AS200N04S-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	1.0mΩ@10V	200A
	1.2mΩ@4.5V	

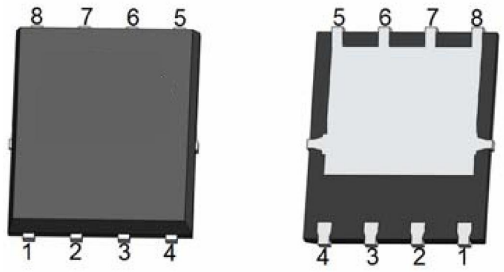
Feature

- Excellent gate charge x RDS(on) product(FOM)
- Very low on-resistance RDS(on)
- 150 °C operating temperature
- Suffix"-Q1"for AEC-Q101

Application

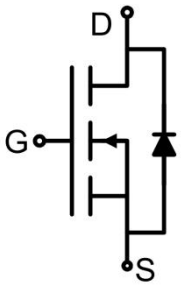
- DC/DC converter
- Ideal for high-frequency switching and synchronous rectification

Package

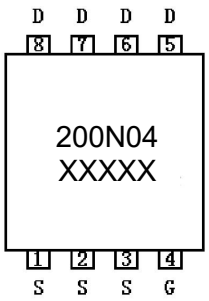


DFN5X6-8L

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}	400	A
Power Dissipation	P_D	180	W
Thermal Resistance,Junction-to-Case[1)]	$R_{\theta JC}$	0.67	℃/W
Single pulse avalanche energy	E_{AS}	1800	mJ
Junction Temperature	T_J	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	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	1.0	1.5	2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =100A		0.85	1.0	mΩ
		V_{GS} =4.5V, I_D =100A		1.0	1.2	
Forward Transconductance	g_{FS}	V_{DS} =5V, I_D =100A		90		S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		8085		pF
Output Capacitance	C_{oss}			2123		
Reverse Transfer Capacitance	C_{rss}			121		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =100A		137		nC
Gate-Source Charge	Q_{gs}			19		
Gate-Drain Charge	Q_{gd}			14		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, I_D=100A, R_{GEN}=1.6Ω		13		nS
Turn-on rise time	t_r			8		
Turn-off delay time	$t_{d(off)}$			55		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				200	A
Diode Forward voltage[2)]	V_{SD}	V_{GS} =0V, I_S=100A			1.2	V
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F =200A di/dt = 100A/μs [2)]		35		nS
Reverse Recovery Charge	Q_{rr}			120		nC

Notes:

1) Surface Mounted on FR4 Board, t ≤ 10 sec.

