AG350SN040MQTB-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	0.88mΩ@10V	350A

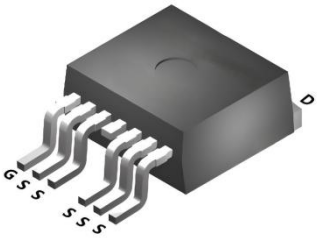
Feature

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- 175°C operating temperature
- Suffix “-Q1” for AEC-Q101

Application

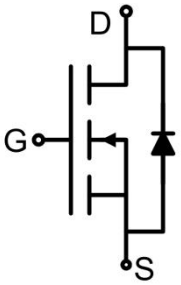
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

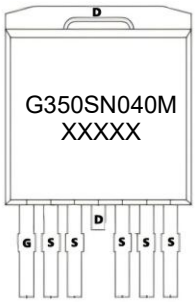


TO-263-7L

Circuit diagram



Marking



Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	350	A
Pulsed Drain Current	I_{DM}	1400	A
Single Pulse Avalanche Energy[1)]	E_{AS}	3000	mJ
Power Dissipation	P_D	380	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.39	℃/W
Operating Junction Temperature	T_J	-55 ~ +175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

Electrical characteristics (T_C=25℃ 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	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =40V, 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	3	4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		0.68	0.88	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		12850		pF
Output Capacitance	C_{oss}			4641		
Reverse Transfer Capacitance	C_{rss}			205		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =20A		156.5		nC
Gate-Source Charge	Q_{gs}			59		
Gate-Drain Charge	Q_{gd}			23.5		
Turn-on delay time	$t_{d(on)}$	V_{DS} =20V, V_{GS} =10V, I_D =20A R_G =1.6Ω		26		nS
Turn-on rise time	t_r			14		
Turn-off delay time	$t_{d(off)}$			110		
Turn-off fall time	t_f			17		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				350	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =20A			1.2	V
Reverse Recovery Time	T_{rr}	I_F =I_S, di/dt =100A/μs T_J =25℃		66		nS
Reverse Recovery Charge	Q_{rr}			240		nC

Notes:

1) T_J=25℃, V_{DD}=20V, V_G=10V, L=0.5mH, R_G=25Ω.

