AS20N04S

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	14.0mΩ@10V	20A
	18.5mΩ@4.5V	

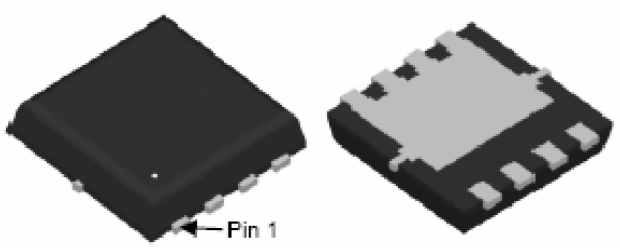
Feature

- High density cell design for ultra low Rdson
- Excellent package for heat dissipatio

Application

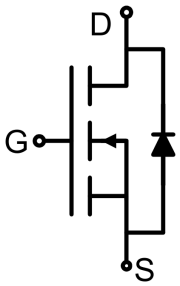
- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

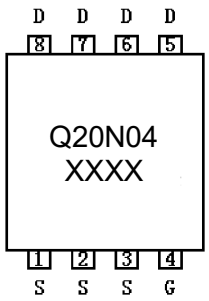


DFN3.3X3.3-8L

Circuit diagram



Marking



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Absolute maximum ratings (Ta=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	20	A
Pulsed Drain Current	I_{DM}	90	A
Power Dissipation	P_D	21	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	5.9	℃/W
Single pulse avalanche energy	E_{AS}	70	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=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 =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		2.5	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =10V, I_D =20A			14.0	mΩ
		V_{GS} =4.5V, I_D =10A			18.5	
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =20V,V_{GS} =0V,f =1MHz		750		pF
Output Capacitance	C_{oss}			150		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	V_{DS} =20V,V_{GS} =10V,ID =20A		15		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V,V_{GS}=10V, I_D =2A,R_{GEN}=3Ω,R_L=1Ω		6		nS
Turn-on rise time	t_r			17.5		
Turn-off delay time	$t_{d(off)}$			31		
Turn-off fall time	t_f			17		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				20	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=10A			1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =20A di/dt = 100A/μs [1]		29		nS
Reverse Recovery Charge	Q_{rr}			26		nC

Notes:

