AS20N15S

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
150V	65mΩ@10V	20A

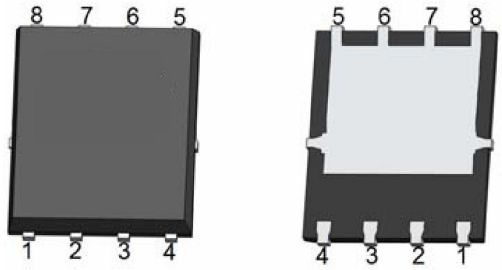
Feature

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$

Application

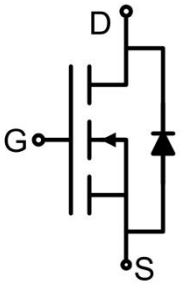
- DC/DC converters
- Ideal for high-frequency switching and synchronous rectification

Package

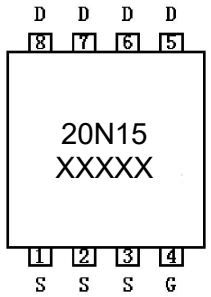


DFN5X6-8L

Circuit diagram



Marking



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N-Channel Enhancement Mode MOSFET

Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	20	A
Continuous Drain Current (T_C =100℃)	I_D	14	A
Pulsed Drain Current	I_{DM}	80	A
Power Dissipation	P_D	68	W
Thermal Resistance,Junction-to-Case[1]	$R_{\theta JC}$	1.84	℃/W
Single pulse avalanche energy[4]	E_{AS}	65	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=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	150			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =150V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.5	3.3	4.5	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		59	65	mΩ
Gate resistance[2]	R_G			4.5		Ω
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =75V, V_{GS} =0V, f =1MHz		600		pF
Output Capacitance	C_{oss}			74.7		
Reverse Transfer Capacitance	C_{rss}			10.8		
Total Gate Charge	Q_g	V_{DS} =75V, V_{GS} =10V, I_D =10A		12		nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			1.8		
Turn-on delay time	$t_{d(on)}$	V_{DD}=75V, V_{GS}=10V, R_G=3Ω, R_L=7.5Ω		9.5		nS
Turn-on rise time	t_r			5.5		
Turn-off delay time	$t_{d(off)}$			12.5		
Turn-off fall time	t_f			3		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				20	A
Diode Forward voltage[2]	V_{SD}	V_{GS} =0V, I_S=10A			1.2	V
Reverse Recovery Time	t_{rr}	T_J=25℃, I_F =I_S di/dt = 100A/μs [2]		29		nS
Reverse Recovery Charge	Q_{rr}			130		nC

Notes:

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

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

3) Guaranteed by design, not subject to production .

4) EAS condition : Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω.

