AW4P06S-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	120mΩ@10V	-4.3A
	170mΩ@4.5V	

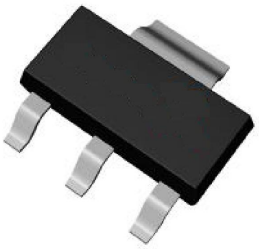
Feature

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

Application

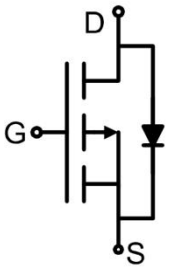
- DC-DC Converters
- Power management functions

Package



SOT-223

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60V	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-4.3	A
Pulsed Drain Current	I_{DM}	-20	A
Power Dissipation	P_D	3.1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	40.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 ºC, 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	-60V			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-48V,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		-2.5	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-4.0A		105	120	mΩ
		V_{GS} =-4.5V, I_D =-3.0A		133	170	
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =-30V,V_{GS} =0V,f =1MHz		930		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			35		
Total Gate Charge	Q_g	V_{DS} =-30V,V_{GS} =-10V,I_D =-4A		25		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			7		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V,V_{GS}=-10V, R_L=7.5Ω,R_{GEN}=3Ω		8		nS
Turn-on rise time	t_r			4		
Turn-off delay time	$t_{d(off)}$			32		
Turn-off fall time	t_f			7		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				-4.3	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-4A			-1.2	V
Reverse Recovery Time	trr	TJ = 25°C, IF =- 4A di/dt = -100A/μs(Note3)		25		nS
Reverse Recovery Charge	Qrr			31		nC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

