AG100N20S-Q1

N-Channel Super Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
200V	12mΩ@10V	100A

Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$
- 175 °C operating temperature
- Pb-free lead plating
- Suffix "-Q1" for AEC-Q101

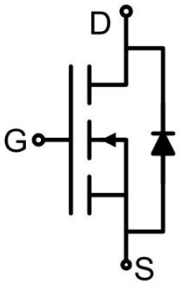
Application

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

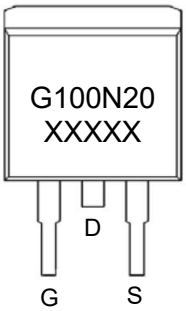
Package

TO-263AB

Circuit Diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	100	A
Continuous Drain Current(T_C =100℃)	I_D	70.7	A
Pulsed Drain Current	I_{DM}	400	A
Power Dissipation	P_D	300	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.5	℃/W
Single Pulse Avalanche Energy[1)]	E_{AS}	1216	mJ
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

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	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =200V,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	2.5		4.5	V
Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =50A		10	12	mΩ
Dynamic Characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =100V,V_{GS} =0V,f =1MHz		6000		pF
Output Capacitance	C_{oss}			425		
Reverse Transfer Capacitance	C_{rss}			16		
Total Gate Charge	Q_g	V_{DS} =100V,V_{GS} =10V, I_D =50A		87		nC
Gate-Source Charge	Q_{gs}			32		
Gate-Drain Charge	Q_{gd}			17.5		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=100V, V_{GS} =10V, I_D =50A, R_{GEN}=4.7Ω		18		nS
Turn-on Rise Time	t_r			26		
Turn-off Delay Time	$t_{d(off)}$			41		
Turn-off Fall Time	t_f			11		
Source-Drain Diode Characteristics						
Diode Forward Current	I_S				100	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=100A			1.2	V
Reverse Recovery Time	t_{rr}	T_J=25℃,I_F=50A, di/dt=100A/μs		140		nS
Reverse Recovery Charge	Q_{rr}			600		nC

Notes:

1) EAS condition : T_J=25 ℃,V_{DD}=50V,V_G=10V,L=0.5mH,R_g=25Ω.

2) Guaranteed by design, not subject to production.

