

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	7.5mΩ@10V	50A
	8.8mΩ@4.5V	

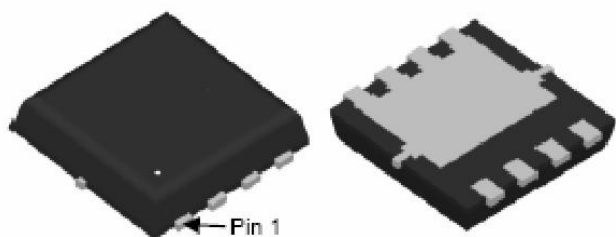
Feature

- High density cell design for ultra low Rdson
- High Speed switching
- Suffix "-Q1" for AEC-Q101

Application

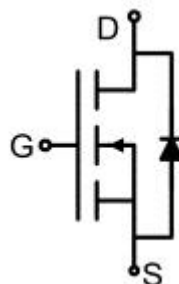
- DC/DC converter
- Ideal for high-frequency switching and synchronous rectification

Package

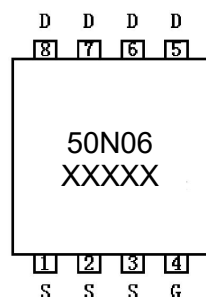


DFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	50	A
Continuous Drain Current(T _C =100 °C)	I _D (100 °C)	39	A
Pulsed Drain Current	I _{DM}	200	A
Power Dissipation	P _D	60	W
Single pulse avalanche energy	E _{AS}	350	mJ
Thermal Resistance,Junction-to-Case	R _{θJC}	2.1	°C/W
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	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, 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	1.8	2.4	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =25A		6.5	7.5	mΩ
		V _{GS} =4.5V, I _D =25A		7.7	8.8	
Forward transconductance	g _{FS}	V _{DS} =5V, I _D =25A		60		S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		2000		pF
Output Capacitance	C _{oss}			315		
Reverse Transfer Capacitance	C _{rss}			9.9		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =25A		34.8		nC
Gate-Source Charge	Q _{gs}			7		
Gate-Drain Charge	Q _{gd}			5.3		
Turn-on delay time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V, I _D =25A, R _{GEN} =1.6Ω		8		nS
Turn-on rise time	t _r			2		
Turn-off delay time	t _{d(off)}			29		
Turn-off fall time	t _f			4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				50	A
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =25A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =25A		38		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ¹⁾		48		nC

