

### Product Summary

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

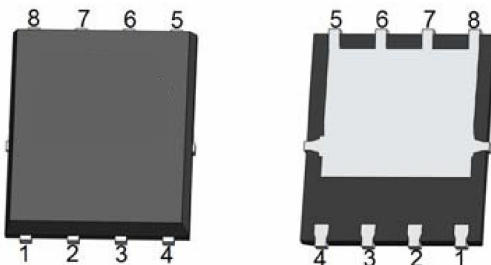
### Feature

- Excellent gate charge x RDS(on) product(FOM)
- Very low on-resistance RDS(on)
- 150 °C operating temperature
- Pb-free lead plating
- 100% UIS tested

### Application

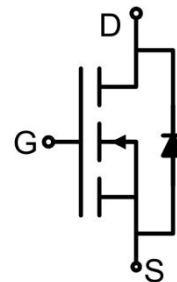
- DC/DC converter
- Ideal for high-frequency switching and synchronous rectification

### Package

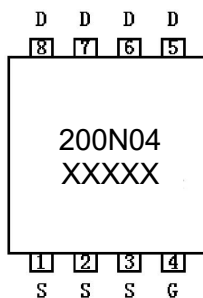


DFN5X6-8L

### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>c</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	200	A
Continuous Drain Current(T <sub>c</sub> =100°C)	I <sub>D</sub> (100°C)	150	A
Pulsed Drain Current	I <sub>DM</sub>	400	A
Power Dissipation	P <sub>D</sub>	180	W
Thermal Resistance,Junction-to-Case <sup>1)</sup>	R <sub>θJC</sub>	0.67	°C/W
Single pulse avalanche energy	E <sub>AS</sub>	1800	mJ
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### Electrical characteristics (T<sub>c</sub>=25 °C, unless otherwise noted)

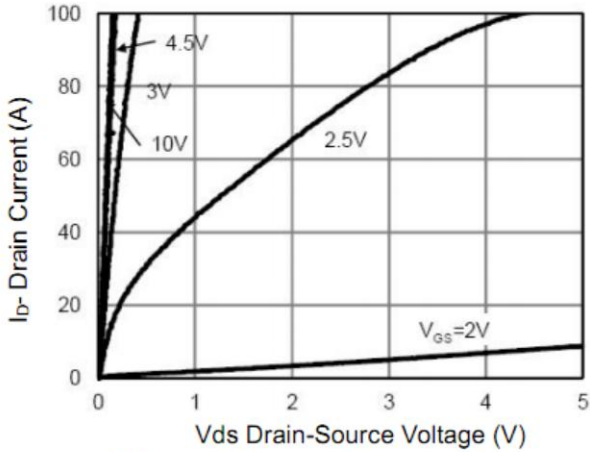
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	40			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.2	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =100A		0.85	1.0	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =100A		1.0	1.2	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =100A		90		S
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f =1MHz		8085		pF
Output Capacitance	C <sub>oss</sub>			2123		
Reverse Transfer Capacitance	C <sub>rss</sub>			121		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =10V, I <sub>D</sub> =100A		137		nC
Gate-Source Charge	Q <sub>gs</sub>			19		
Gate-Drain Charge	Q <sub>gd</sub>			14		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =20V, V <sub>GS</sub> =10V, I <sub>D</sub> =100A, R <sub>GEN</sub> =1.6Ω		13		nS
Turn-on rise time	t <sub>r</sub>			8		
Turn-off delay time	t <sub>d(off)</sub>			55		
Turn-off fall time	t <sub>f</sub>			10		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current <sup>1)</sup>	I <sub>S</sub>				200	A
Diode Forward voltage <sup>2)</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =100A			1.2	V
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> =200A di/dt = 100A/μs <sup>2)</sup>		35		nS
Reverse Recovery Charge	Q <sub>rr</sub>				120	

Notes:

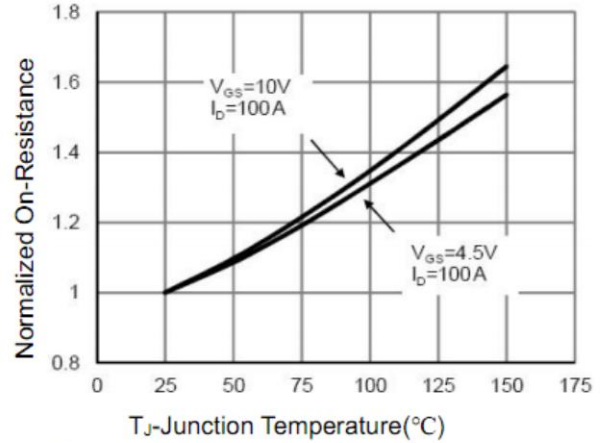
1) Surface Mounted on FR4 Board, t ≤ 10 sec.