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

Typical Characteristics

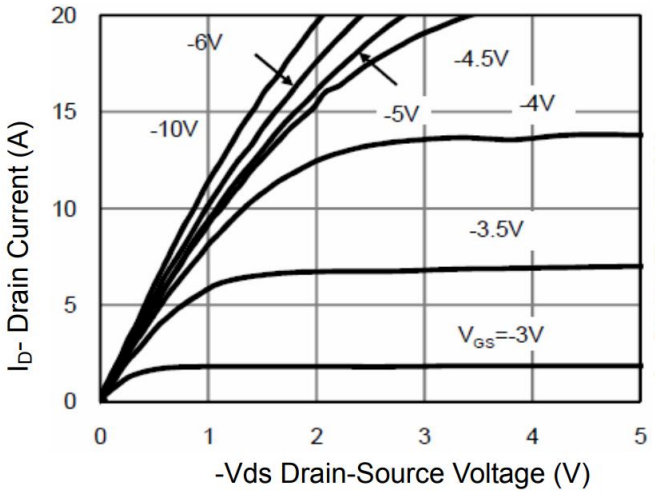


Figure 1 Output Characteristics

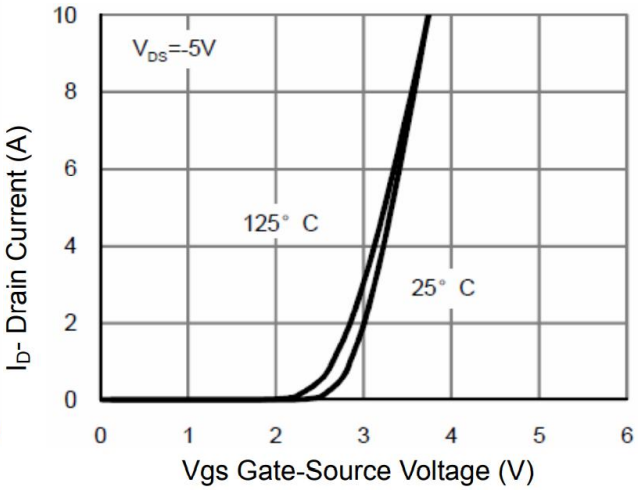


Figure 2 Transfer Characteristics

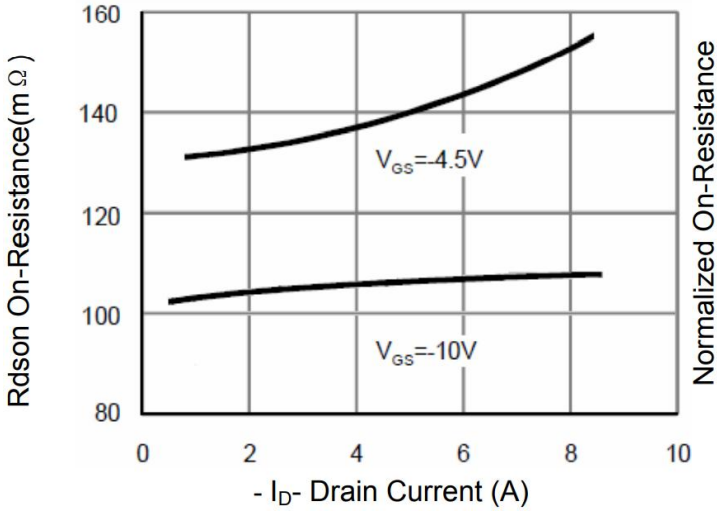


Figure 3 Rdson- Drain Current

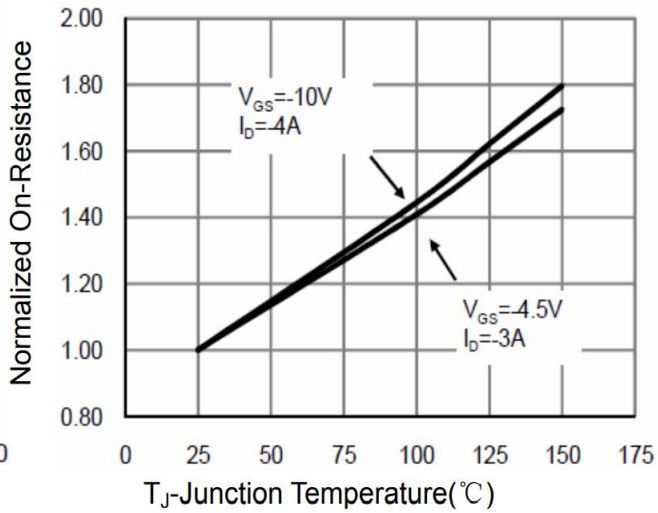