2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Typical Characteristics

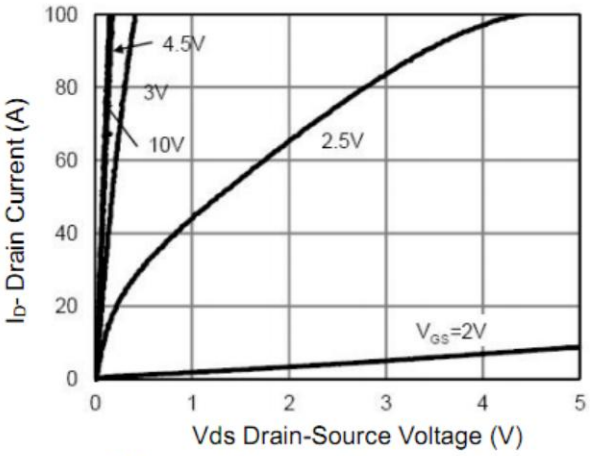


Figure 1 Output Characteristics

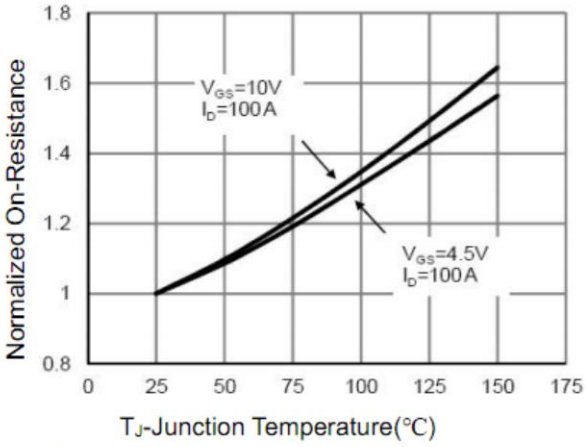


Figure 2 Rdson-Junction Temperature

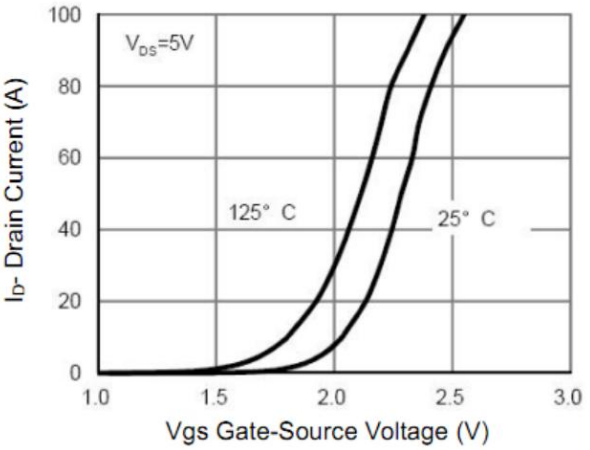


Figure 3 Transfer Characteristics

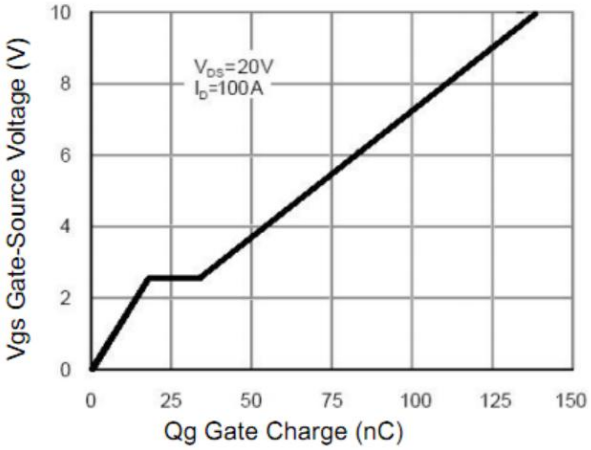


Figure 4 Gate Charge

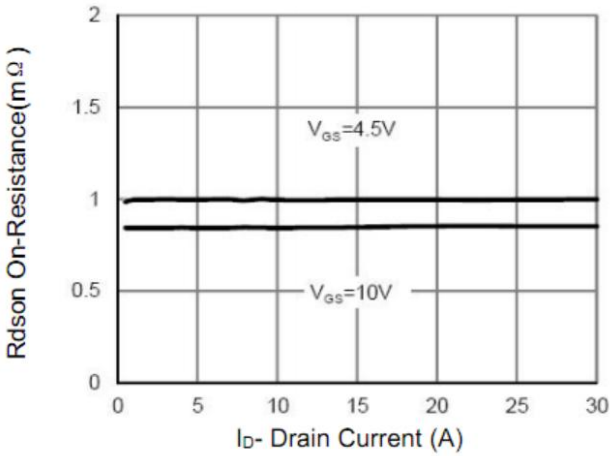