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

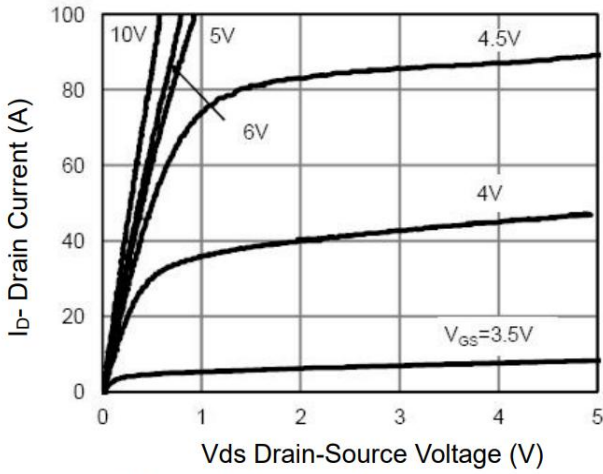


Figure 1 Output Characteristics

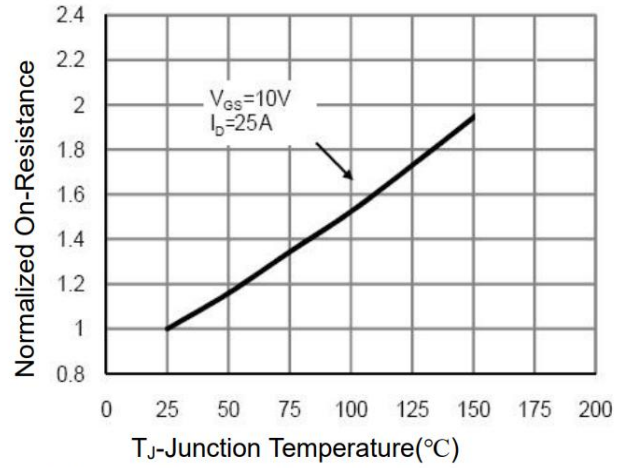


Figure 2 Rdson-Junction Temperature

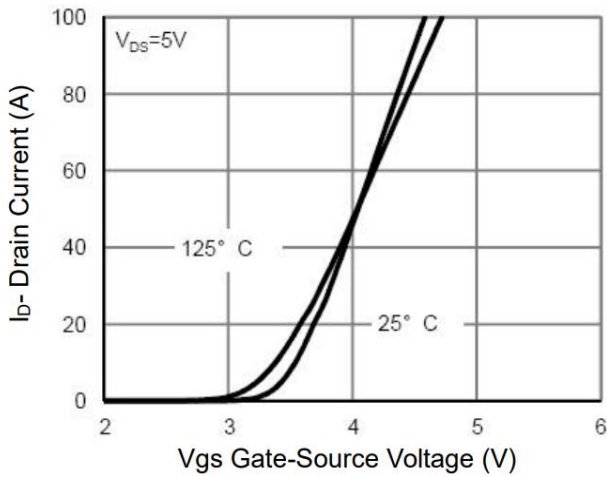


Figure 3 Transfer Characteristics

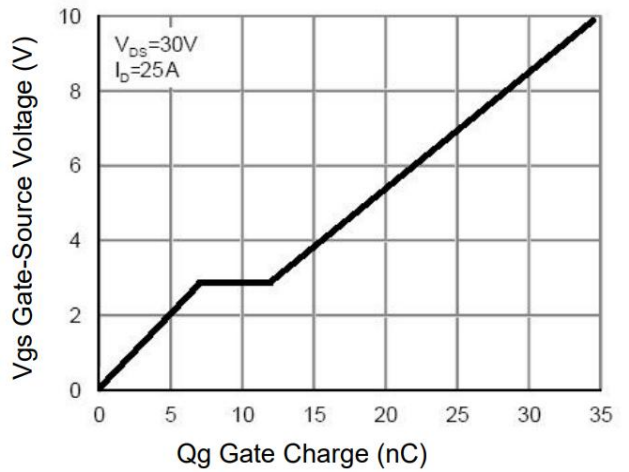


Figure 4 Gate Charge

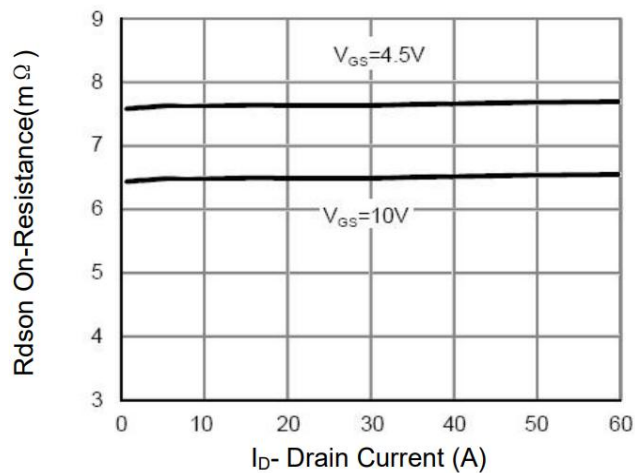