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

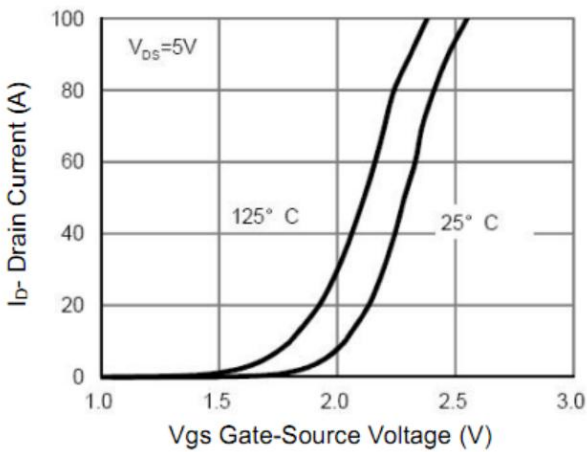
## Typical Characteristics



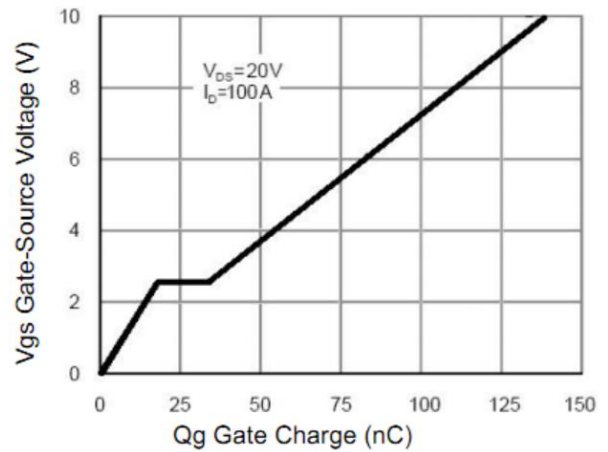
**Figure 1 Output Characteristics**



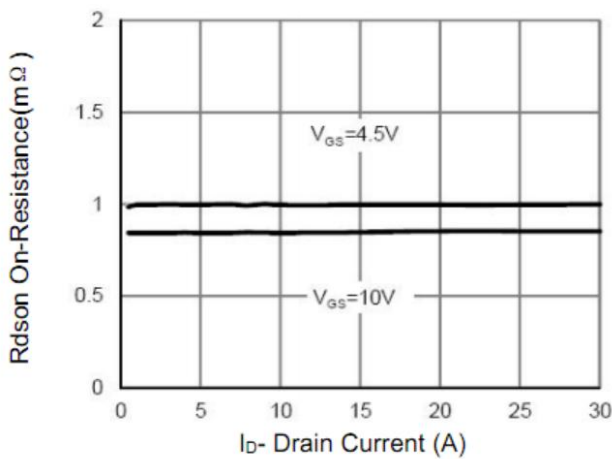
**Figure 2 Rdson-Junction Temperature**



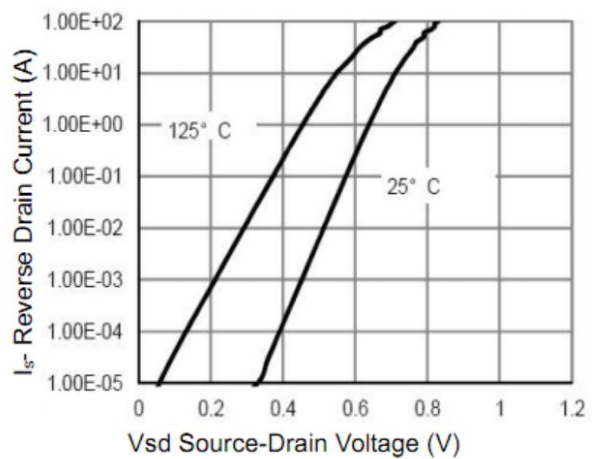
