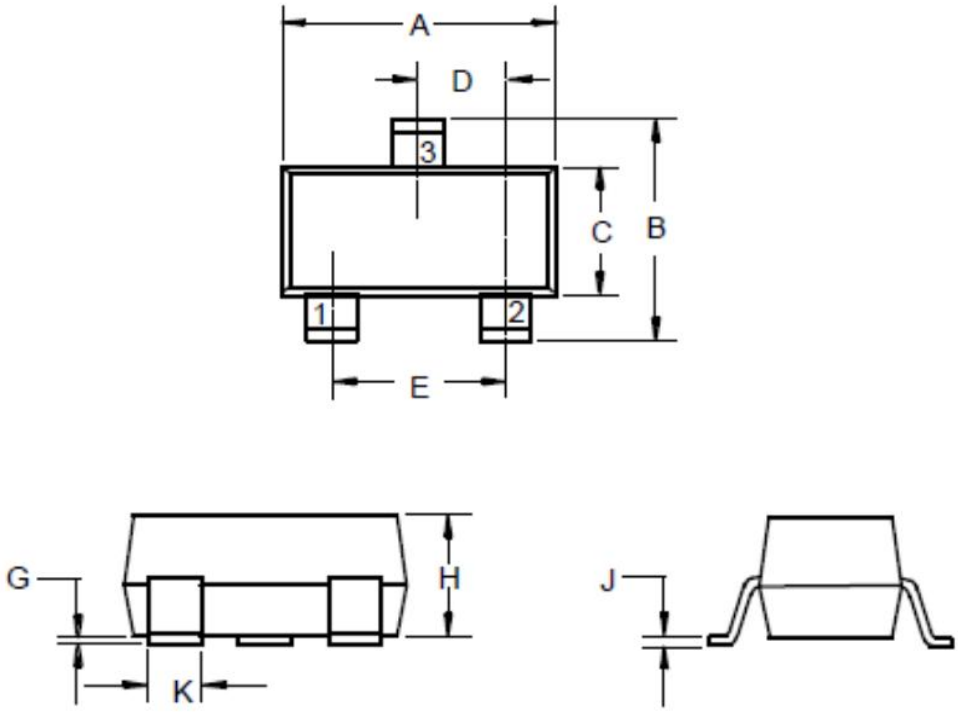


Figure 8. Maximum Continuous Drain Current vs Case Temperature



SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.820	3.020	0.111	0.119
B	2.650	2.950	0.104	0.116
C	1.500	1.700	0.059	0.067
D	0.950 TYP		0.037 TYP	
E	1.800	2.000	0.071	0.079
G	0.000	0.200	0.000	0.008
H	1.050	1.250	0.041	0.049
J	0.100	0.200	0.004	0.008
K	0.300	0.500	0.012	0.020