

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	2.8mΩ@10V	65A
	4.2mΩ@4.5V	

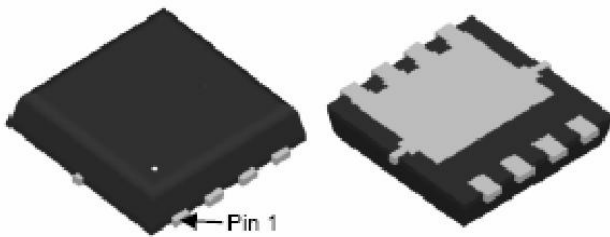
Feature

- Excellent gate charge x RDS(on) product(FOM)
- Very low on-resistance RDS(on)

Application

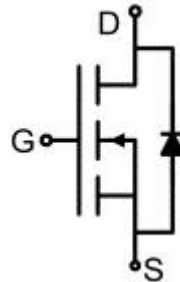
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

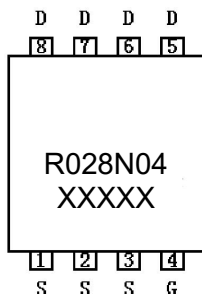


DFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (Tc=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	65	A
Continuous Drain Current(T _C =100 °C)	I _D (100 °C)	45.5	A
Pulsed Drain Current	I _{DM}	260	A
Power Dissipation	P _D	55	W
Thermal Resistance,Junction-to-Case	R _{θJC}	2.3	°C/W
Single pulse avalanche energy	E _{AS}	500	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	1.0	1.5	2.0	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.2	2.8	mΩ
		V _{GS} =4.5V, I _D =20A		3.3	4.2	
Dynamic characteristics²⁾						
Input Capacitance	C _{iSS}	V _{DS} =20V, V _{GS} =0V, f =1MHz		2100		pF
Output Capacitance	C _{oss}			773		
Reverse Transfer Capacitance	C _{rSS}			15.5		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A		35		nC
Gate-Source Charge	Q _{gs}			6.2		
Gate-Drain Charge	Q _{gd}			5.1		
Turn-on delay time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, I _D =20A, R _G =1.6Ω		7.5		nS
Turn-on rise time	t _r			4.0		
Turn-off delay time	t _{d(off)}			37		
Turn-off fall time	t _f			7.5		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				65	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = I _S di/dt = 100A/μs ¹⁾		14		nS
Reverse Recovery Charge	Q _{rr}				21	

Notes:

- 1) Surface Mounted on FR4 Board, t ≤ 10 sec.
- 2) Guaranteed by design, not subject to production.
- 3) EAS condition : T_J=25 ,V °C DD=20V,V_G=10V,L=0.5mH,R_G=25Ω.