Figure 5 Rdson- Drain Current

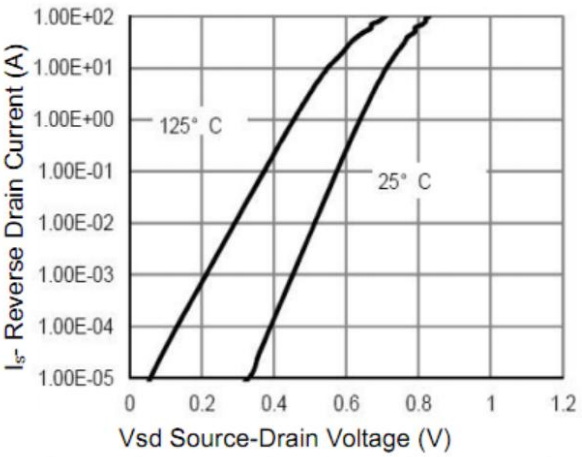


Figure 6 Source- Drain Diode Forward

Typical Characteristics

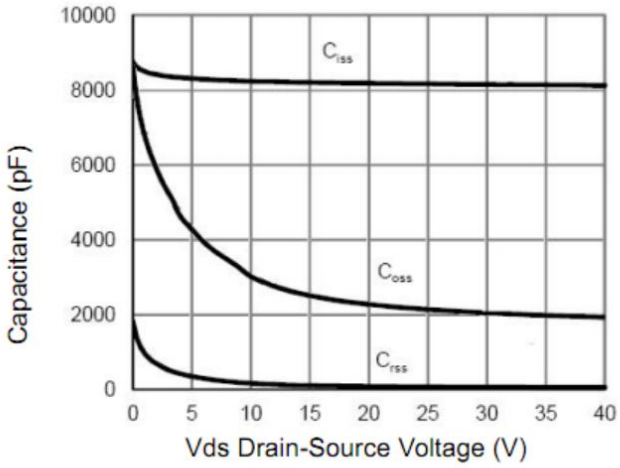


Figure 7 Capacitance vs Vds

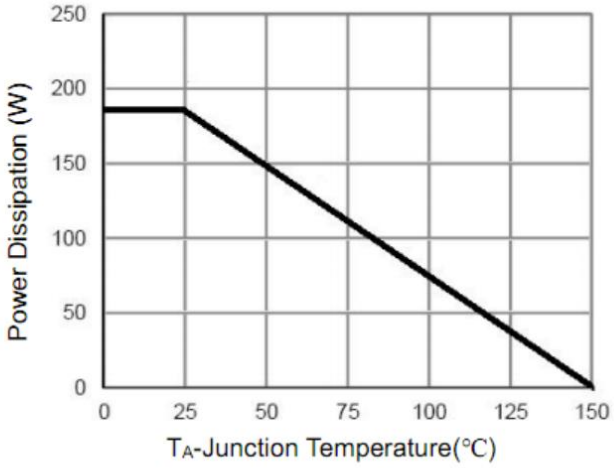


Figure 8 Power De-rating

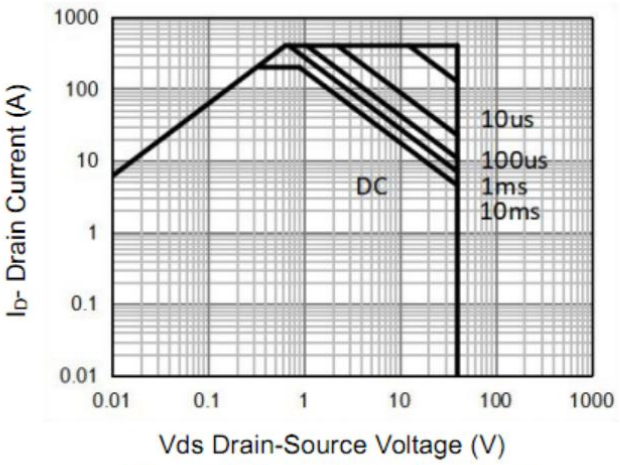


Figure 9 Safe Operation Area

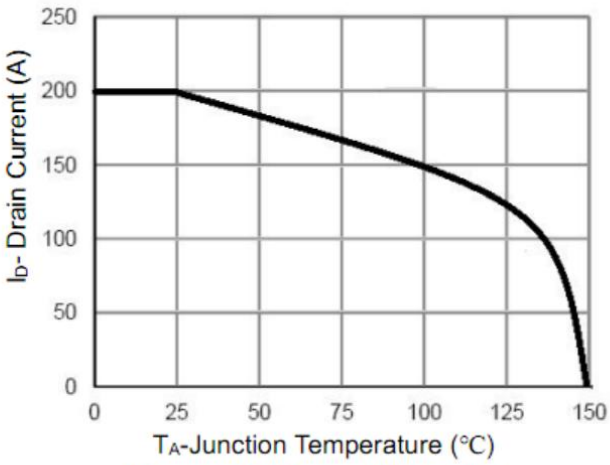


Figure 10 Current De-rating

