

Product Summary

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

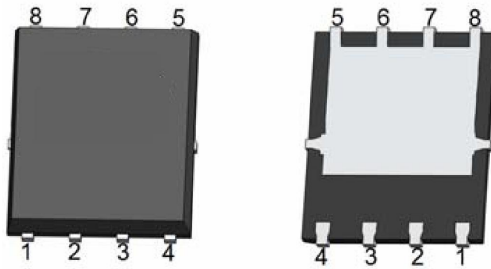
Feature

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

Application

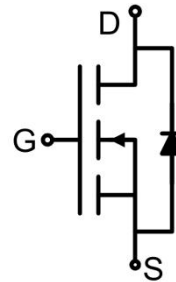
- DC/DC converters
- Ideal for high-frequency switching and synchronous rectification

Package

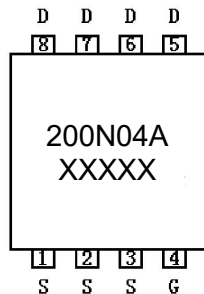


DFN5X6-8L

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C 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°C)	I _D (100°C)	150	A
Pulsed Drain Current	I _{DM}	800	A
Power Dissipation	P _D	180	W
Thermal Resistance, Junction-to-Case	R _{θJC}	0.67	°C/W
Single pulse avalanche energy ¹⁾	E _{AS}	1800	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=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	2.0		4.0	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =100A		0.95	1.3	mΩ
Dynamic characteristics²⁾						
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°C, I _F =I _S		35		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs		120		nC

Notes:

- 1) EAS condition : T_J=25°C, V_{DD}=20V, V_G=10V, L=0.5mH, R_G=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 T_J(MAX)=150°C. The SOA curve provides a single pulse rating

