AG453SN080MQTT-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
80V	1.13mΩ@10V	453A

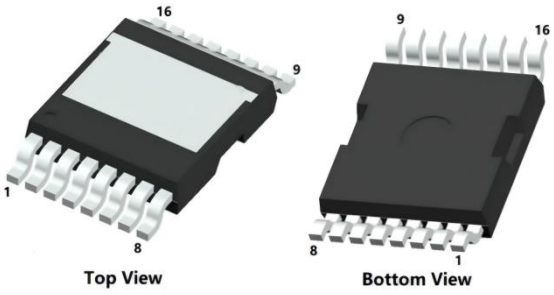
Feature

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Suffix “-Q1” for AEC-Q101

Application

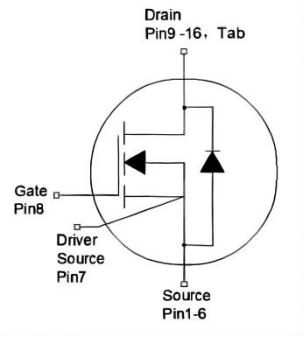
- BLDC motor driver
- Load switch
- DC-DC convertor
- 48V Port

Package

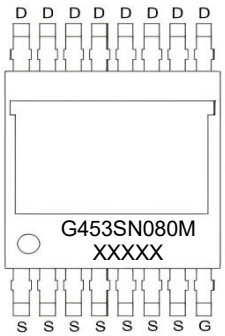


TOLT

Circuit diagram



Marking



Document ID	Issued Date	Revised Date	Revision	Page.
AS-1151438	2023/12/08	2026/04/29	B	6

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1,3] (V_{GS} =10V, Chip limitation)	I_D	453	A
Continuous Drain Current[1,3] (V_{GS} =10V, T_C =100℃)	I_D (100℃)	320	A
Pulsed Drain Current (t_p ≤10μs)	I_{DM}	1812	A
Single Pulse Avalanche Energy[2]	E_{AS}	1568	mJ
Power Dissipation[1,3]	P_D	468	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.32	℃/W
Operating Junction Temperature	T_J	-55 ~ +175	℃
Storage Temperature Range	T_{STG}	-55 ~ +175	℃

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 =1mA	80			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	2.2	3	3.8	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =50A		0.86	1.13	mΩ
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =40V, V_{GS} =0V, f =1MHz		12790		pF
Output Capacitance	C_{oss}			3130		
Reverse Transfer Capacitance	C_{rss}			106		
Total Gate Charge	Q_g	V_{DS} =40V, V_{GS} =10V, I_D =50A		219		nC
Gate-Source Charge	Q_{gs}			55		
Gate-Drain Charge	Q_{gd}			69		
Turn-on delay time	$t_{d(on)}$	V_{DS} =40V, V_{GS} =10V, I_D =50A R_G =3Ω		23.5		nS
Turn-on rise time	t_r			152		
Turn-off delay time	$t_{d(off)}$			110		
Turn-off fall time	t_f			120		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				453	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =50A			1.2	V
Reverse Recovery Time	T_{rr}	V_{GS} =0V, V_R =40V, I_F =50A di/dt =-100A/μs		84		nS
Reverse Recovery Charge	Q_{rr}			158		nC

Notes:

1) The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

2) T_J =25℃, V_G =10V, R_G =25Ω, L =1mH, I_{AS} =56A.

3) Thermal resistance from junction to soldering point (on the exposed drain pad).

4) Guaranteed by design,not subject to production.