Figure 4 Rdson-Junction Temperature

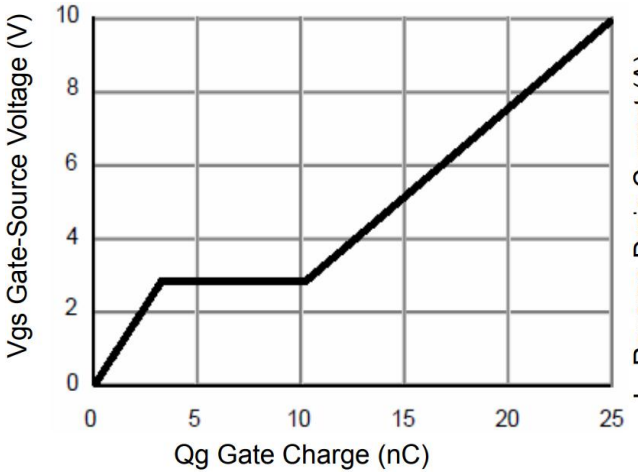


Figure 5 Gate Charge

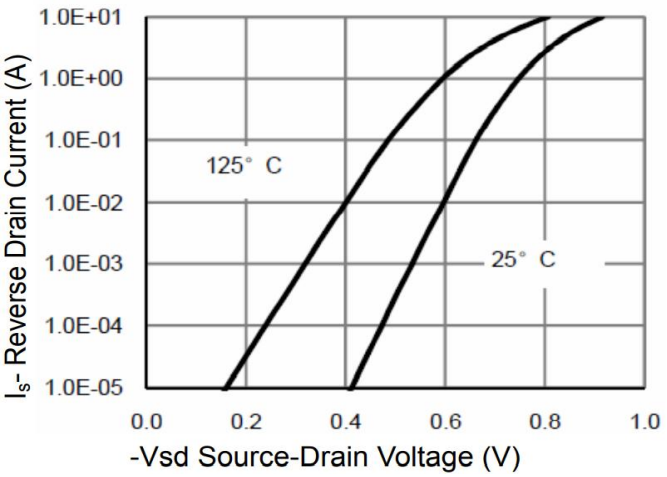


Figure 6 Source- Drain Diode Forward

Typical Characteristics

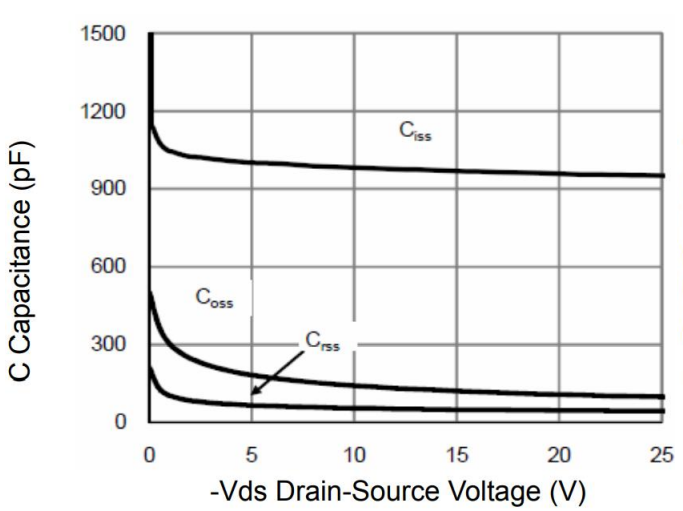


Figure 7 Capacitance vs Vds

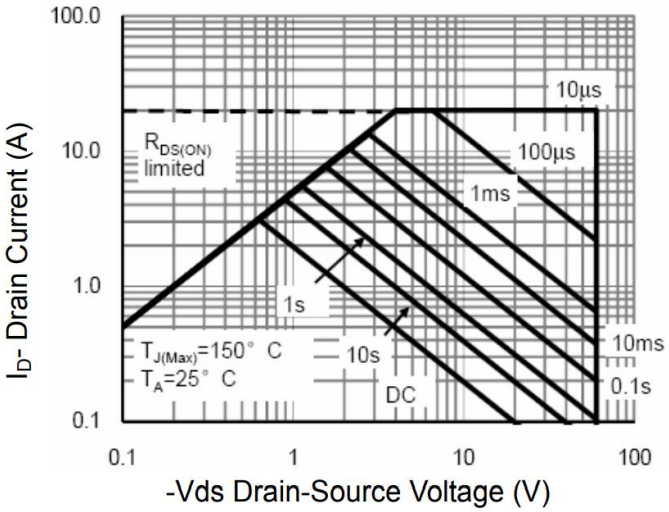


Figure 8 Safe Operation Area

