AG3P3DN100MQSP-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	130mΩ@10V	3.3A
	165mΩ@4.5V	

Feature

- Advanced SGT technology
- Low $R_{DS(ON)}$ × Q_G FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Suffix “-Q1” for AEC-Q101

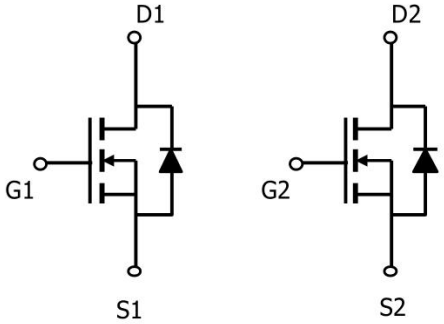
Application

- Load switching

Package

SOP-8

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(T_C =25℃)	I_D	3.3	A
Continuous Drain Current[1]	I_D	2.5	A
Continuous Drain Current[1] (T_A =70℃)	I_D(70℃)	2	A
Pulsed Drain Current (t_p =10μs)	I_{DM}	20	A
Single Pulse Avalanche Energy[2]	E_{AS}	0.1	mJ
Power Dissipation[1]	P_D	1.6	W
Thermal Resistance Junction to Ambient[1]	$R_{\theta JA}$	78	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=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	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.5	V
Drain-source on-resistance[3]	$R_{DS(on)}$	V_{GS} =10V, I_D =3A		105	130	mΩ
		V_{GS} =4.5V, I_D =2A		135	165	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		143		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			2.8		
Total Gate Charge	Q_g	V_{DS} =50V, V_{GS}=10V, I_D =3A		6		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			0.8		
Turn-on delay time	$t_{d(on)}$	V_{DS} =50V, V_{GS}=10V, I_D =3A R_G =2Ω		13.2		nS
Turn-on rise time	t_r			2.2		
Turn-off delay time	$t_{d(off)}$			11		
Turn-off fall time	t_f			1.1		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				3.3	A
Diode Forward voltage[3]	V_{SD}	V_{GS} =0V, I_S =3A			1	V
Reverse recover time	T_{rr}	V_{GS} =0V, I_F =3A di/dt =-100A/us		30		nS
Reverse recovery charge	Q_{rr}			24		nC

Notes:

1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2) The EAS data shows Max. rating. The test condition is V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH

3) The data tested by pulsed, pulse width ≤00μs, duty cycle ≤2%.