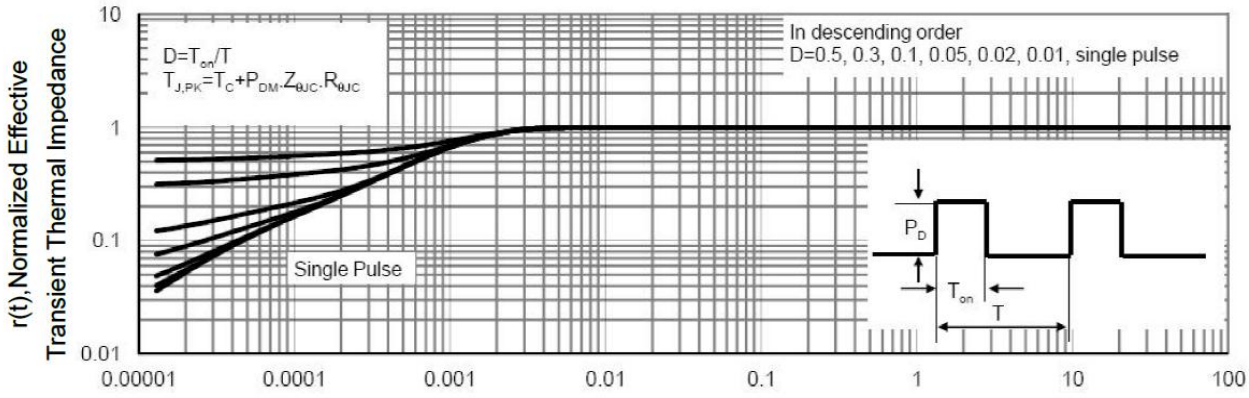
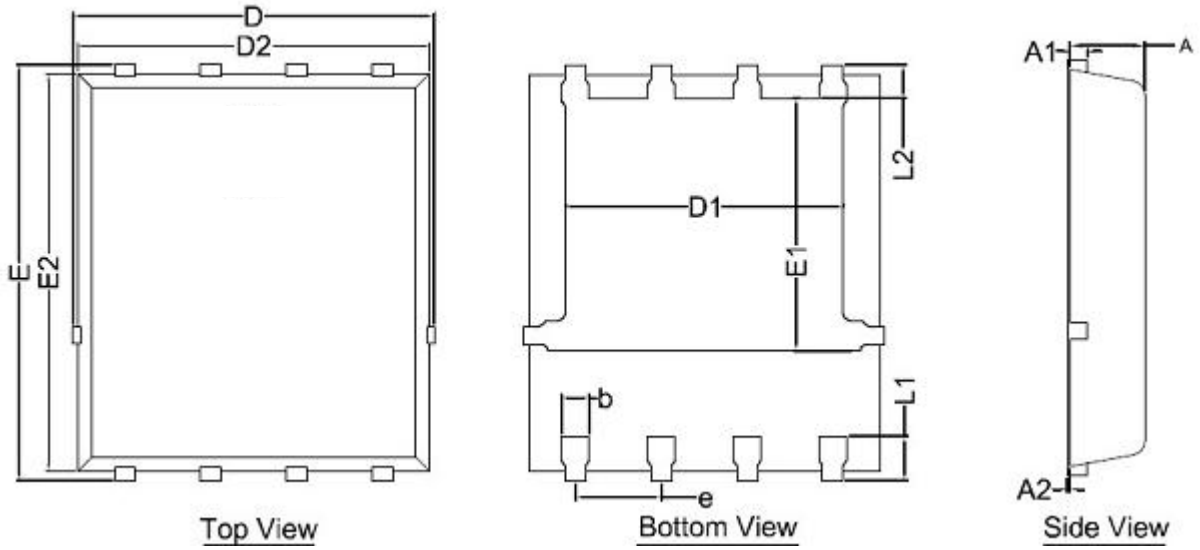


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
A1	0.254BSC.		0.010BSC.	
A2	0.000	0.100		0.004
D	5.150	5.550	0.202	0.219
E	6.100	6.350	0.240	0.250
D1	3.920	4.320	0.154	0.170
E1	3.520	3.920	0.139	0.154
D2	4.900	5.400	0.193	0.212
E2	5.660	6.060	0.223	0.239
b	0.310	0.510	0.012	0.020
e	1.270BSC.		0.050BSC	
L1	0.560	0.760	0.022	0.030
L2	0.500BSC.		0.020BSC	