Typical Characteristics

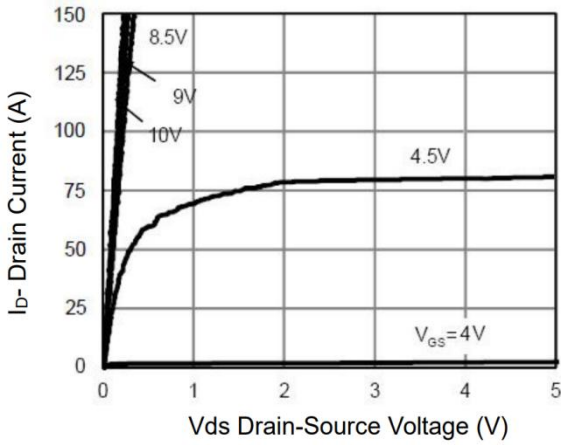


Figure 1 Output Characteristics

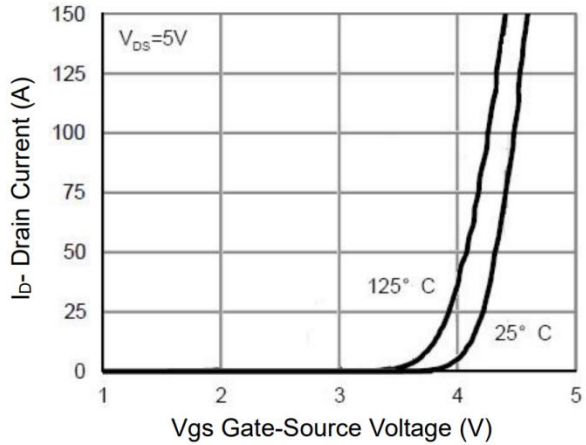


Figure 2 Transfer Characteristics

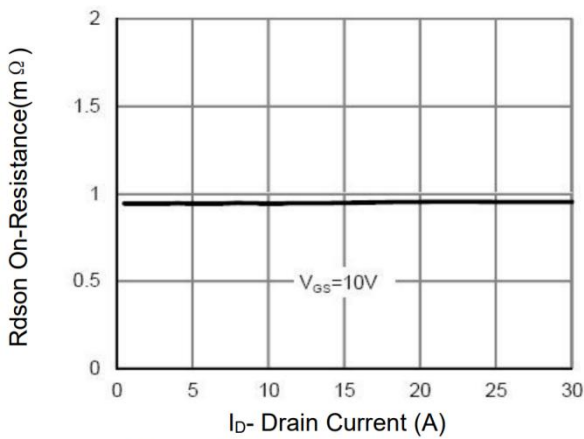


Figure 3 Rdson- Drain Current

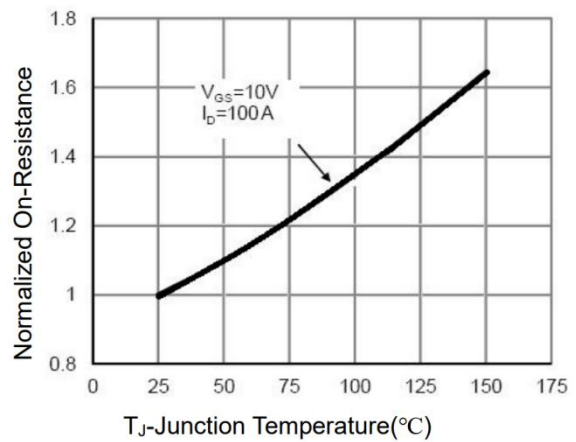


Figure 4 Rdson-Junction Temperature

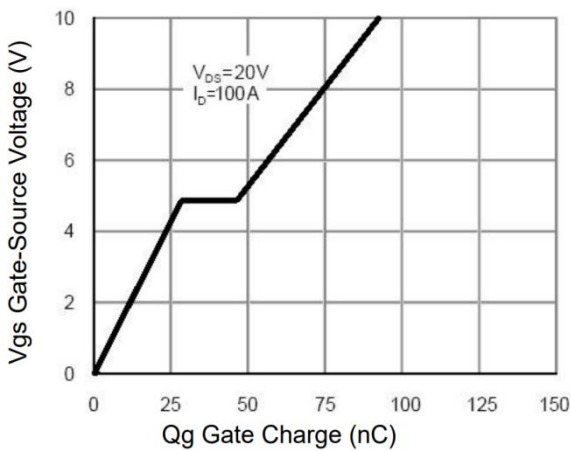


Figure 5 Gate Charge

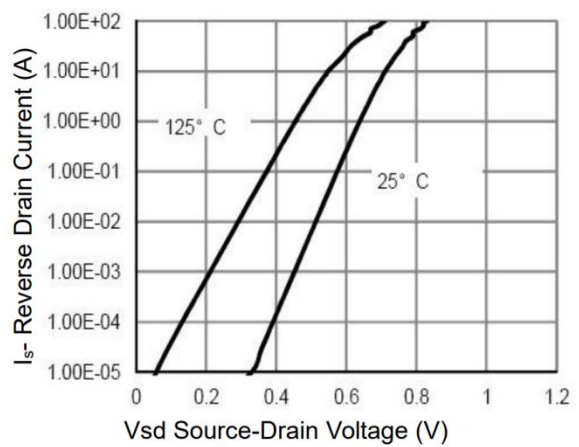


Figure 6 Source- Drain Diode Forward

Typical Characteristics

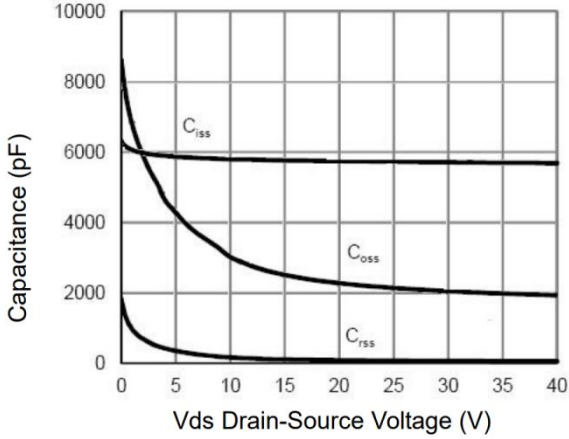


Figure 7 Capacitance vs Vds

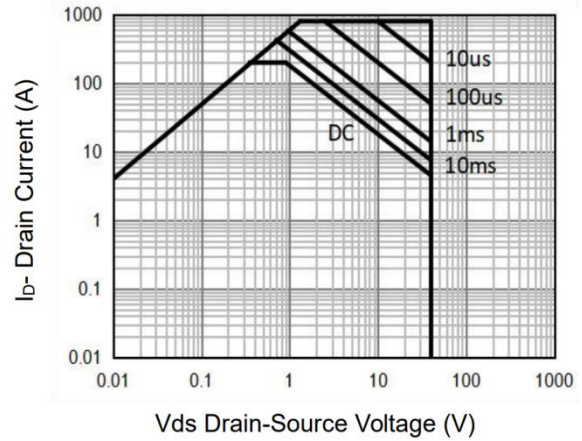


Figure 8 Safe Operation Area (Note 3)

