AS200N04AS-Q1

N-Channel Super Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	1.3mΩ@10V	200A

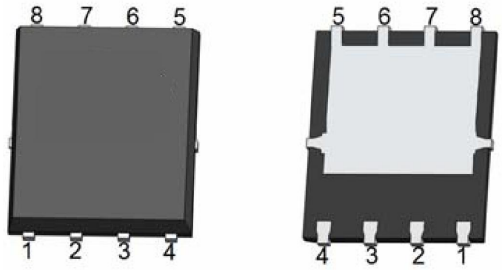
Feature

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- Suffix "-Q1" for AEC-Q101

Application

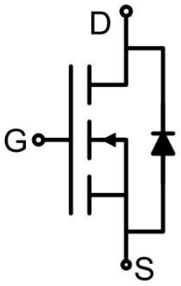
- DC/DC converters
- Ideal for high-frequency switching and synchronous rectification

Package

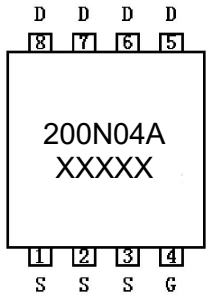


DFN5X6-8L

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	200	A
Continuous Drain Current (T_C =100℃)	I_D(100℃)	150	A
Pulsed Drain Current	I_{DM}	800	A
Power Dissipation	P_D	180	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.67	℃/W
Single pulse avalanche energy[1)]	E_{AS}	1800	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

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_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =100A		0.95	1.3	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		5834.6		pF
Output Capacitance	C_{oss}			2320.5		
Reverse Transfer Capacitance	C_{rss}			70		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =100A		91		nC
Gate-Source Charge	Q_{gs}			29.4		
Gate-Drain Charge	Q_{gd}			19		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, R_G=1.6Ω, I_D=100A		14.5		nS
Turn-on rise time	t_r			8		
Turn-off delay time	$t_{d(off)}$			58		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				200	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 =I_S di/dt = 100A/μs		35		nS
Reverse Recovery Charge	Q_{rr}			120		nC

Notes:

1) EAS condition : Tj=25℃,VDD=20V,VG=10V,L=0.5mH,Rg=25Ω

2) Guaranteed by design, not subject to production

3) These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of TJ(MAX)=150°C. The SOA curve provides a single pulse rating