Figure 5 Rdson- Drain Current

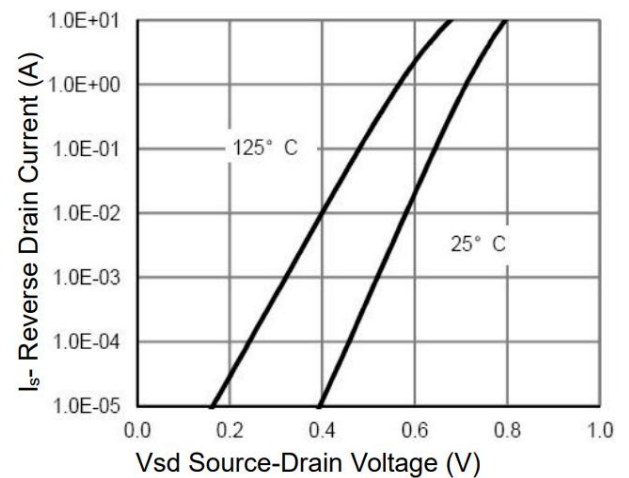


Figure 6 Source- Drain Diode Forward

Typical Characteristics

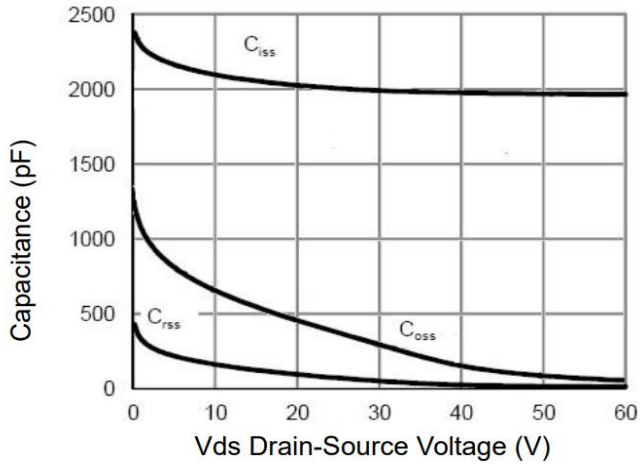


Figure 7 Capacitance vs Vds

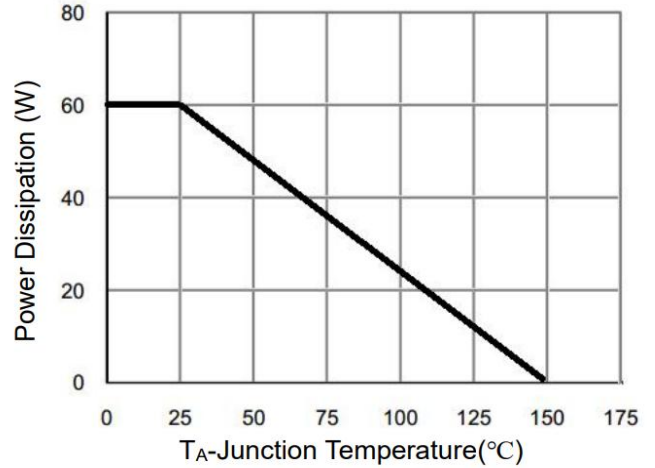


Figure 8 Power De-rating

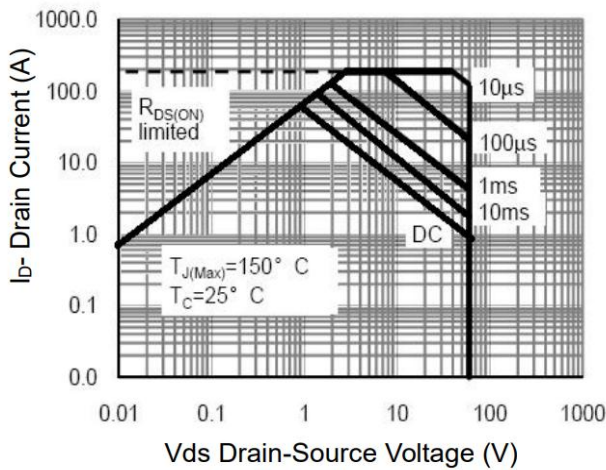


Figure 9 Safe Operation Area (Note 3)