**Figure 3 Transfer Characteristics**



**Figure 4 Gate Charge**

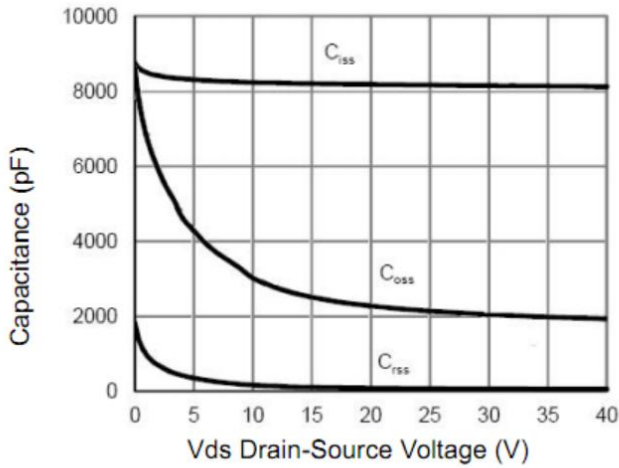


**Figure 5 Rdson- Drain Current**

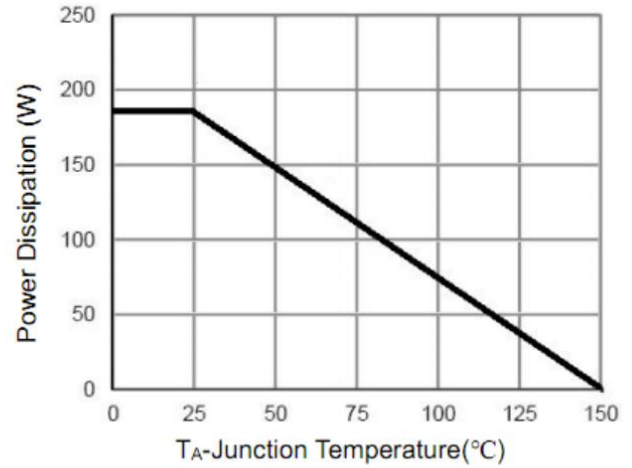


**Figure 6 Source- Drain Diode Forward**

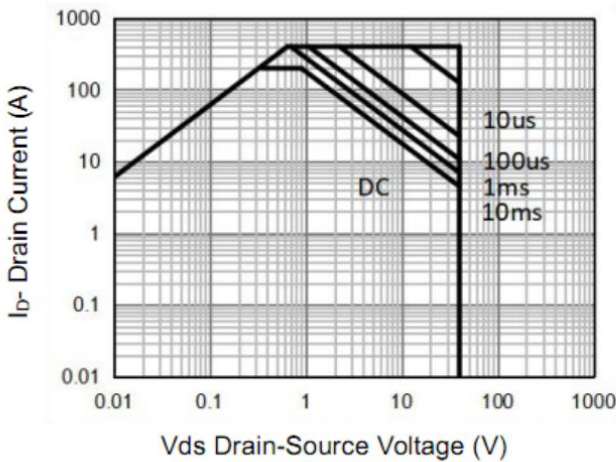