Typical Characteristics

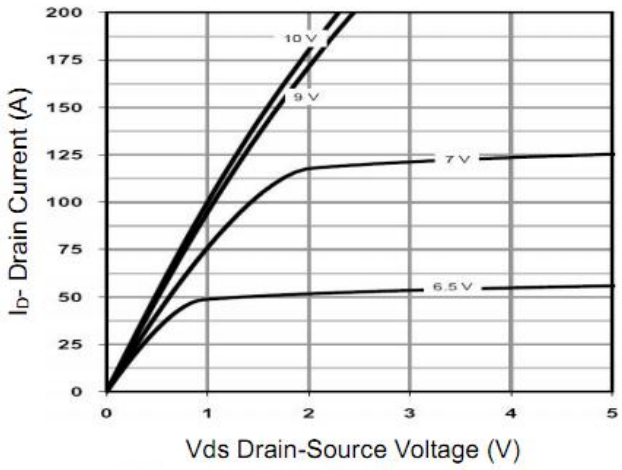


Figure 1 Output Characteristics

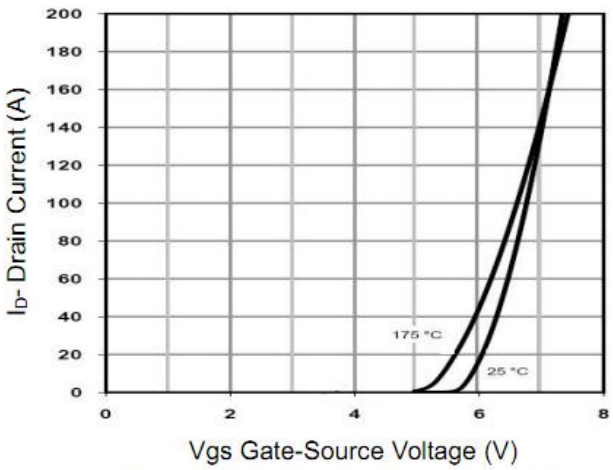


Figure 2 Transfer Characteristics

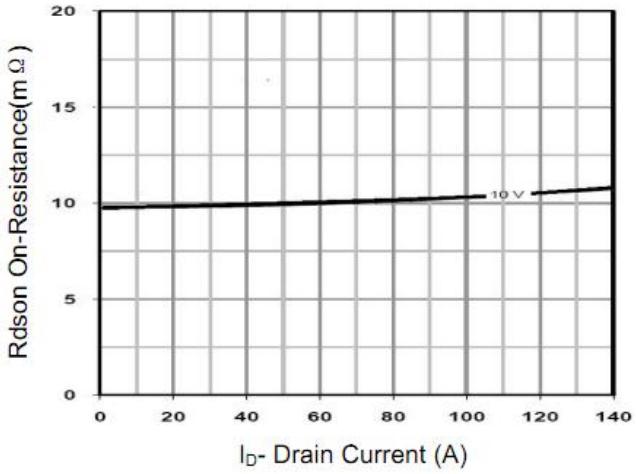


Figure 3 Rdson- Drain Current

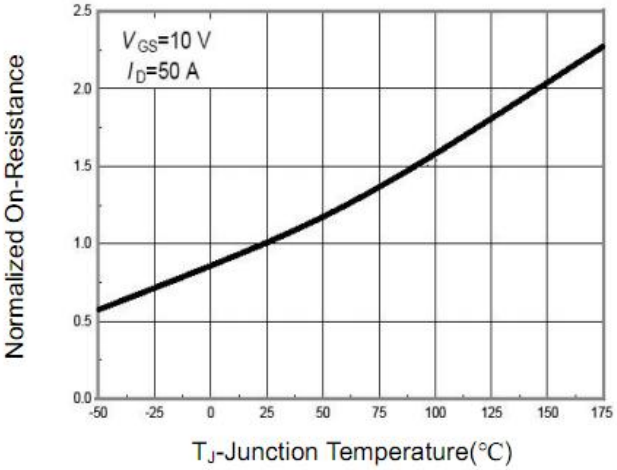


Figure 4 Rdson-JunctionTemperature

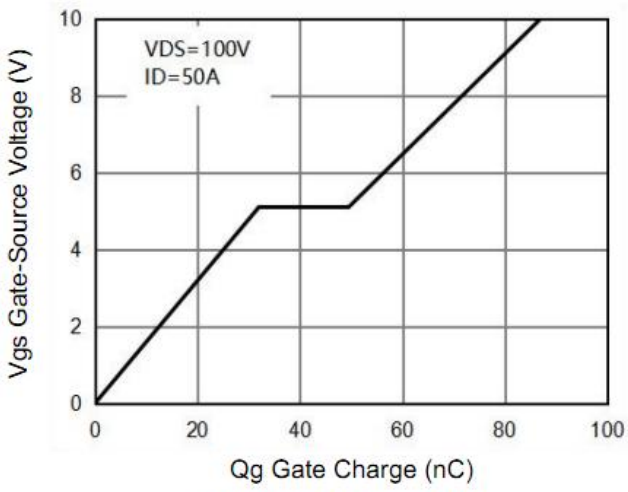


Figure 5 Gate Charge

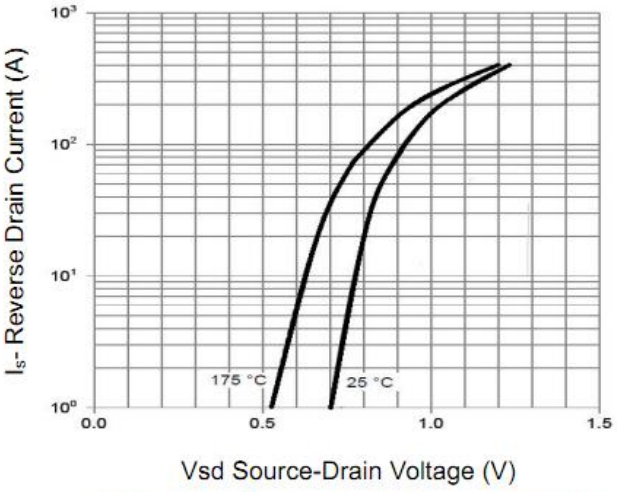