Typical Characteristics

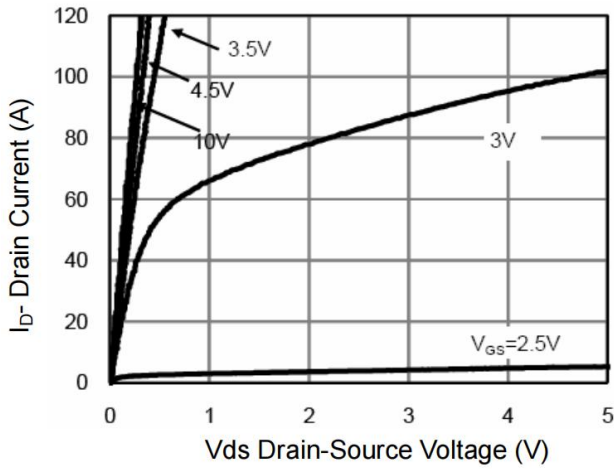


Figure 1 Output Characteristics

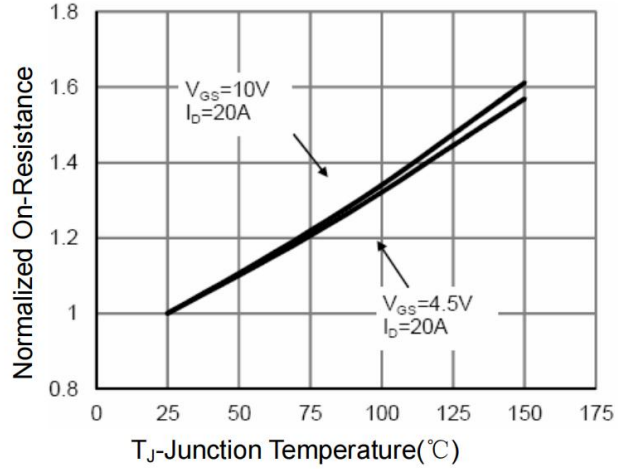


Figure 2 Rdson-Junction Temperature

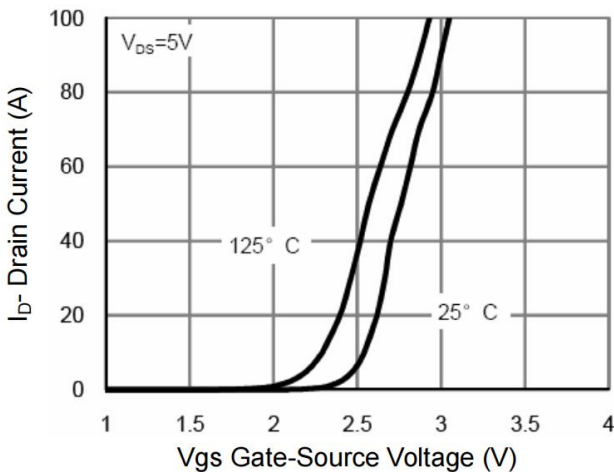


Figure 3 Transfer Characteristics

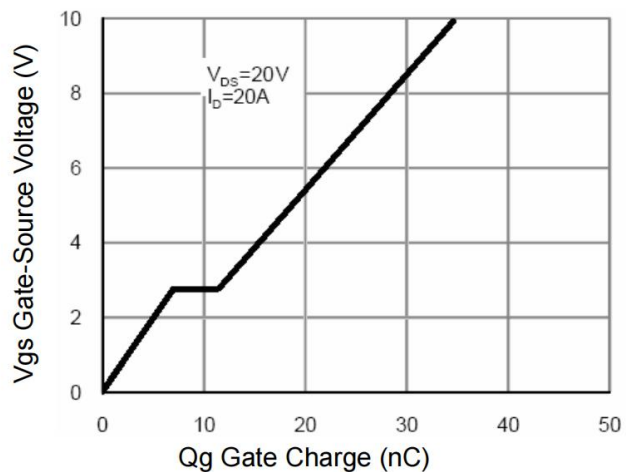


Figure 4 Gate Charge

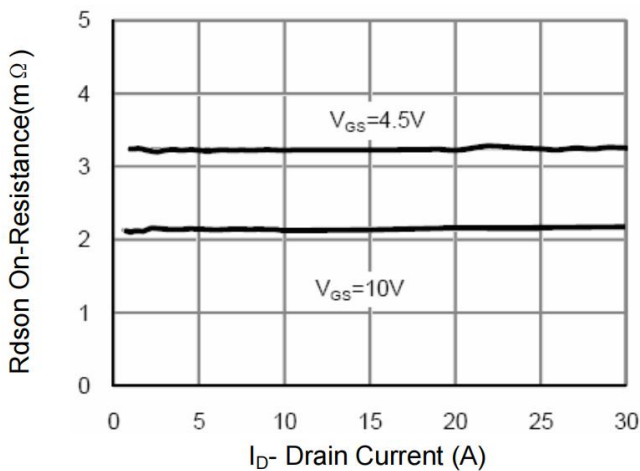


Figure 5 Rdson- Drain Current

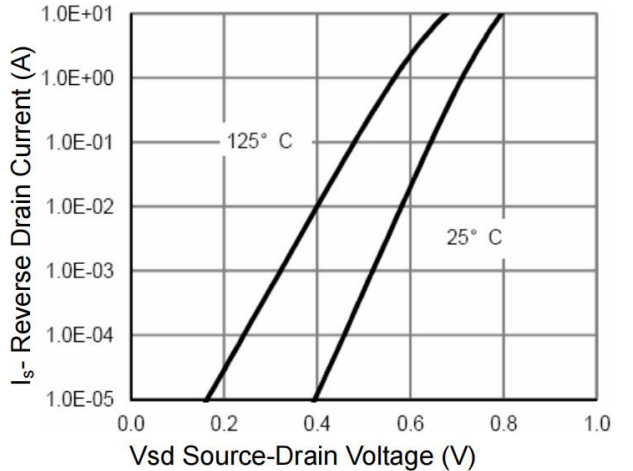