## Typical Characteristics



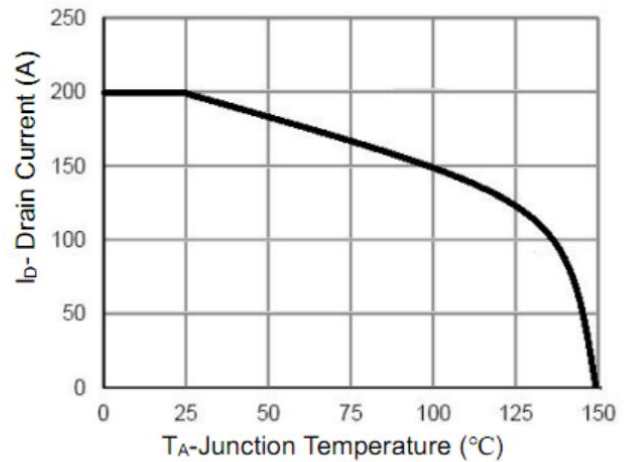
**Figure 7 Capacitance vs Vds**



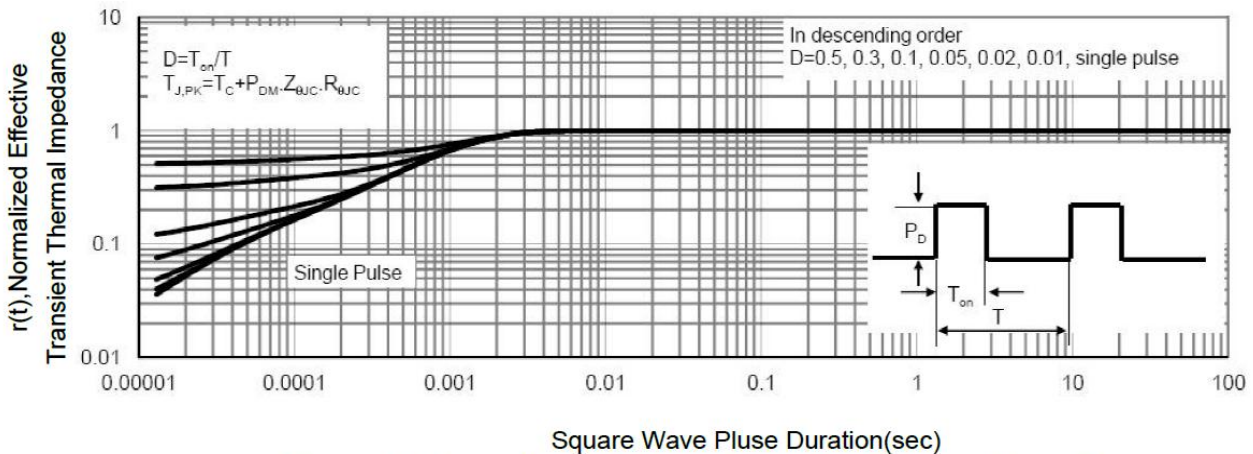
**Figure 8 Power De-rating**



**Figure 9 Safe Operation Area**

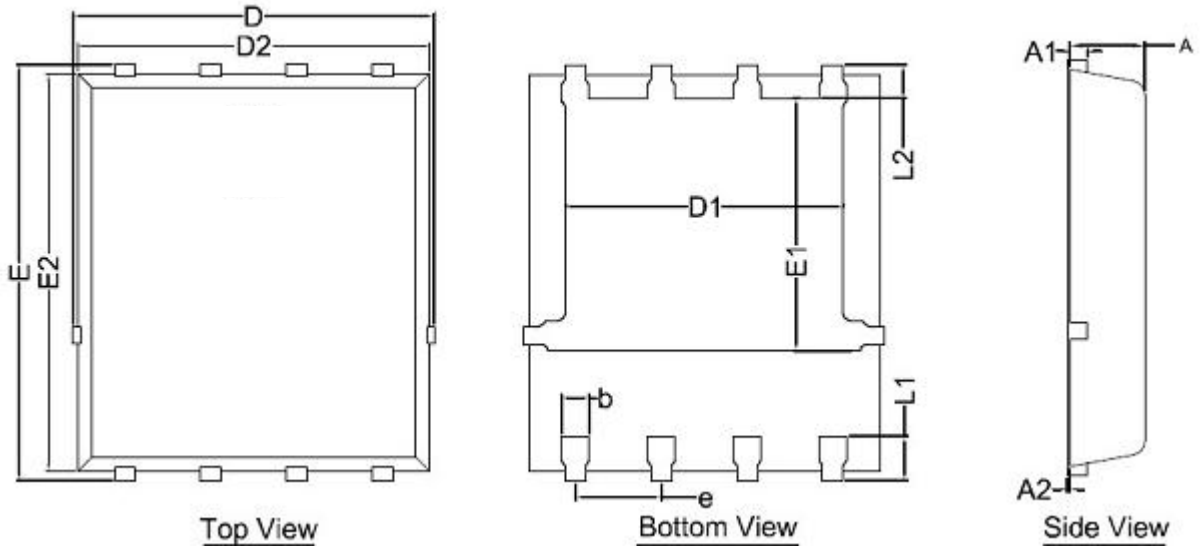


**Figure 10 Current De-rating**



**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	