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

Typical Characteristics

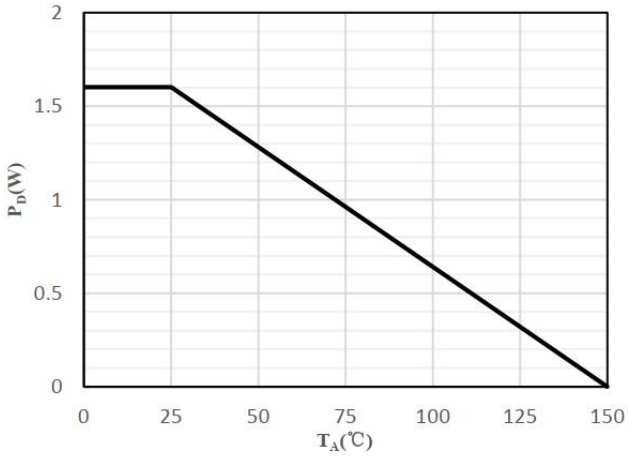


Fig 1 Power Dissipation

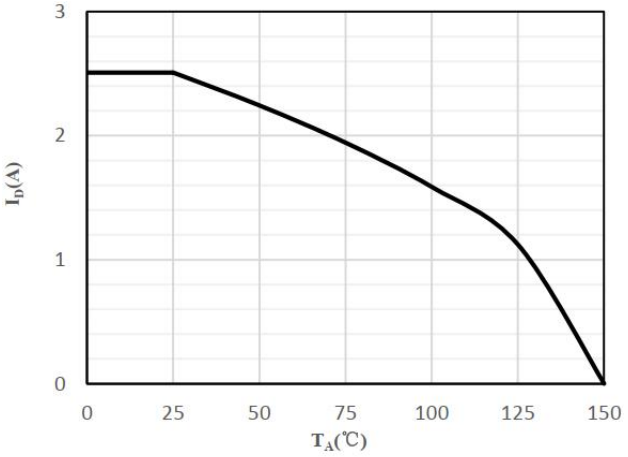


Fig 2 Drain Current

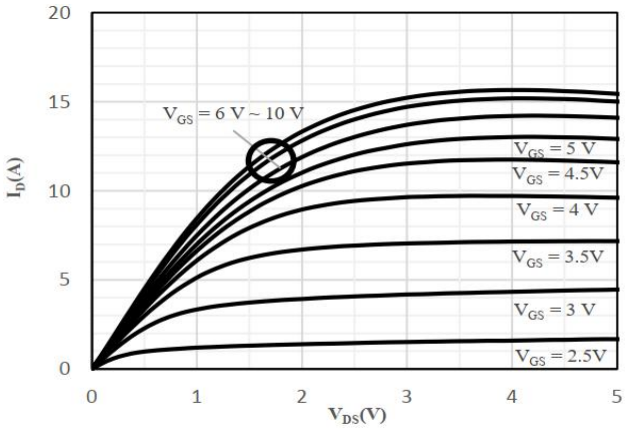


Fig 3 Typical Output Characteristics

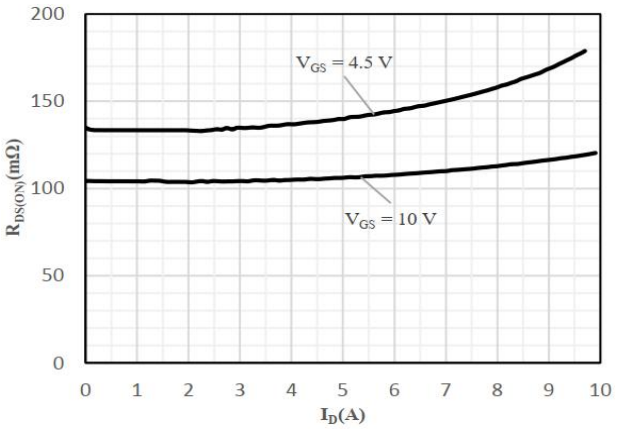


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

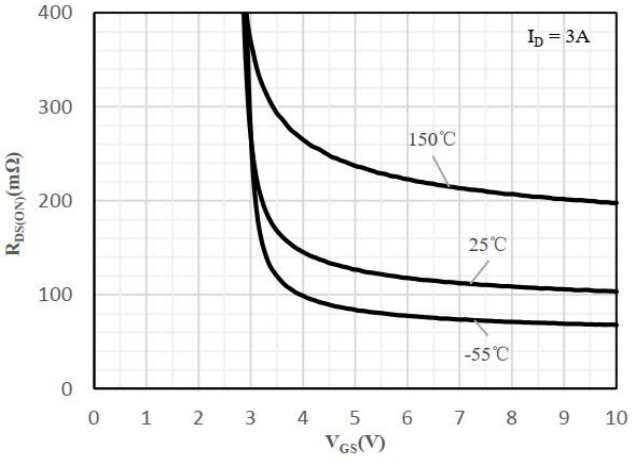


Fig 5 On-Resistance vs. Gate-Source Voltage