Figure 6 Source- Drain Diode Forward

Typical Characteristics

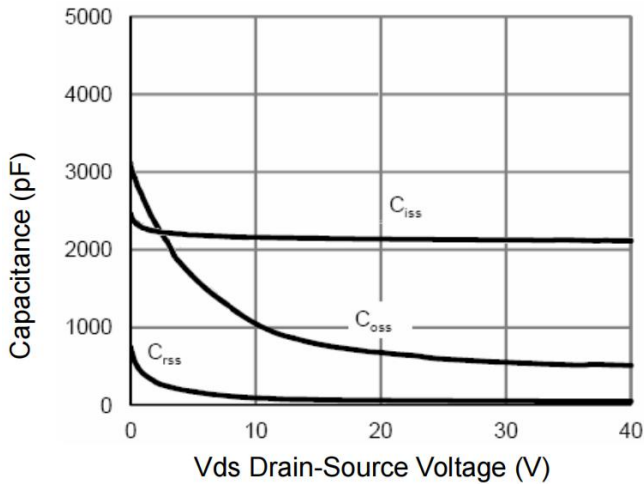


Figure 7 Capacitance vs Vds

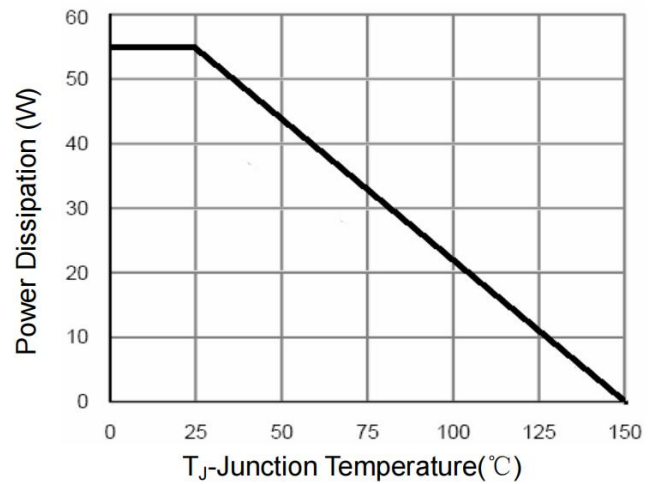


Figure 8 Power De-rating

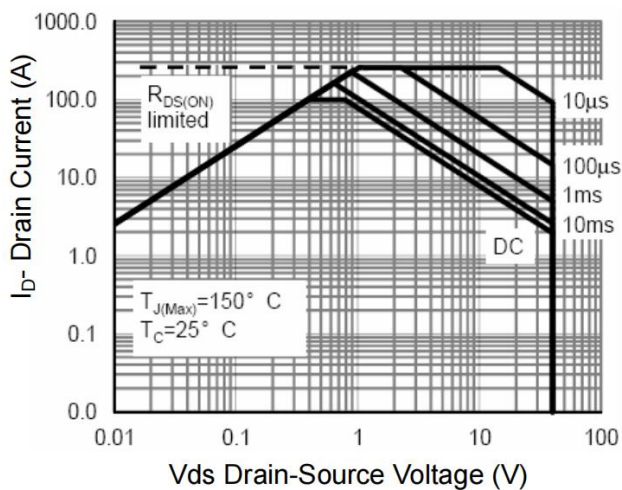


Figure 9 Safe Operation Area

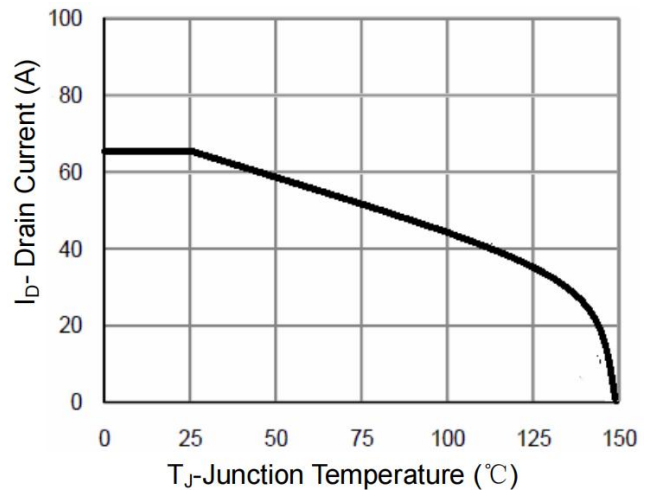


Figure 10 Current De-rating

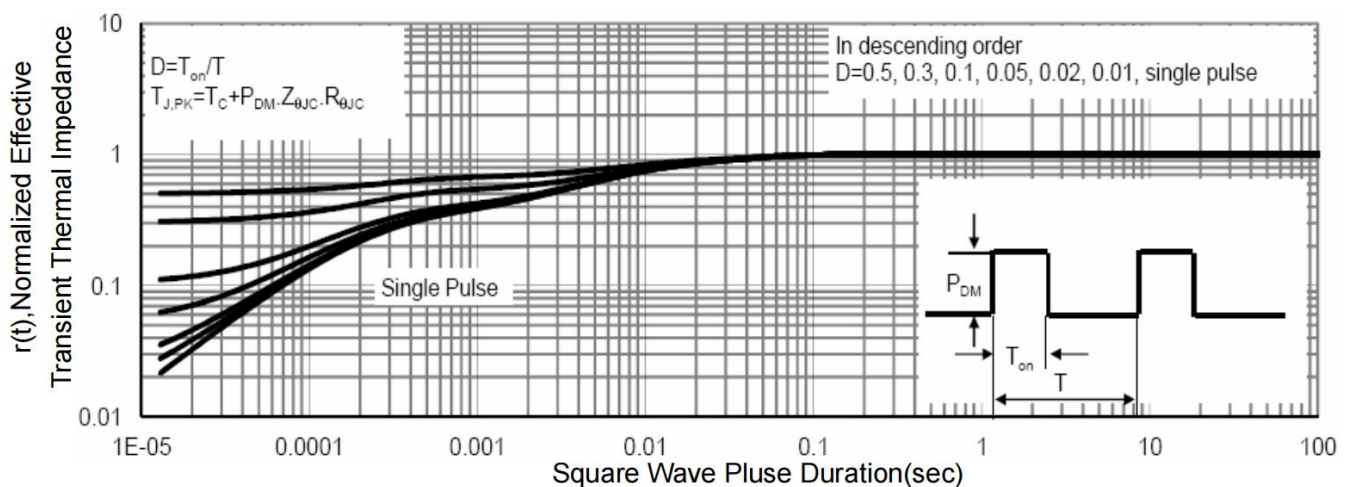
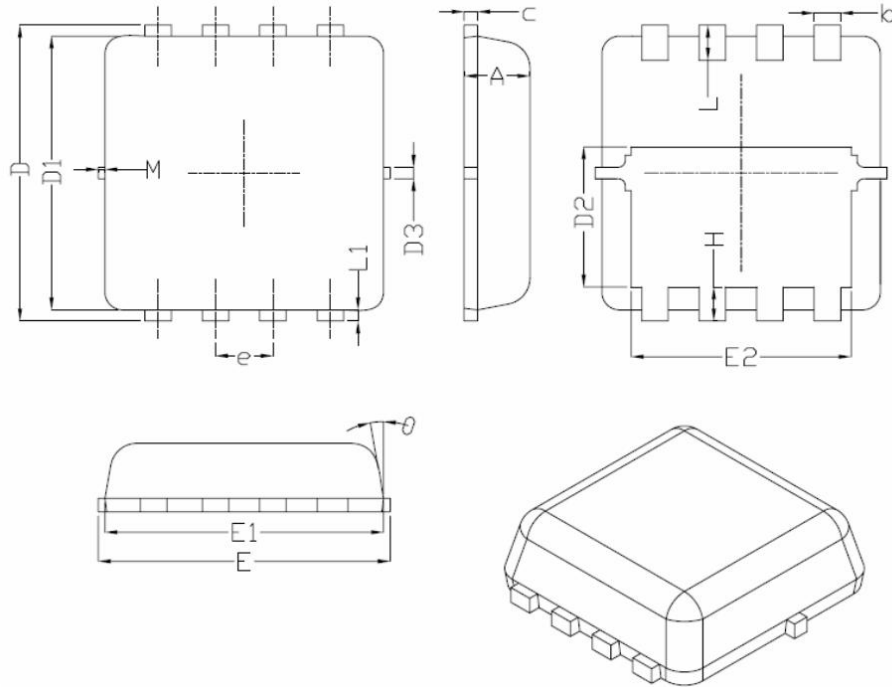


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.025	0.034
b	0.200	0.400	0.007	0.016
c	0.100	0.250	0.003	0.010
D	3.250	3.450	0.127	0.136
D1	3.000	3.200	0.118	0.126
D2	1.480	1.680	0.058	0.067
D3	0.130 REF		0.051 REF	
E	3.200	3.400	0.125	0.134
E1	3.000	3.200	0.118	0.126
E2	2.390	2.590	0.094	0.102
H	0.300	0.500	0.011	0.020
L	0.300	0.500	0.011	0.020
L1	0.130 REF		0.051 REF	
M	0.000	0.150	0.000	0.006
e	0.650 REF		0.026 REF	
θ	8 °	12 °	8 °	12 °