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

Typical Characteristics

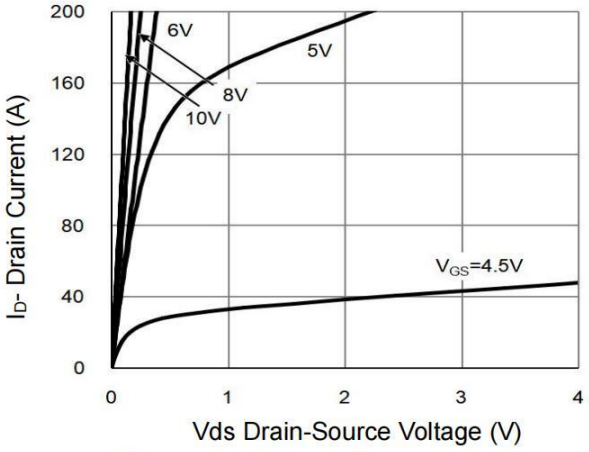


Figure 1 Output Characteristics

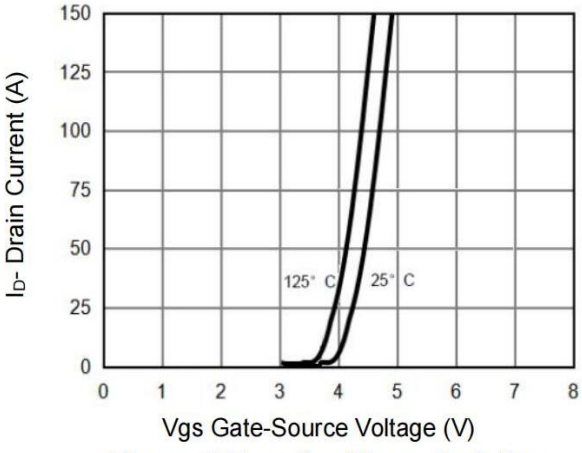


Figure 2 Transfer Characteristics

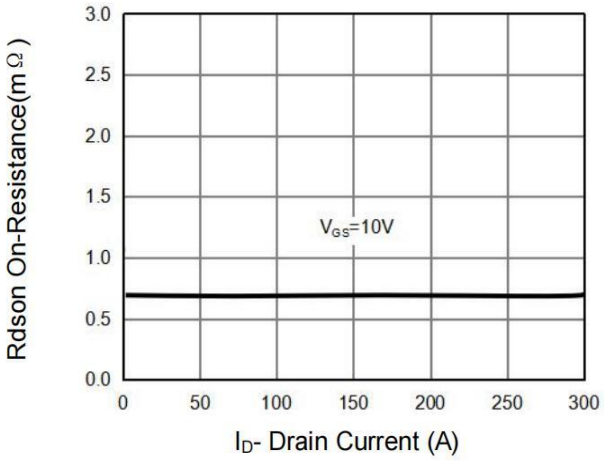


Figure 3 Rdson- Drain Current

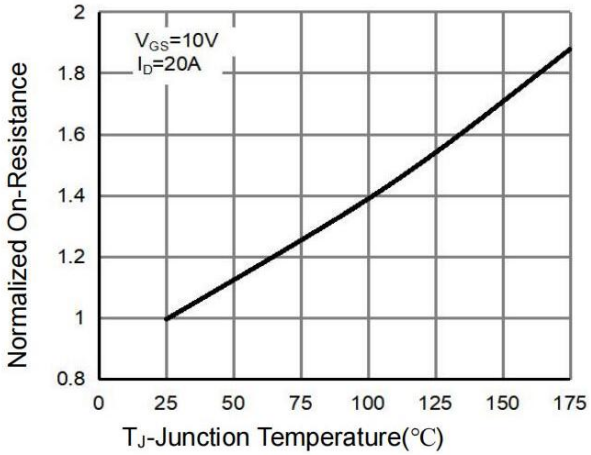


Figure 4 Rdson-Junction Temperature

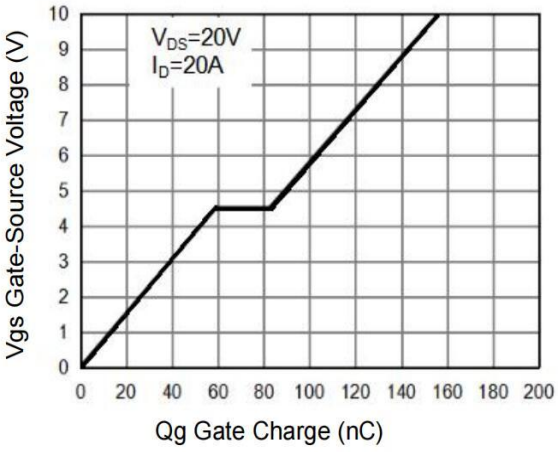


Figure 5 Gate Charge

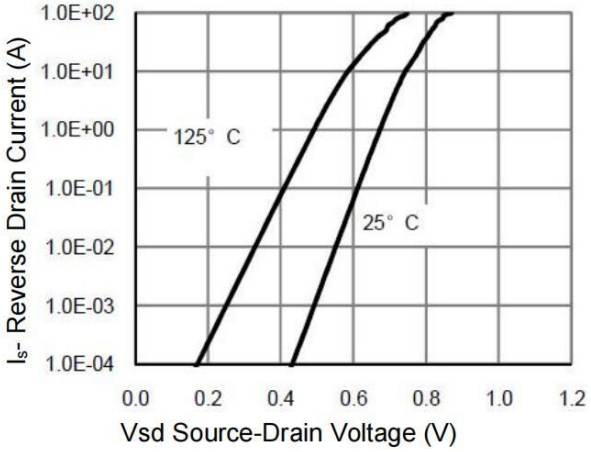