Figure 6 Source- Drain Diode Forward

Typical Characteristics

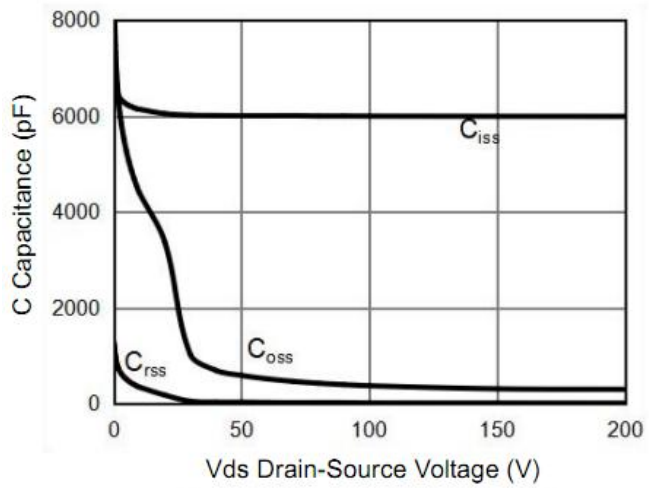


Figure 7 Capacitance vs Vds

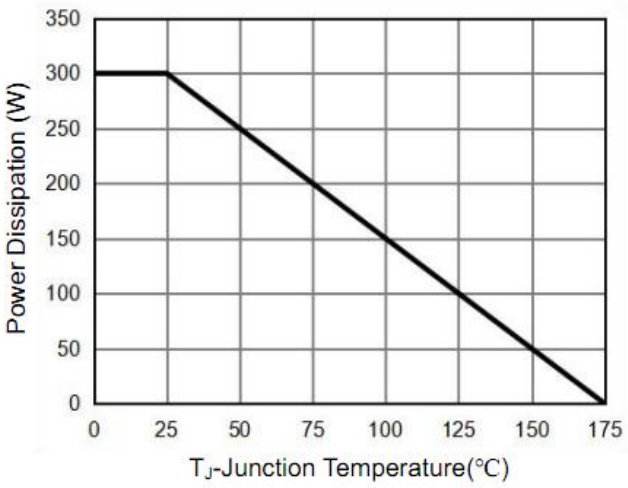


Figure 8 Power De-rating

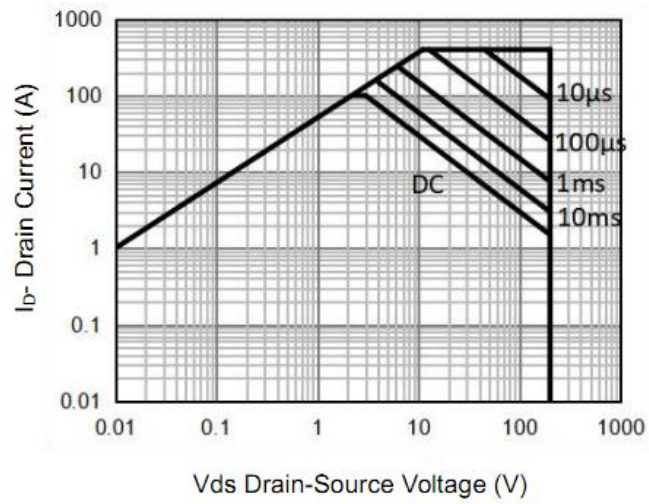


Figure 9 Safe Operation Area

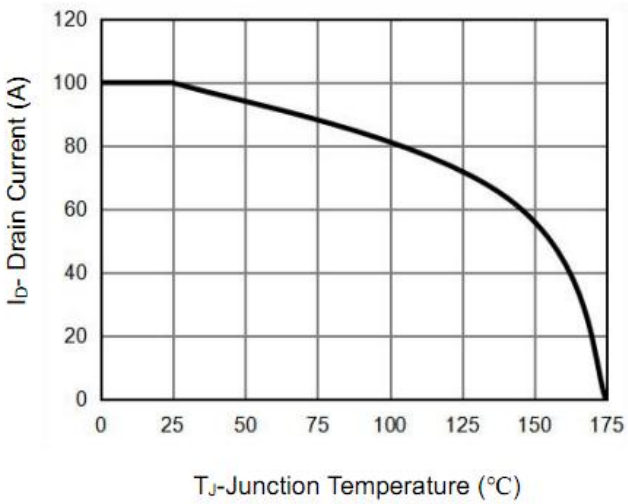


Figure 10 Current De-rating

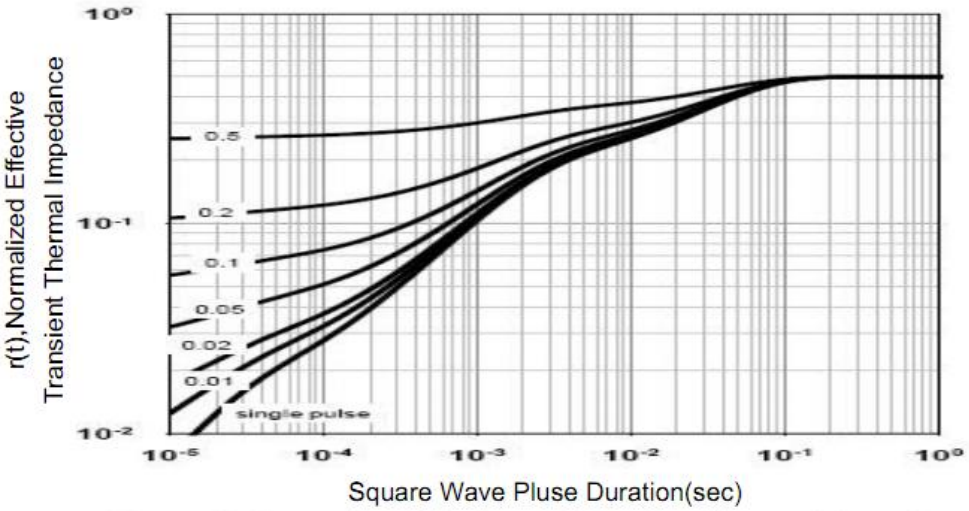
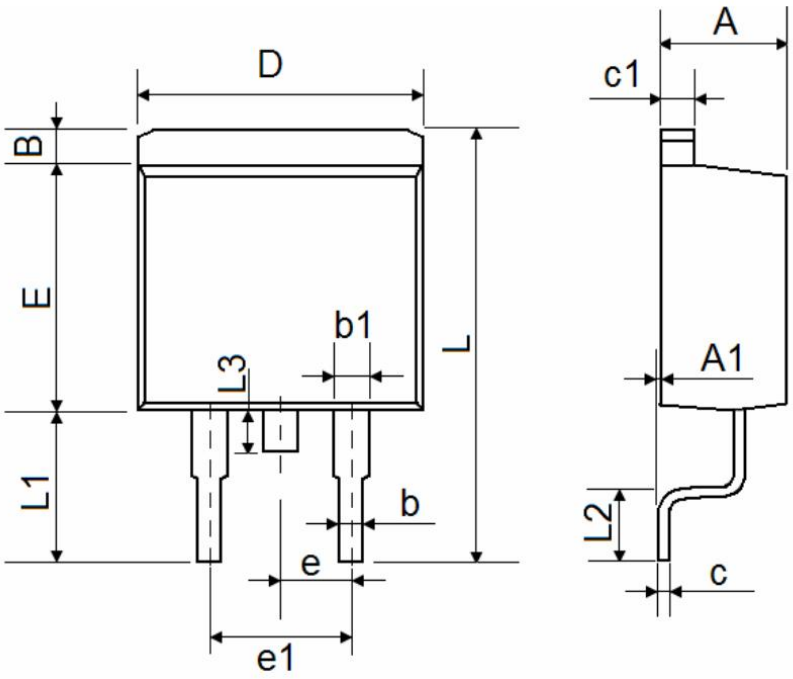


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.320	4.670	0.170	0.184
A1	0.000	0.250	0.000	0.010
B	1.150	1.390	0.045	0.055
b	0.710	0.910	0.028	0.036
b1	1.150	1.400	0.045	0.055
c	0.310	0.610	0.012	0.024
c1	1.170	1.400	0.046	0.055
D	10.010	10.310	0.394	0.406
E	8.500	9.400	0.335	0.370
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.610	15.880	0.575	0.625
L1	5.080	5.480	0.200	0.216
L2	1.780	2.790	0.070	0.110
L3	1.270	1.770	0.050	0.070