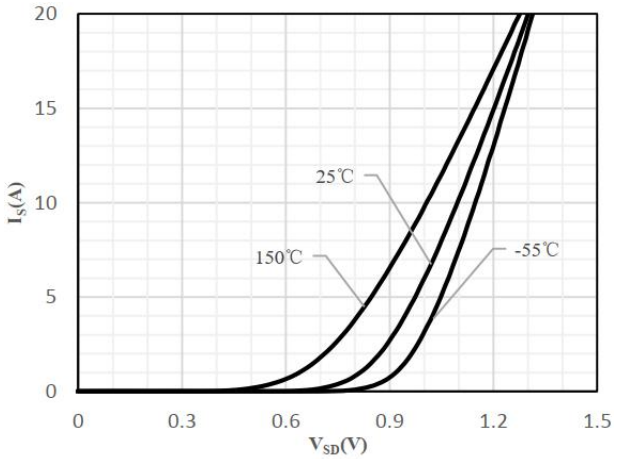


Fig 6 Body-Diode Characteristics

Typical Characteristics

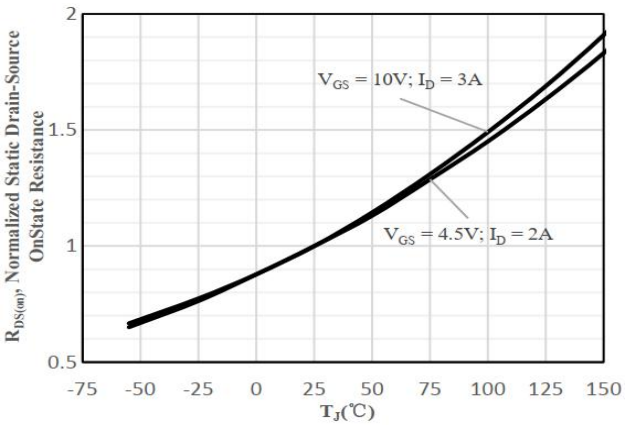


Fig 7 Normalized On-Resistance vs. Junction Temperature

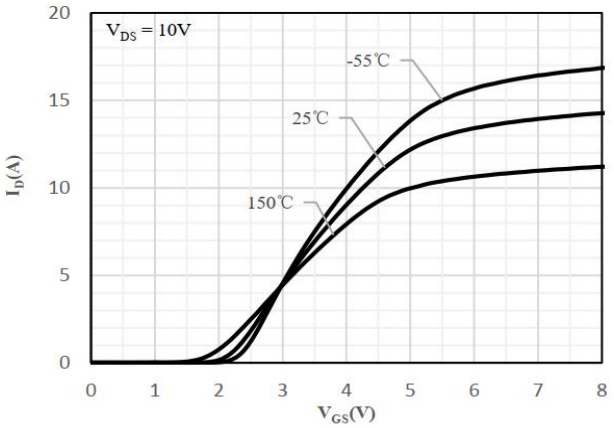


Fig 8 Transfer Characteristics

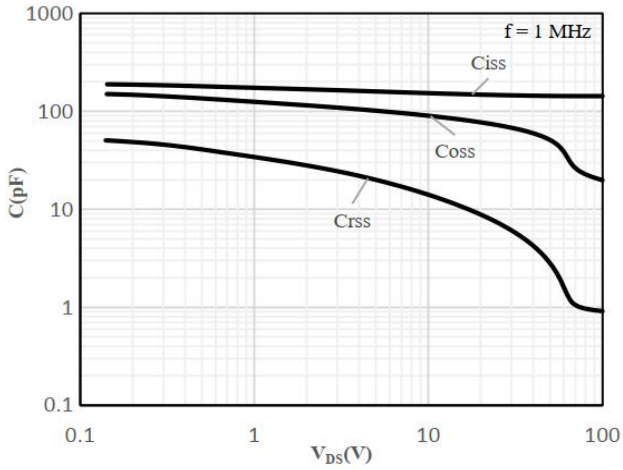


Fig 9 Capacitance Characteristics

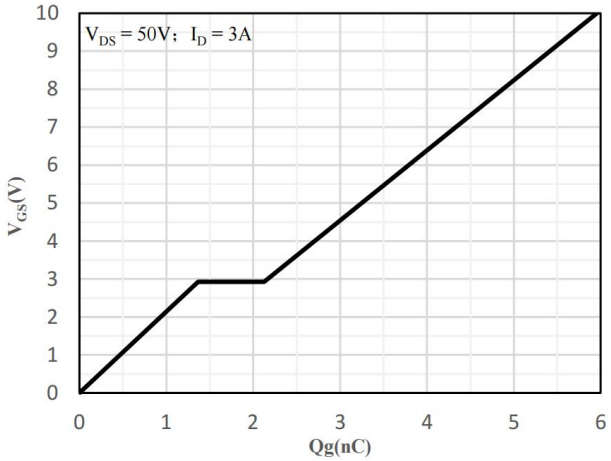


Fig 10 Gate-Charge Characteristics