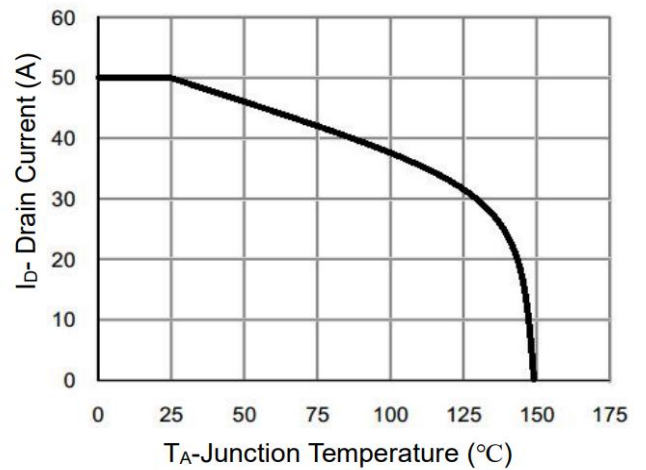


Figure 10 Current De-rating

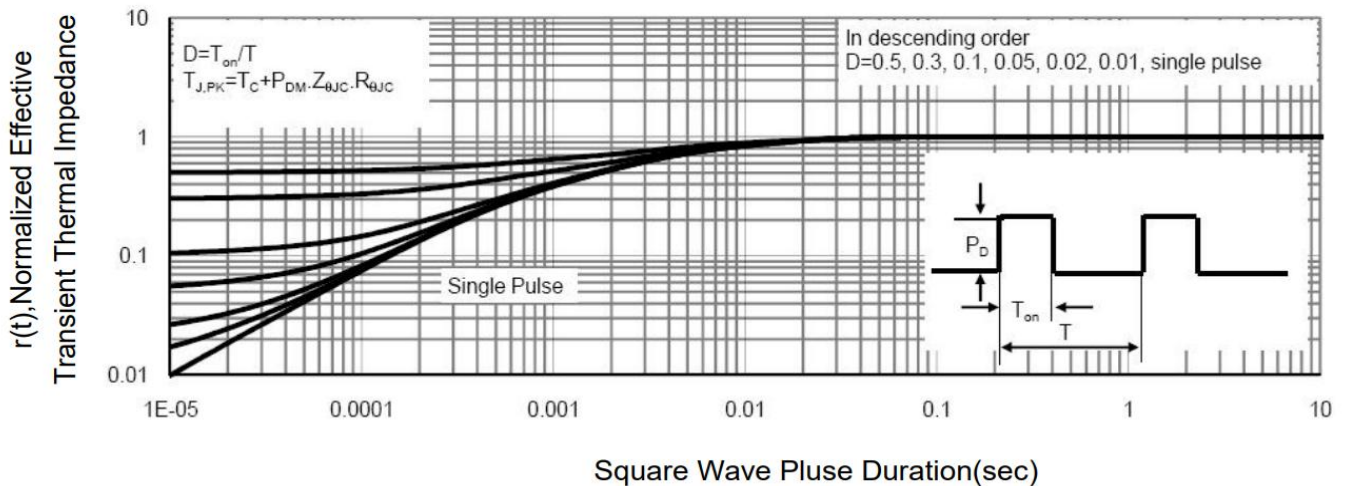
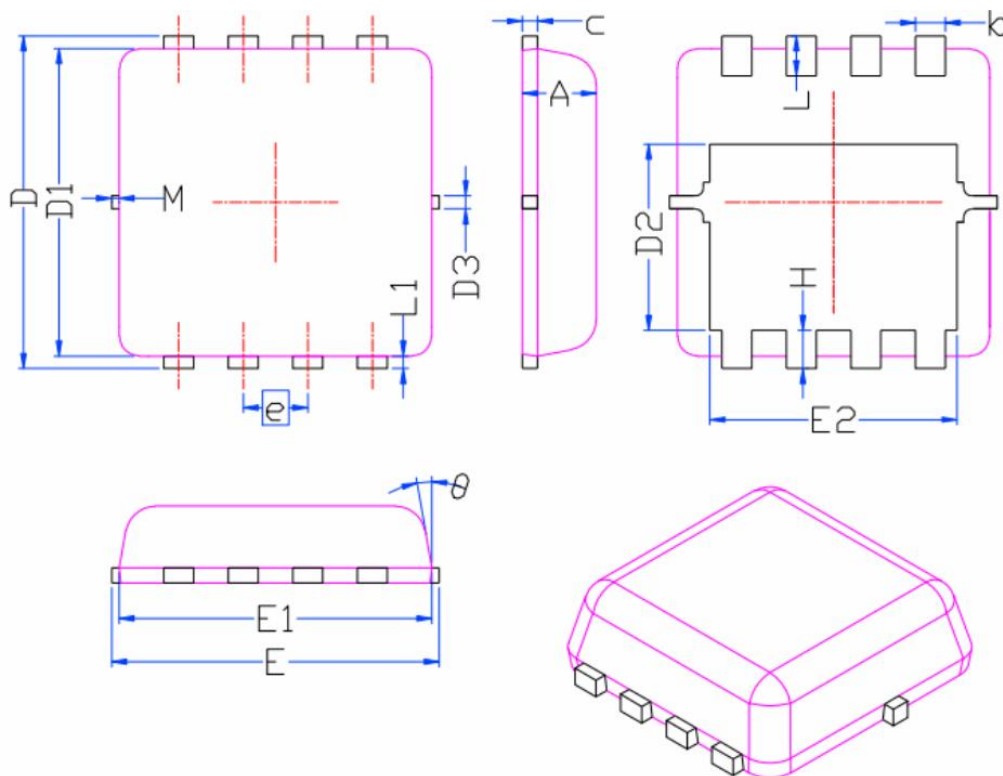


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.027	0.032
b	0.250	0.350	0.009	0.014
c	0.100	0.250	0.003	0.009
D	3.250	3.450	0.124	0.132
D1	3.000	3.200	0.086	0.098
D2	1.780	1.980	0.070	0.078
D3	0.130 BSC		0.005 BSC	
E	3.100	3.300	0.122	0.130
E1	3.000	3.200	0.118	0.126
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.020
L	0.300	0.500	0.011	0.020
L1	0.130 BSC		0.005BSC	
M	0.000	0.150	0.000	0.006
θ	0 °	12 °	0 °	12 °