Figure 6 Source- Drain Diode Forward

Typical Characteristics

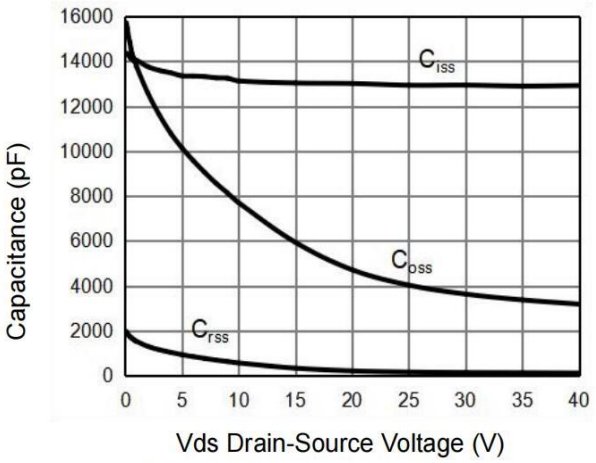


Figure 7 Capacitance vs Vds

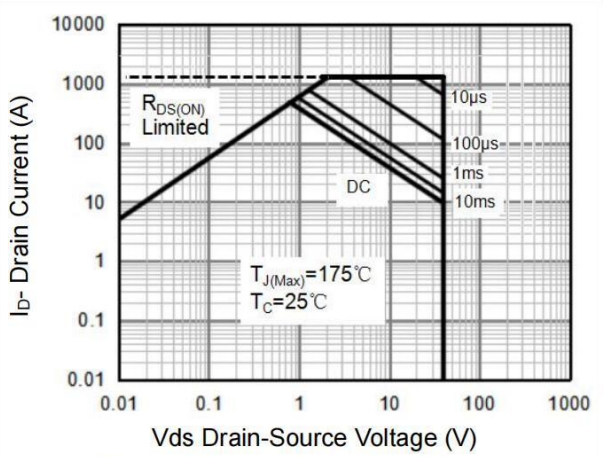


Figure 8 Safe Operation Area

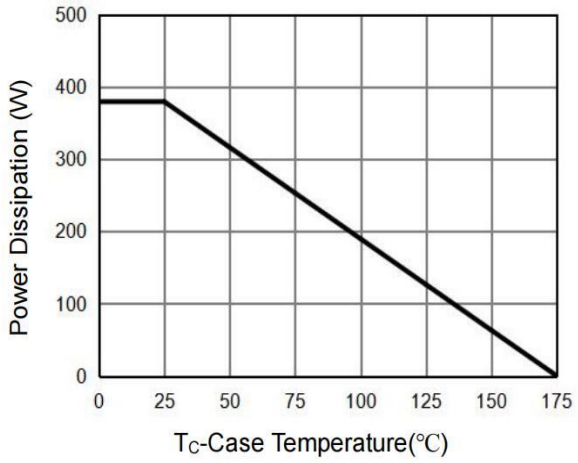


Figure 9 Power De-rating

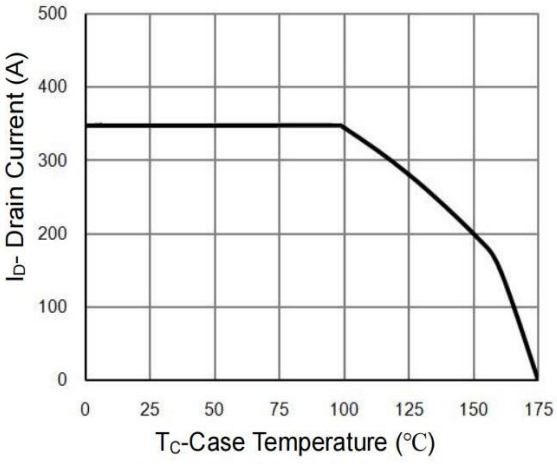


Figure 10 Current De-rating

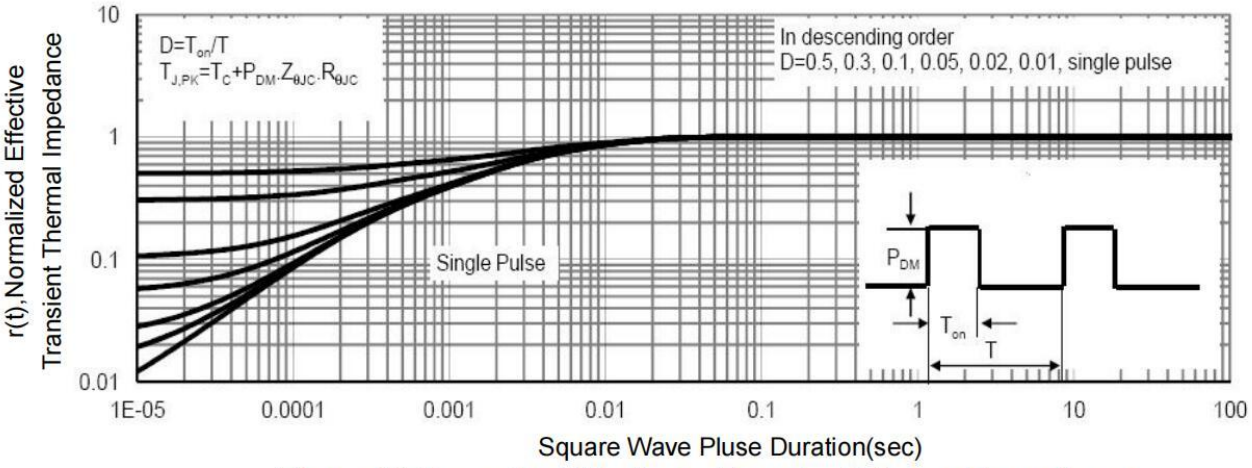
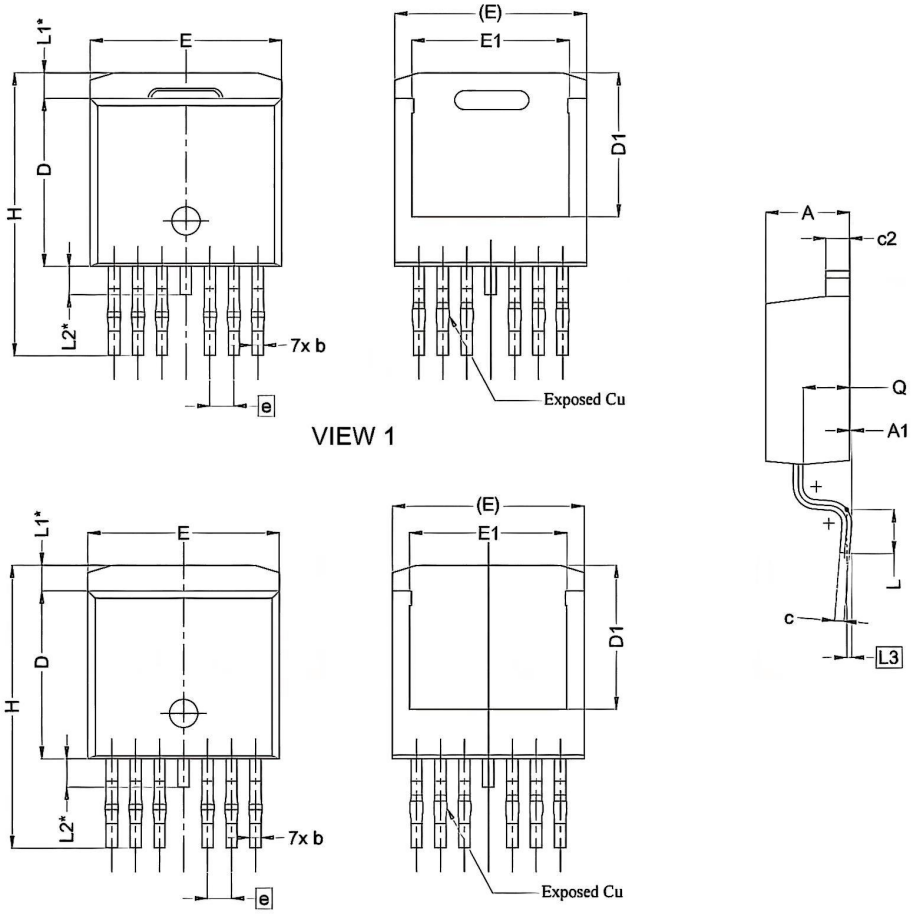


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263-7L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.240	4.700	0.167	0.185
A1	0.000	0.250	0.000	0.010
b	0.500	0.850	0.020	0.033
c	0.400	0.600	0.016	0.024
c2	1.150	1.400	0.045	0.055
D	8.820	9.400	0.347	0.370
D1	6.860	-	0.270	-
E	9.680	10.360	0.381	0.408
E1	7.700	8.500	0.303	0.335
e	1.270 BSC.		0.050 BSC.	
H	14.610	15.880	0.575	0.625
L	1.780	2.790	0.070	0.110
L1	1.360 REF.		0.054 REF.	
L2	1.500 REF.		0.059 REF.	
L3	0.250 BSC.		0.010 BSC.	
Q	2.200	2.700	0.087	0.106