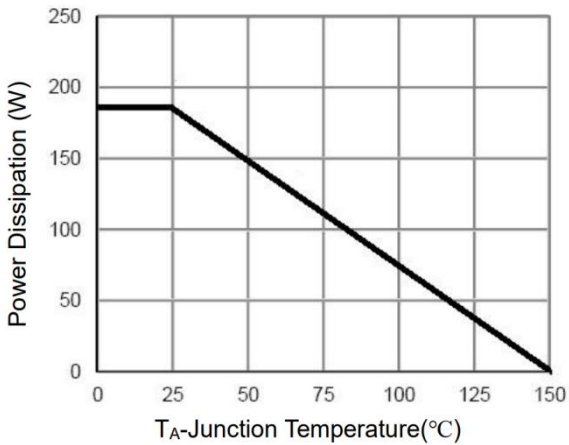


Figure 9 Power De-rating

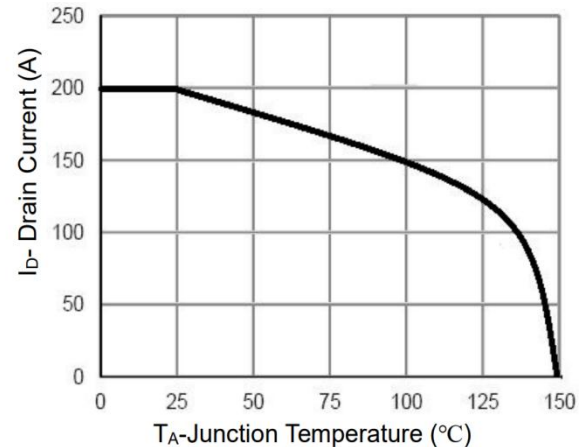


Figure 10 Current De-rating

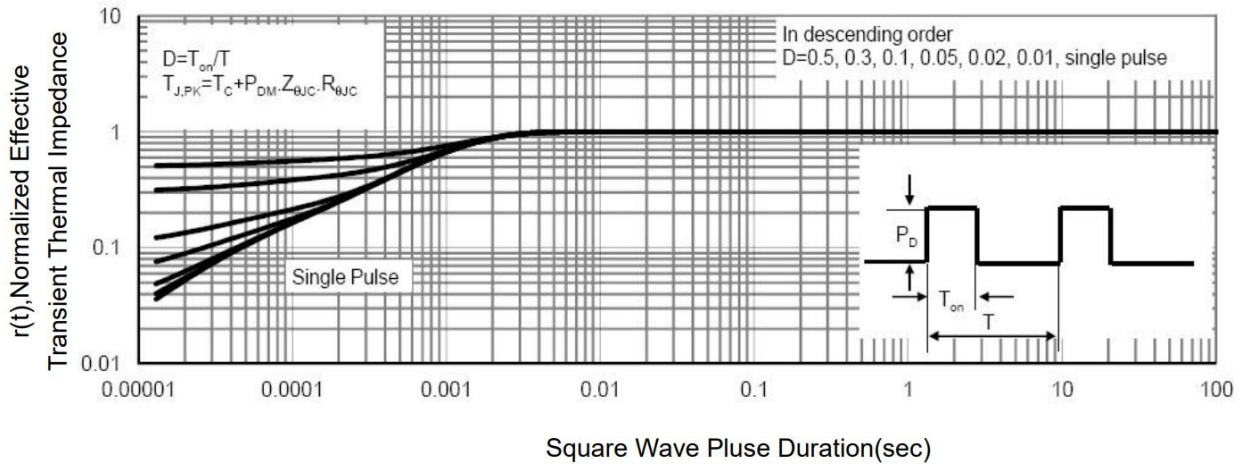
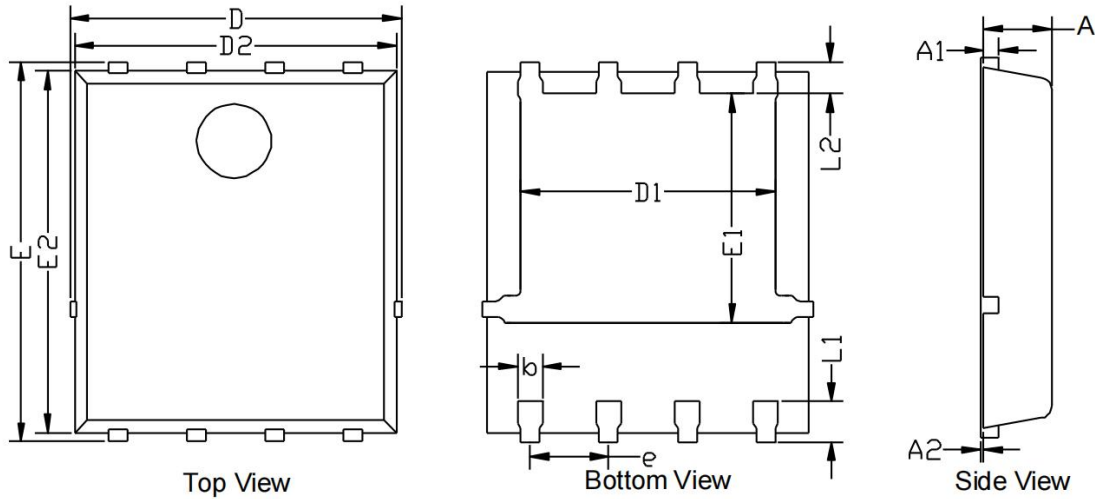


Figure 11 Normalized Maximum Transient Thermal Impedance

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	