Typical Characteristics

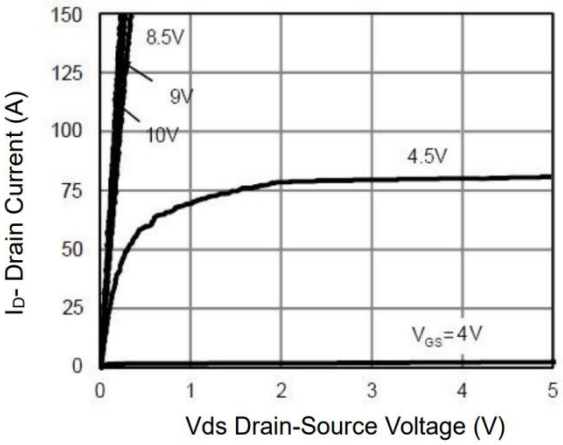


Figure 1 Output Characteristics

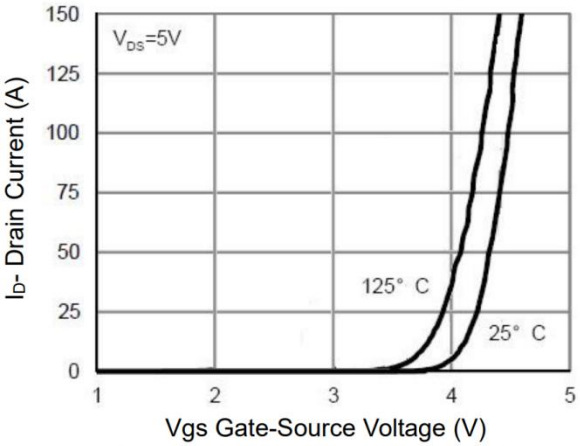


Figure 2 Transfer Characteristics

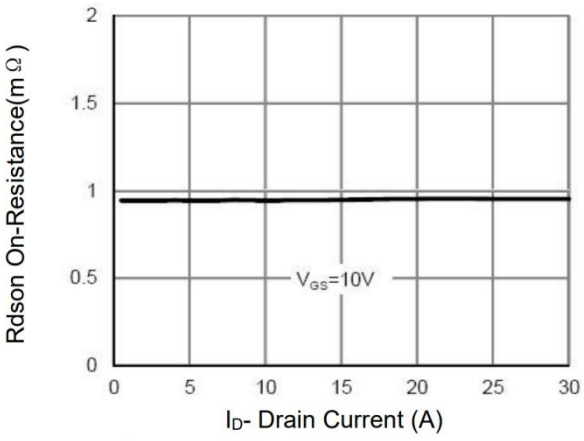


Figure 3 Rdson- Drain Current

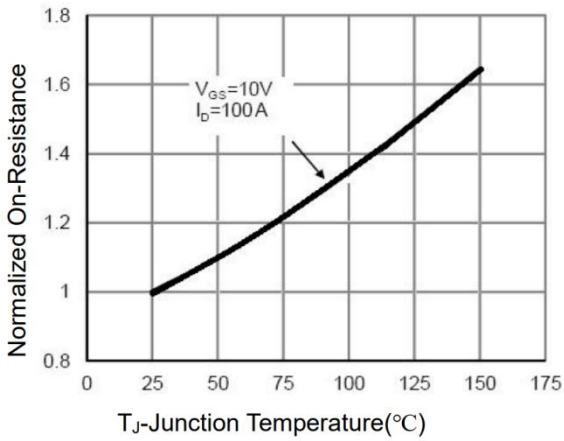


Figure 4 Rdson-Junction Temperature