Typical Characteristics

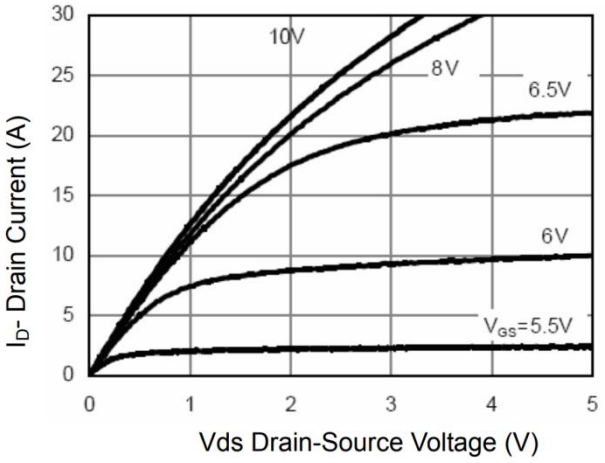


Figure 1 Output Characteristics

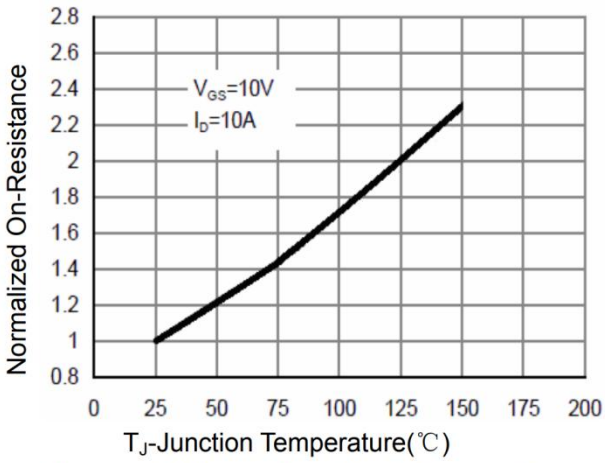


Figure 2 Rdson-Junction Temperature

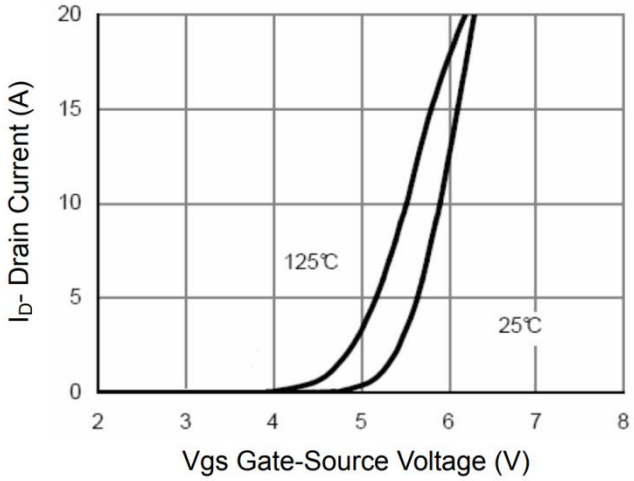


Figure 3 Transfer Characteristics

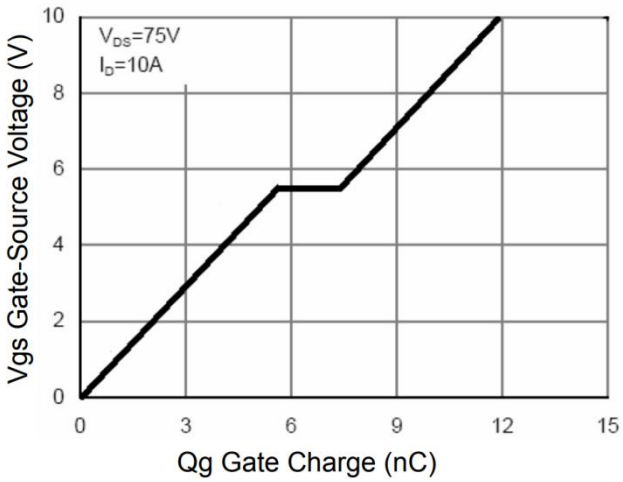


Figure 4 Gate Charge