Typical Characteristics

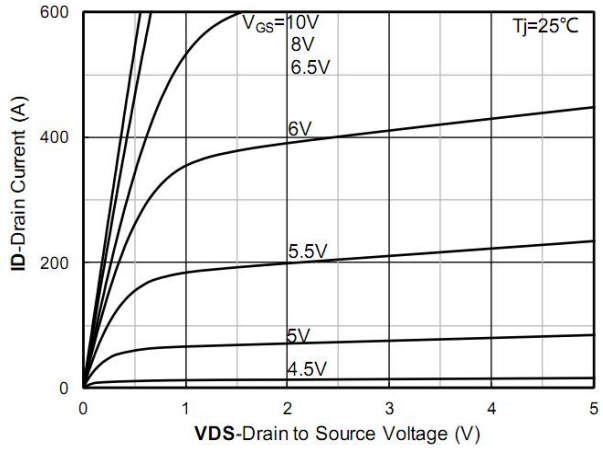


Figure 1. Output Characteristics; typical values

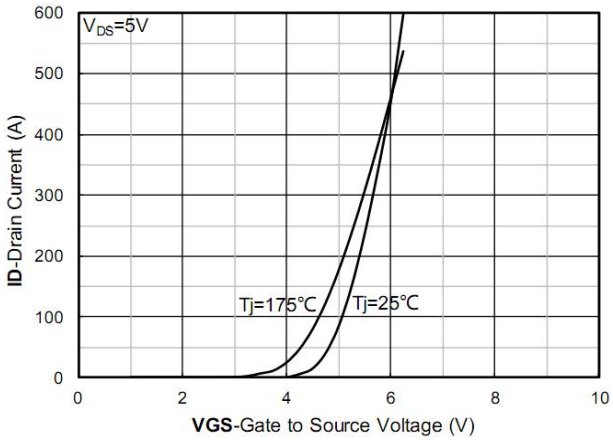


Figure 2. Transfer Characteristics; typical values

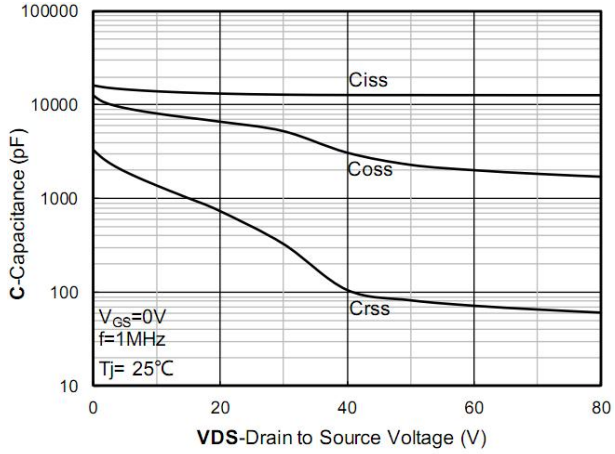


Figure 3. Capacitance Characteristics; typical values

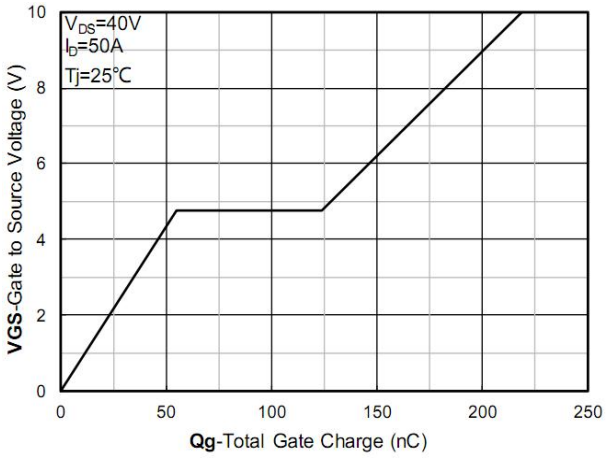


Figure 4. Gate Charge; typical values

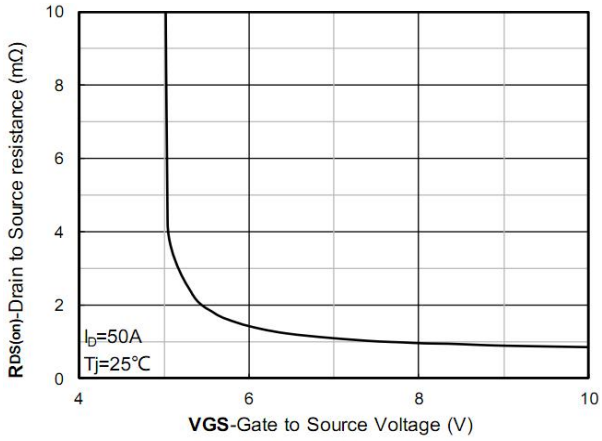


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

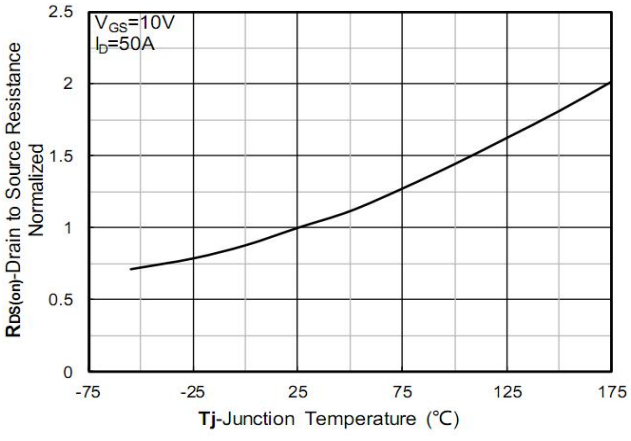


Figure 6. Normalized On-Resistance

Document ID	Issued Date	Revised Date	Revision	Page.
AS-1151438	2023/12/08	2026/04/29	B	6