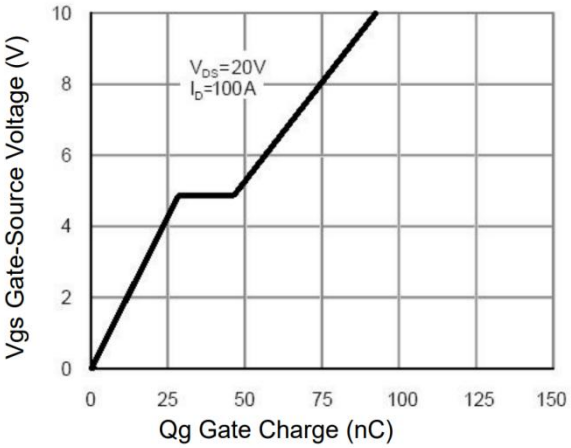


Figure 5 Gate Charge

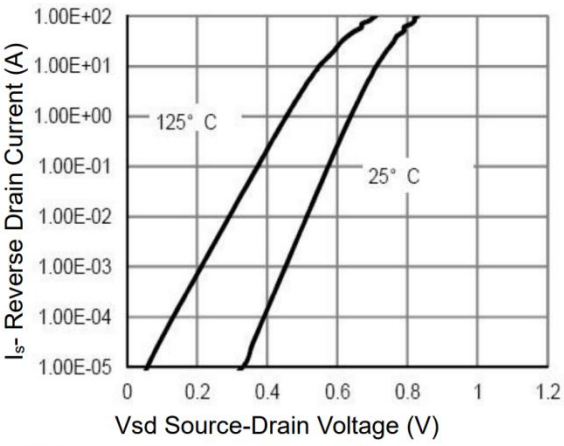


Figure 6 Source- Drain Diode Forward

Typical Characteristics

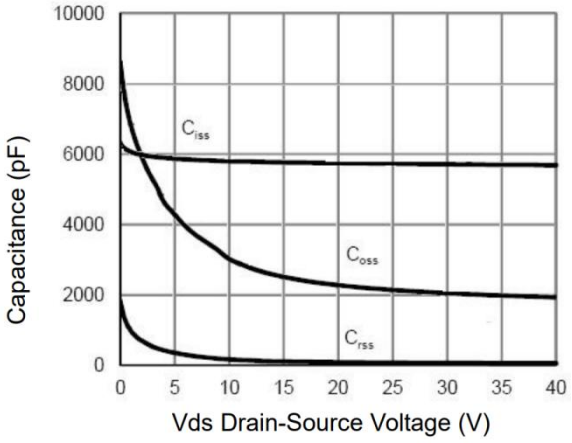


Figure 7 Capacitance vs Vds

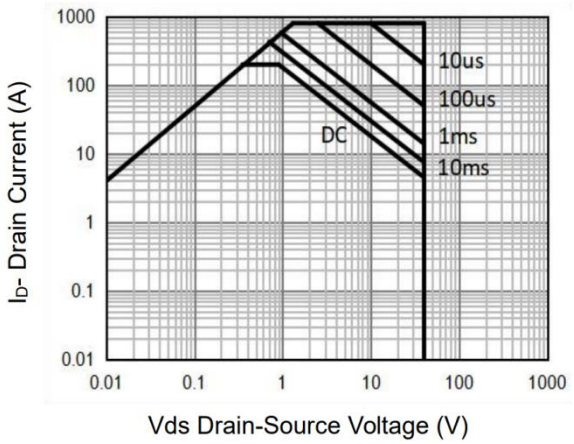


Figure 8 Safe Operation Area(Note 3)