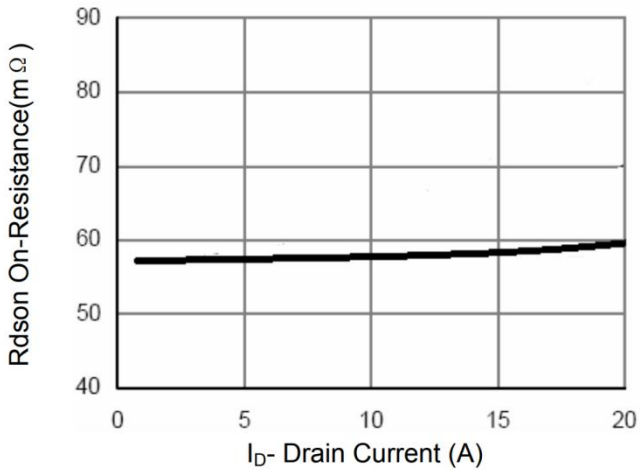


Figure 5 Rdson- Drain Current

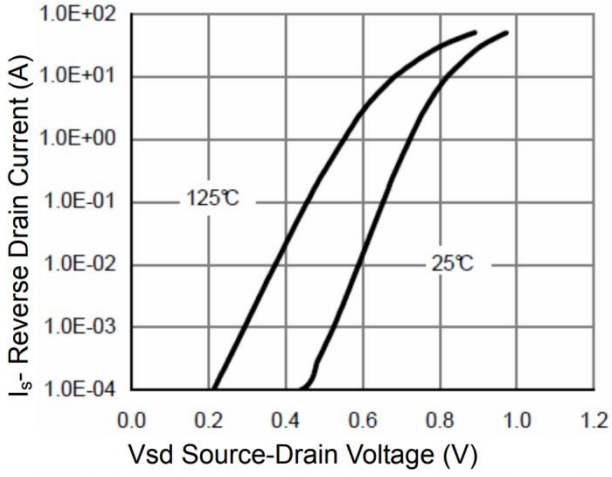


Figure 6 Source- Drain Diode Forward

Typical Characteristics

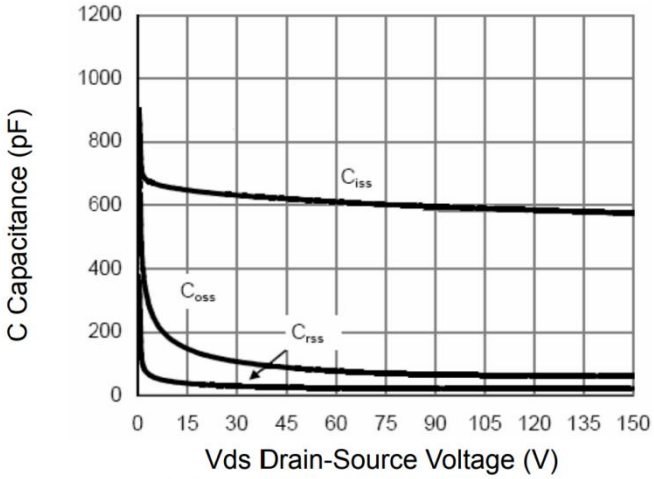


Figure 7 Capacitance vs Vds

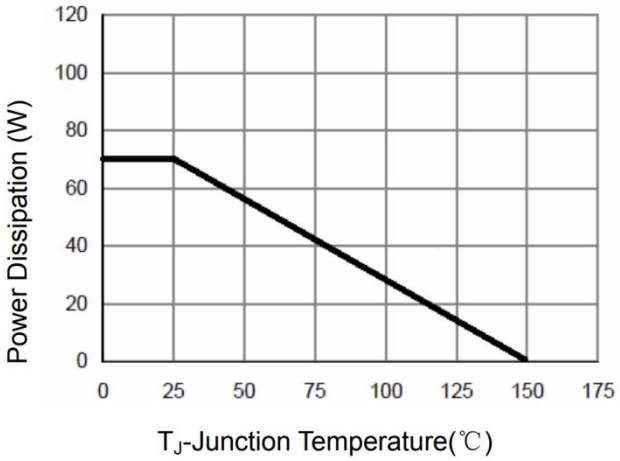