Typical Characteristics

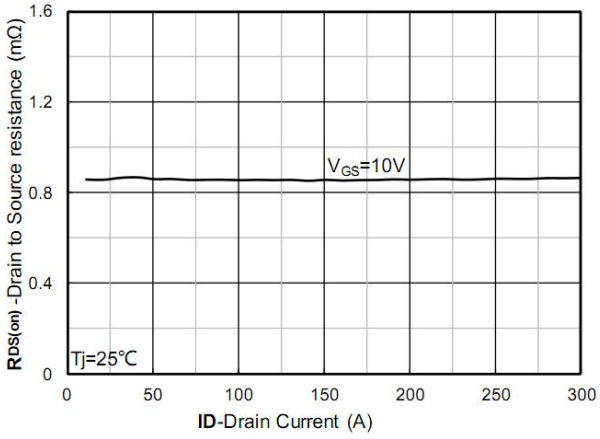


Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

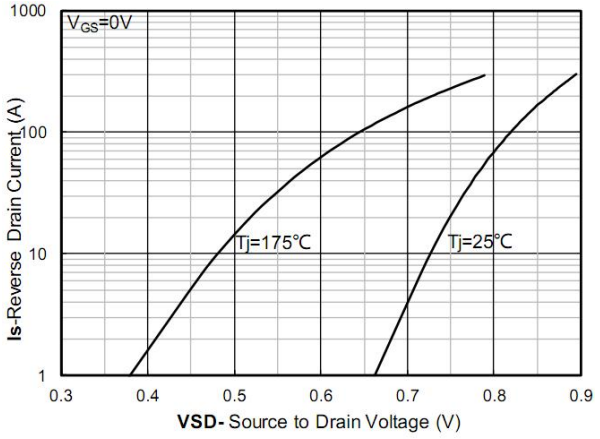


Figure 8. Forward characteristics of reverse diode; typical values

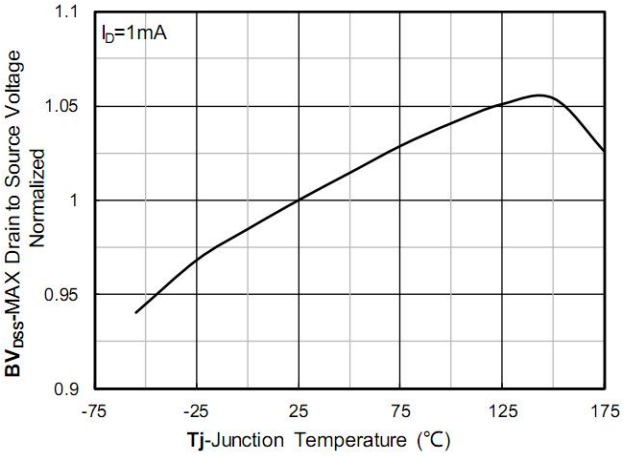


Figure 9. Normalized breakdown voltage

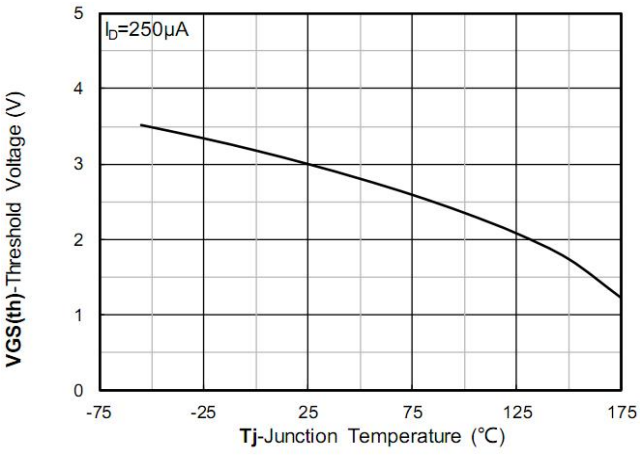


Figure 10. Gate Threshold voltage; typical values

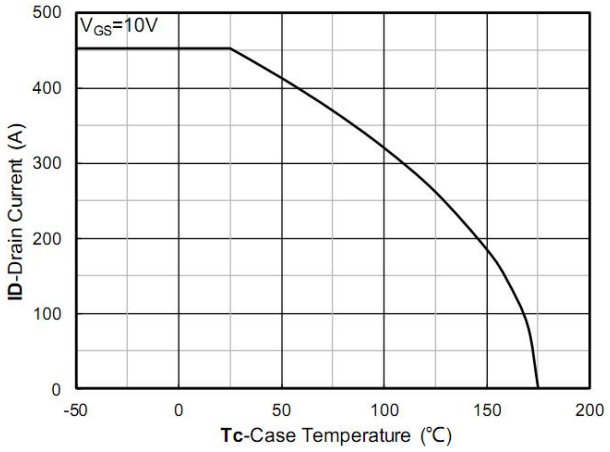