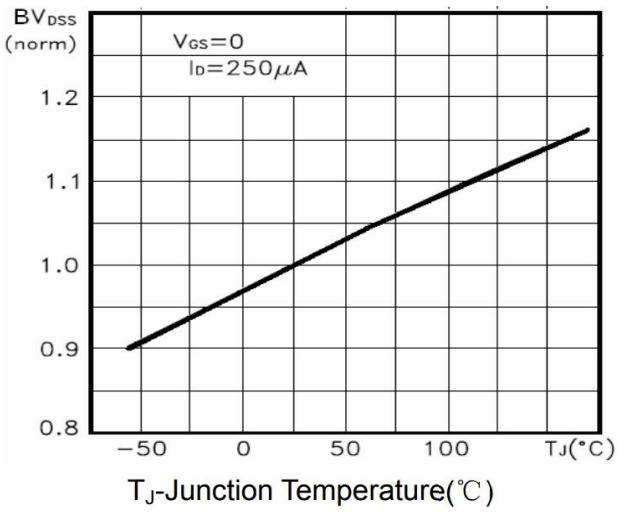


Figure 9 BVDSS vs Junction Temperature

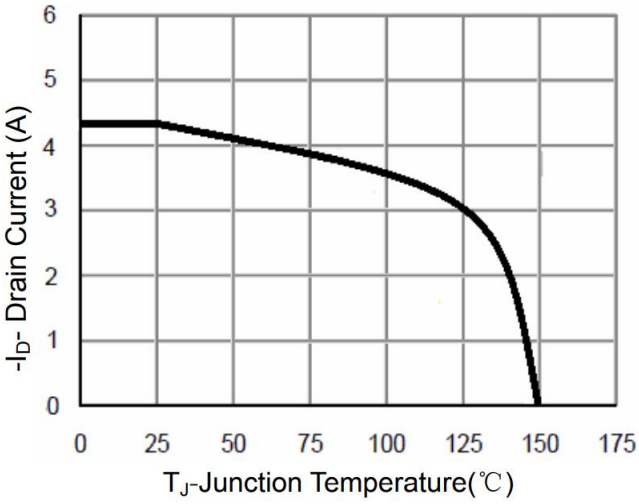


Figure 10 ID Current De-rating

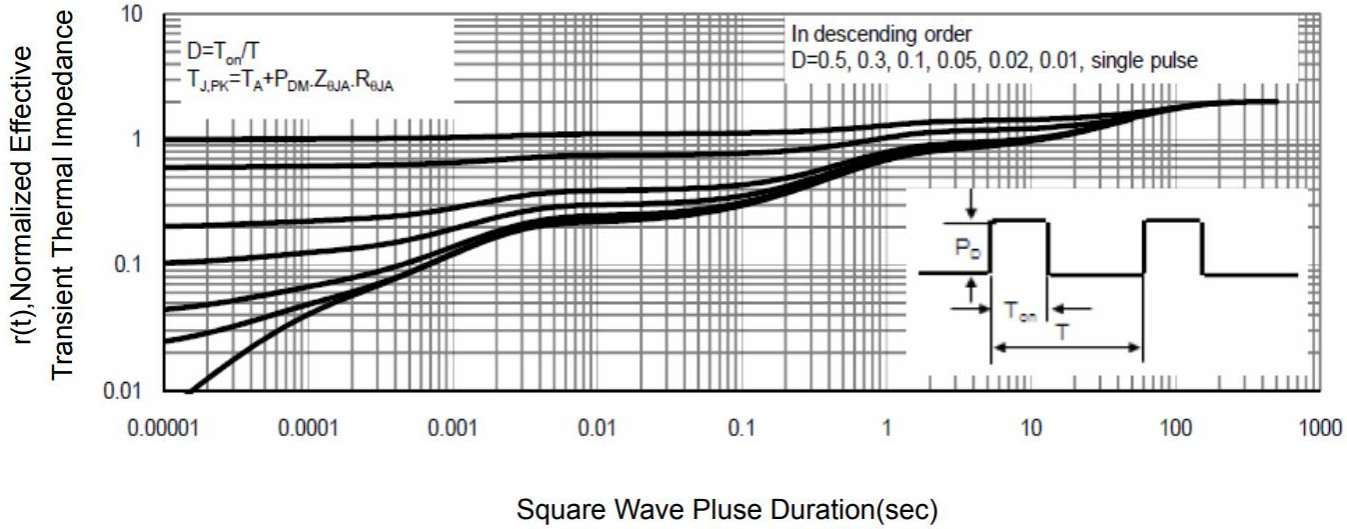
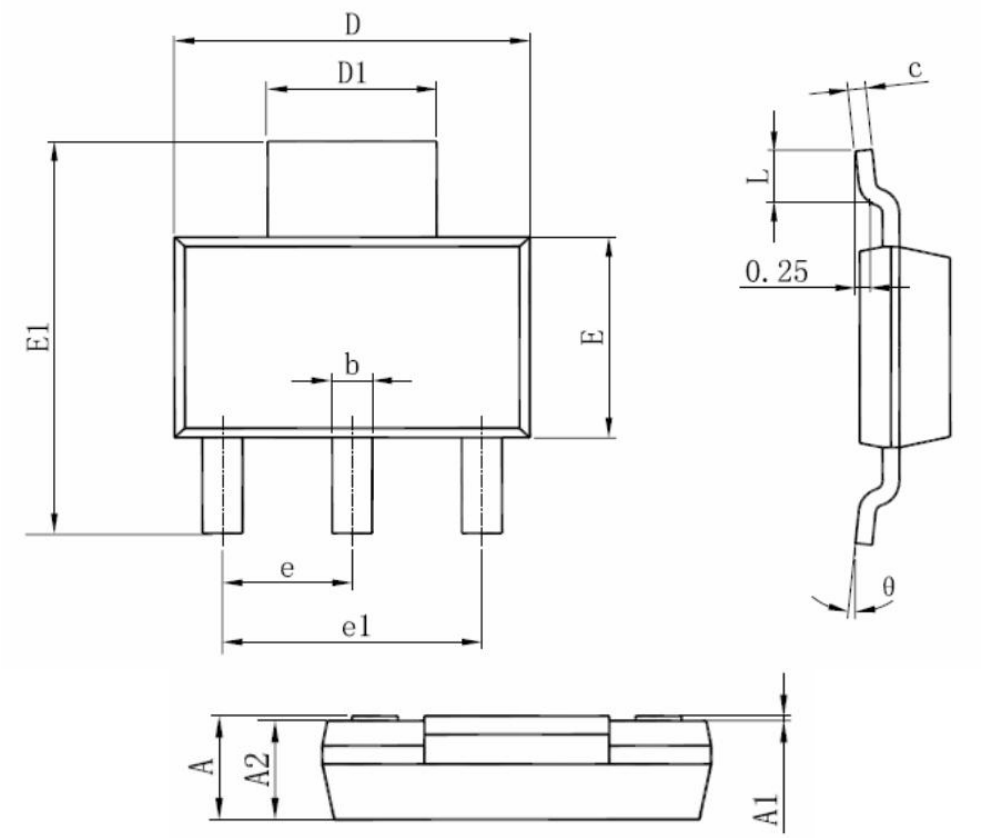


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT-223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°