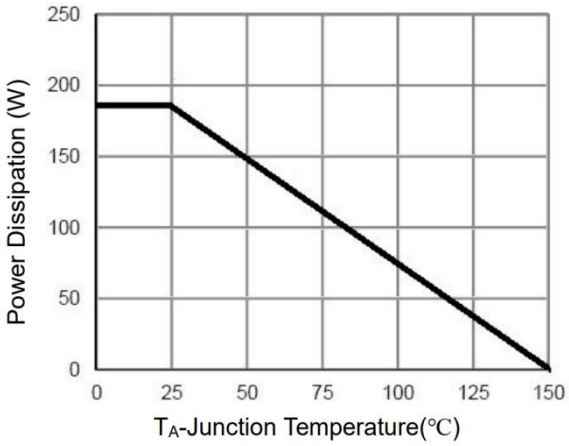


Figure 9 Power De-rating

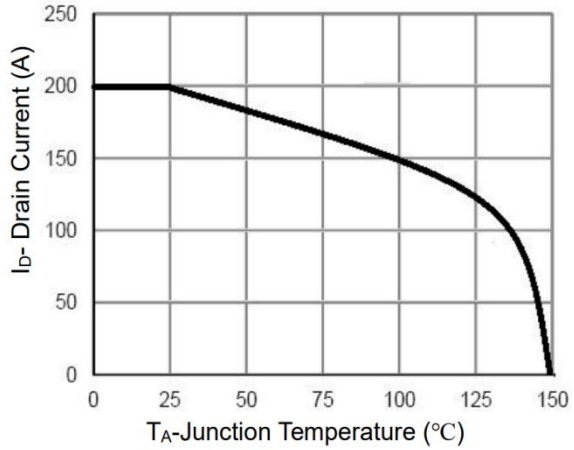


Figure 10 Current De-rating

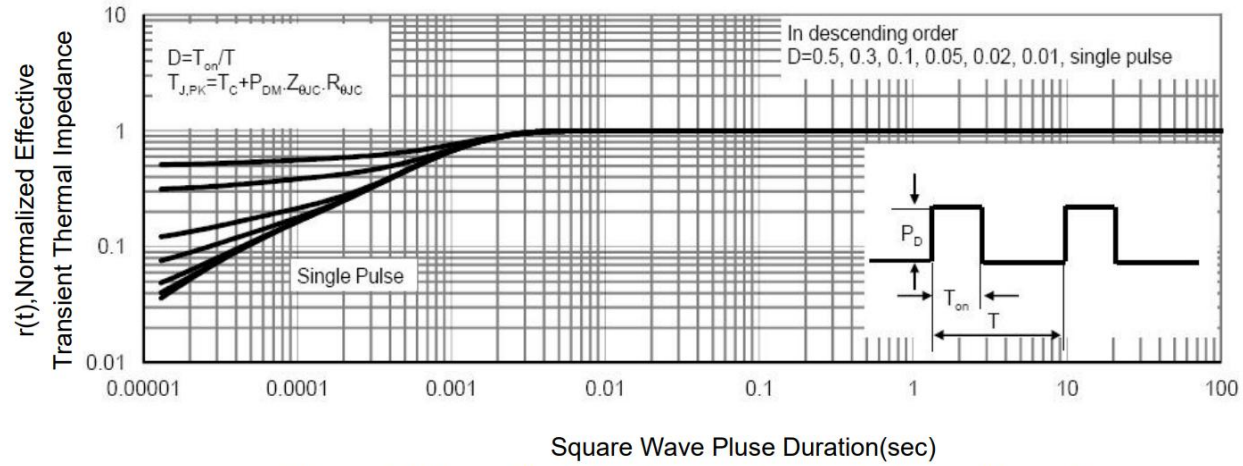
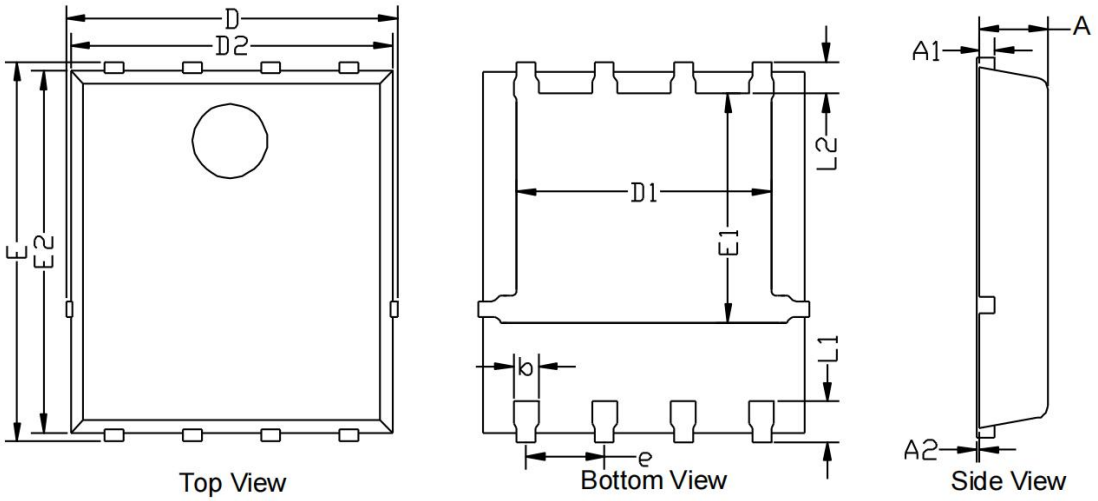


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A1	0.254 BSC		0.010 BSC	
A2	0.000	0.100	0.000	0.004
D	5.100	5.500	0.201	0.217
E	5.950	6.350	0.234	0.250
D1	3.910	4.450	0.154	0.175
E1	3.520	3.920	0.139	0.154
D2	5.000	5.400	0.197	0.213
E2	5.660	6.060	0.223	0.239
b	0.310	0.510	0.012	0.020
e	1.270 BSC		0.050 BSC	
L1	0.550	0.760	0.022	0.030
L2	0.550 BSC		0.022 BSC	