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

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

Typical Characteristics

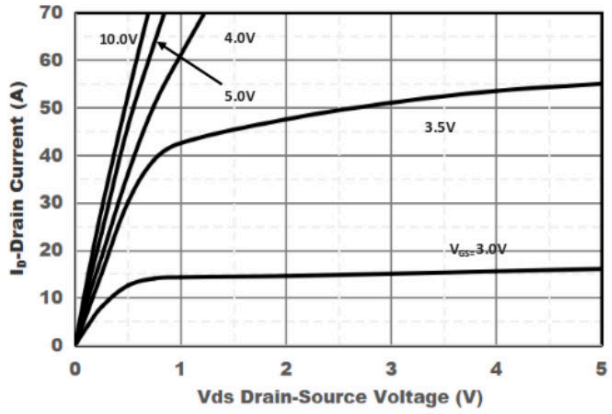


Figure1. Output Characteristics

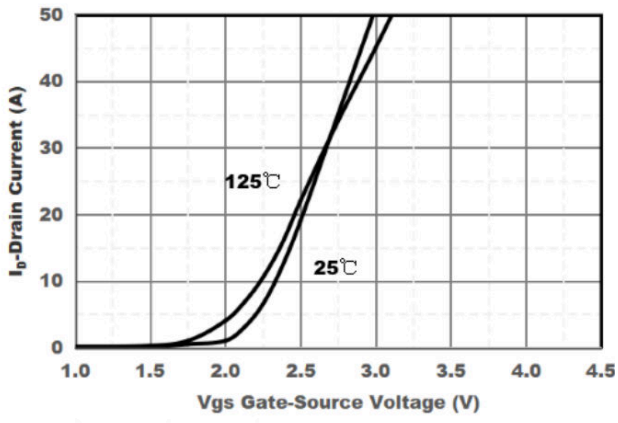


Figure2. Transfer Characteristics

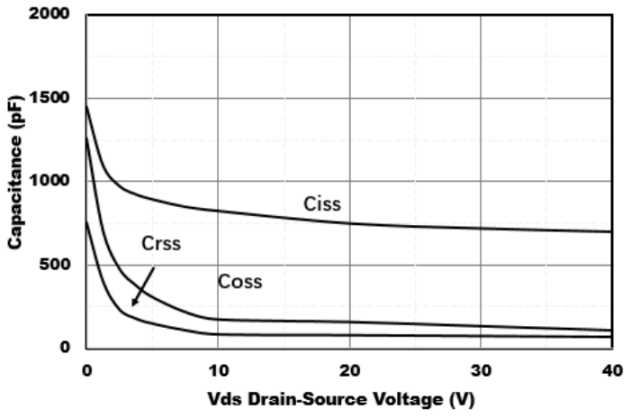


Figure3. Capacitance Characteristics

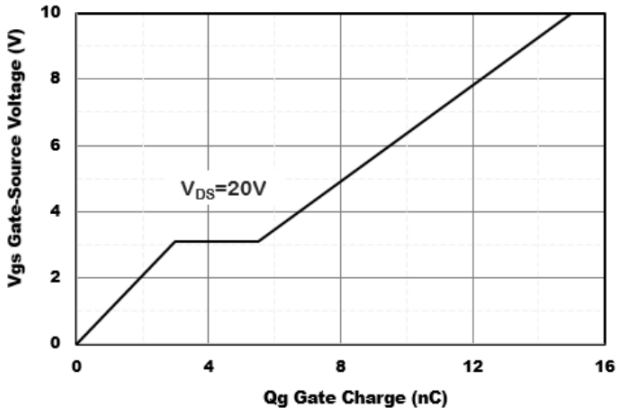


Figure4. Gate Charge

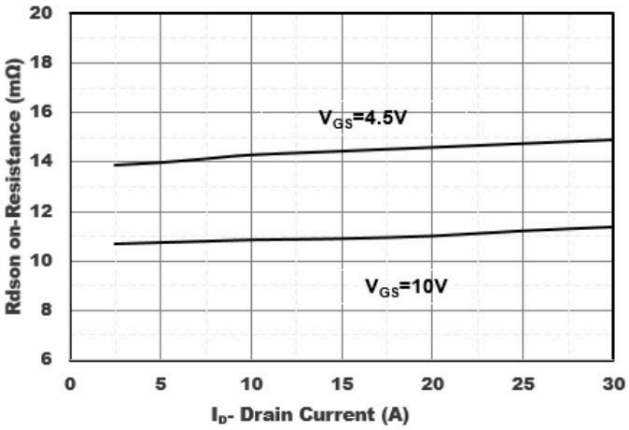


Figure5. Drain-Source on Resistance

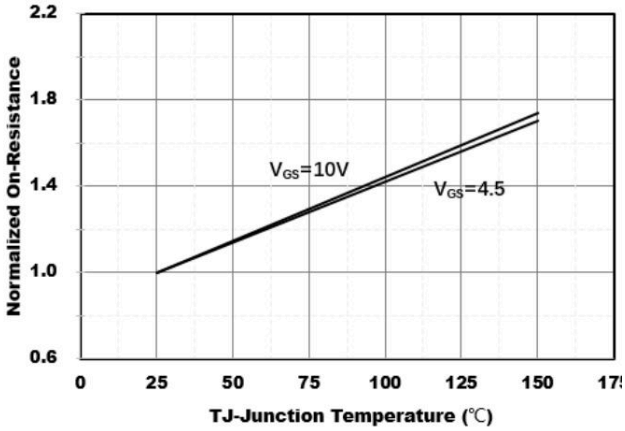
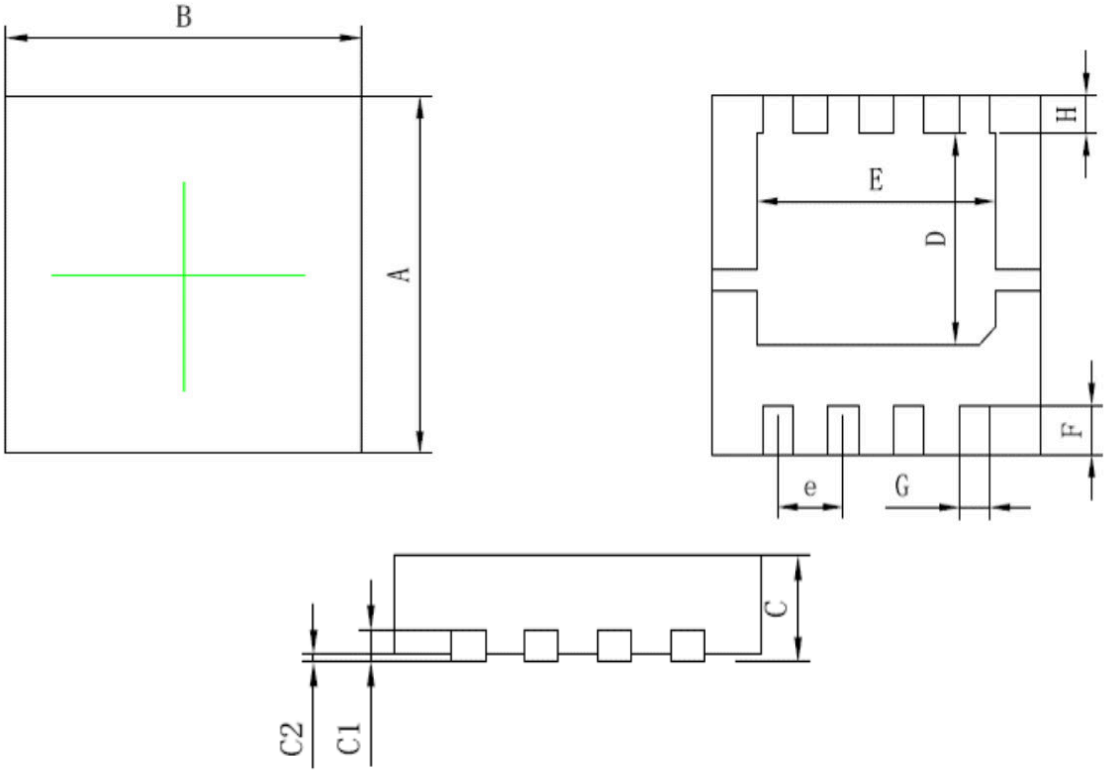


Figure6. Drain-Source on Resistance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.200	3.300	0.126	0.130
B	3.200	3.300	0.126	0.130
C	0.750	0.850	0.030	0.033
C1	0.180	0.220	0.007	0.009
C2	0.05 Max		0.002 Max	
D	1.800	2.000	0.071	0.079
E	2.200	2.500	0.087	0.098
F	0.400	0.500	0.016	0.020
G	0.250	0.350	0.010	0.014
H	0.300	0.400	0.012	0.016
e	0.600	0.700	0.024	0.028