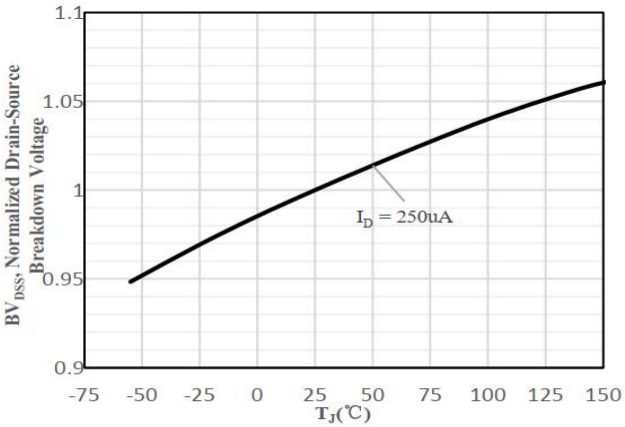


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

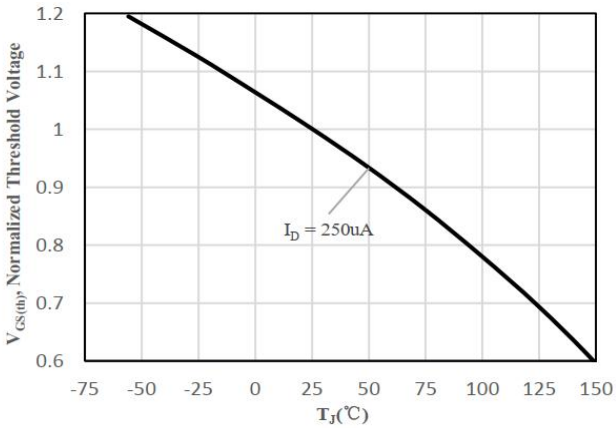
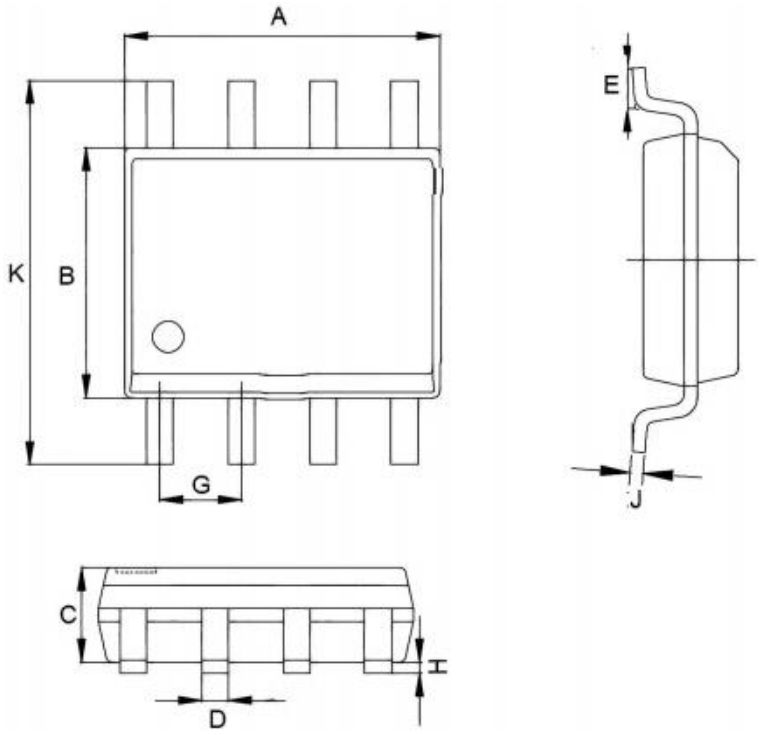


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.800	5.200	0.189	0.205
B	3.800	4.200	0.150	0.165
C	1.300	1.500	0.051	0.059
D	0.300	0.500	0.012	0.020
E	0.400	1.000	0.016	0.039
G	1.170	1.370	0.046	0.054
H	0.100	0.300	0.004	0.012
J	0.100	0.300	0.004	0.012
K	5.800	6.200	0.228	0.244