Figure 8 Power De-rating

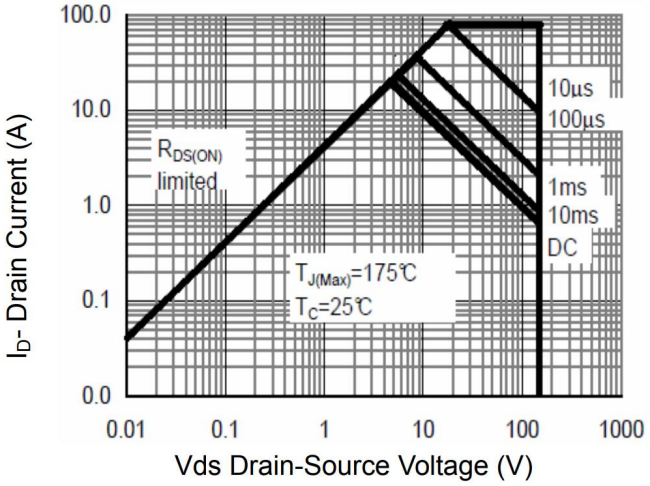


Figure 9 Safe Operation Area

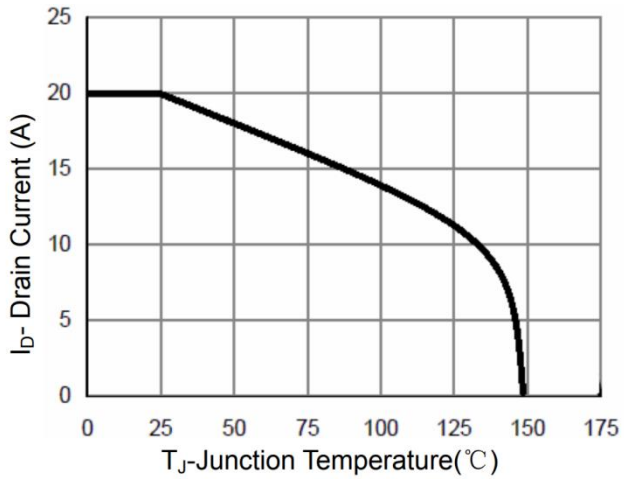


Figure 10 Current De-rating

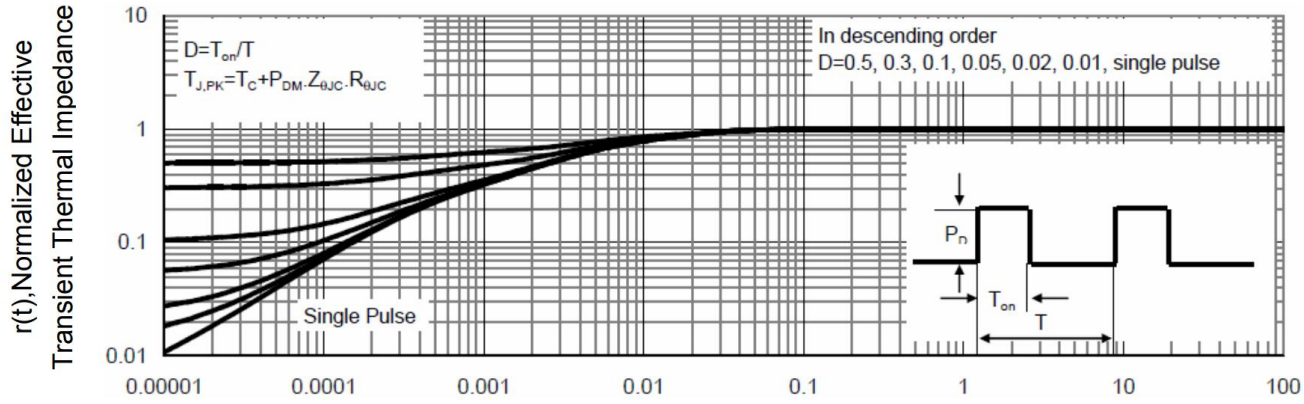
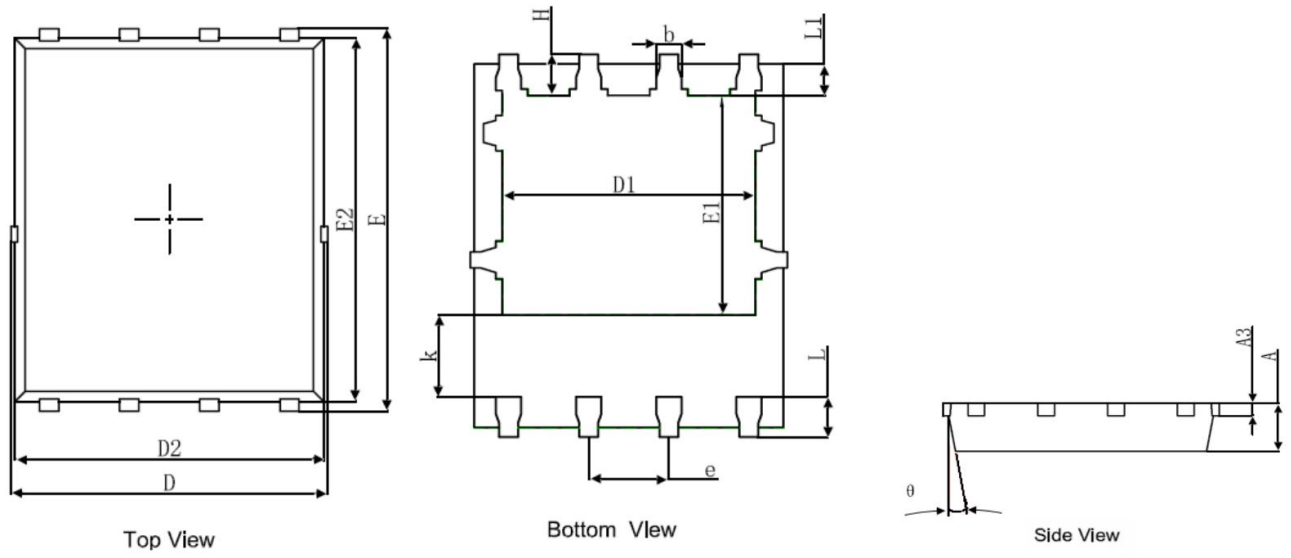


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	8°	12°	8°	12°