Figure 11. Current dissipation

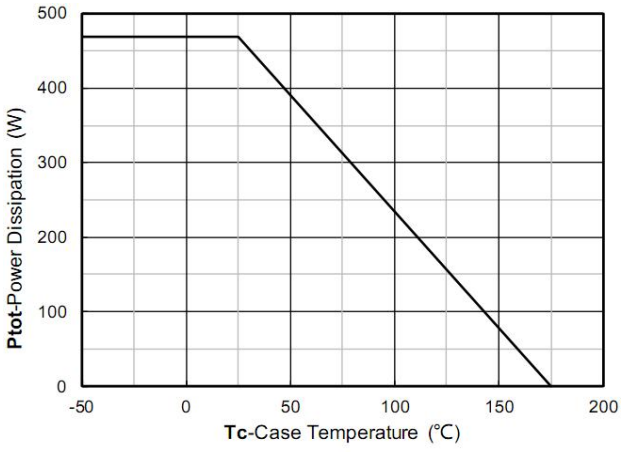


Figure 12. Power dissipation

Typical Characteristics

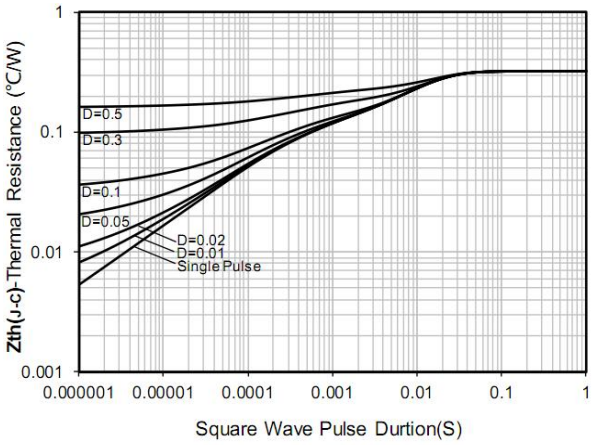


Figure 13. Maximum Transient Thermal Impedance

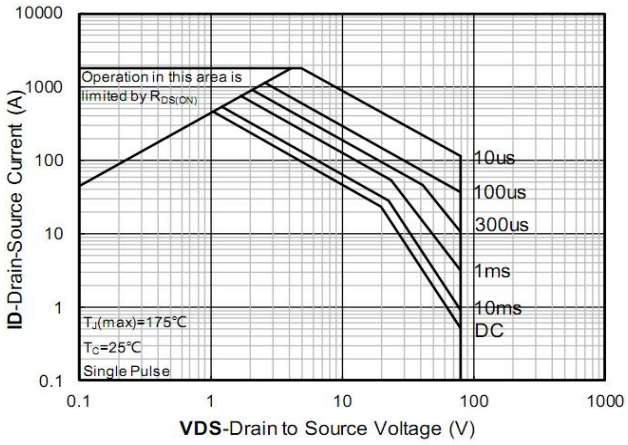
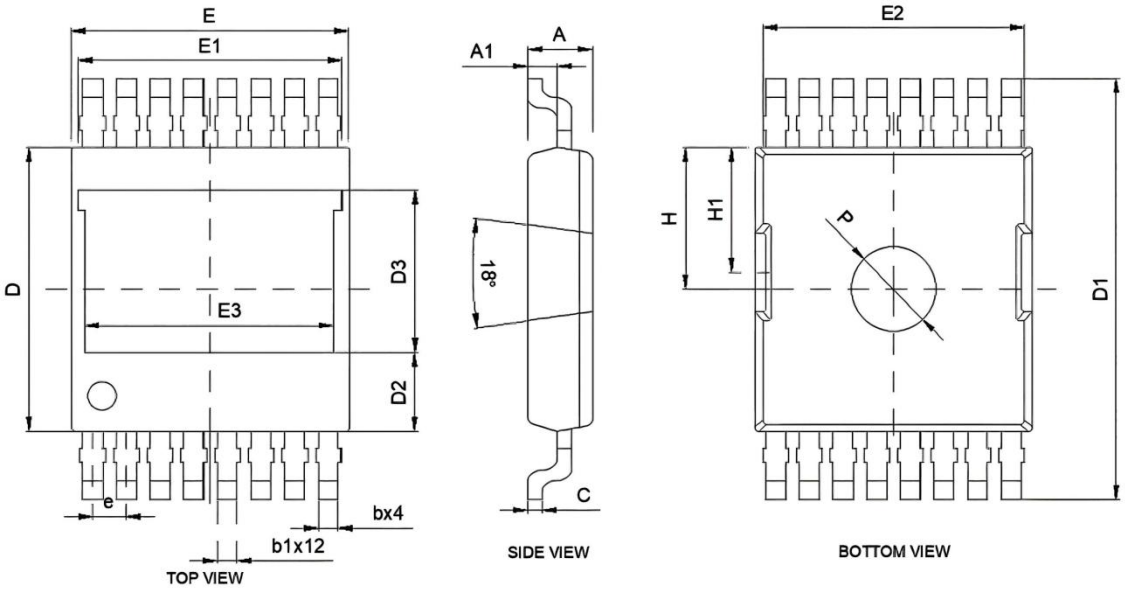


Figure 14. Safe Operation Area

TOLT Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.250	2.350	0.089	0.093
A1	1.000	1.080	0.039	0.043
A2	0.010	0.160	0.000	0.006
A3	1.500 REF.		0.059 REF.	
b	0.700	0.800	0.028	0.031
b1	0.600	0.800	0.024	0.031
c	0.400	0.600	0.016	0.024
D	10.000	10.300	0.394	0.406
D1	14.800	15.200	0.583	0.598
D2	2.600	3.000	0.102	0.118
D3	5.770 REF.		0.227 REF.	
E	9.700	10.100	0.382	0.398
E1	9.460 REF.		0.372 REF.	
E2	9.250 REF.		0.364 REF.	
E3	8.700 REF.		0.343 REF.	
e	1.180	1.220	0.046	0.048
H	5.000	5.400	0.197	0.213
H1	4.400	4.800	0.173	0.189
L	2.400	2.500	0.094	0.098
P	2.800	3.200	0.110	0.126