

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	14mΩ@10V	25A
	19mΩ@4.5V	

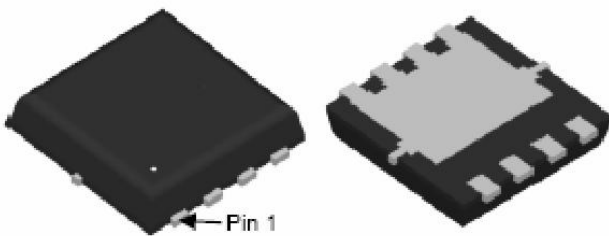
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

Application

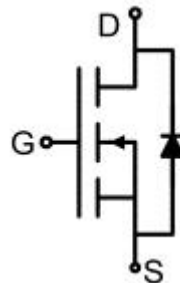
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

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	25	A
Continuous Drain Current(T _C =100°C)	I _D (100 °C)	17.7	A
Pulsed Drain Current	I _{DM}	100	A
Power Dissipation	P _D	35	W
Single pulse avalanche energy ⁴⁾	E _{AS}	150	mJ
Thermal Resistance,Junction-to-Case ¹⁾	R _{θJC}	3.6	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (Tc=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 ²⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		12	14	mΩ
		V _{GS} =4.5V, I _D =20A		16	19	
Dynamic characteristics³⁾						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f =1MHz		1630		pF
Output Capacitance	C _{oss}			113		
Reverse Transfer Capacitance	C _{rss}			97		
Total Gate Charge	Q _g	V _{DS} =30V,V _{GS} =10V, I _D =20A		39		nC
Gate-Source Charge	Q _{gs}			7		
Gate-Drain Charge	Q _{gd}			8.5		
Turn-on delay time	t _{d(on)}	V _{DD} =30V,V _{GS} =10V, R _L =6.7Ω,R _G =3Ω		7.4		nS
Turn-on rise time	t _r			5.1		
Turn-off delay time	t _{d(off)}			28.2		
Turn-off fall time	t _f			5.5		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				25	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 20A		28		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ²⁾		40		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 : T_J=25°C,V_{DD}=30V,V_G=10V,L=0.5mH,R_G=25Ω.

Typical Characteristics

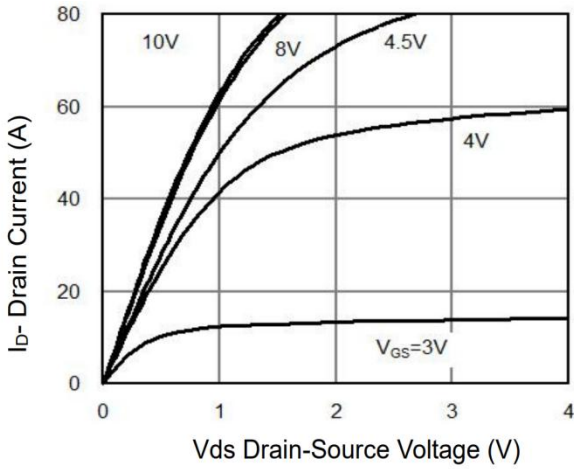


Figure 1 Output Characteristics

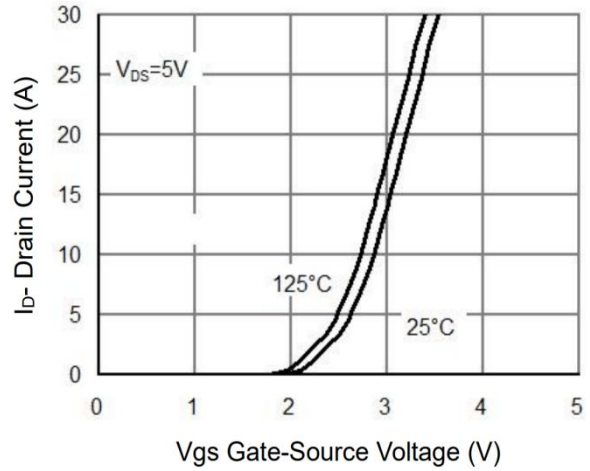


Figure 2 Transfer Characteristics

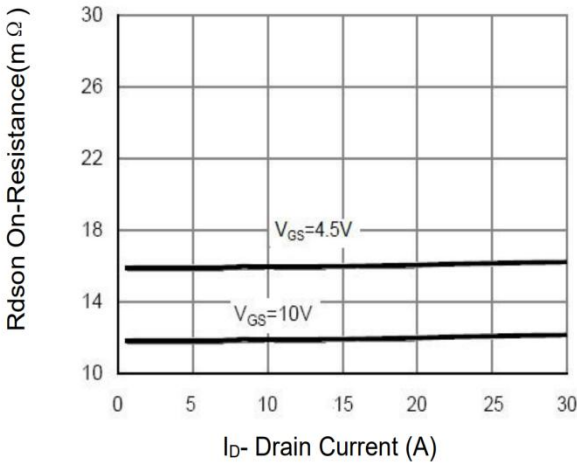


Figure 3 Rds(on)- Drain Current

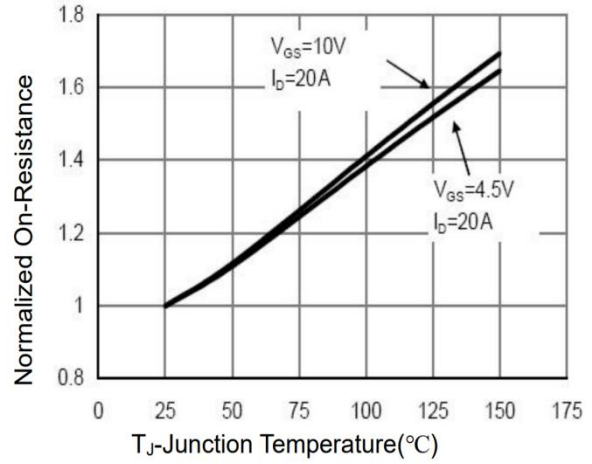


Figure 4 Rds(on)-Junction Temperature

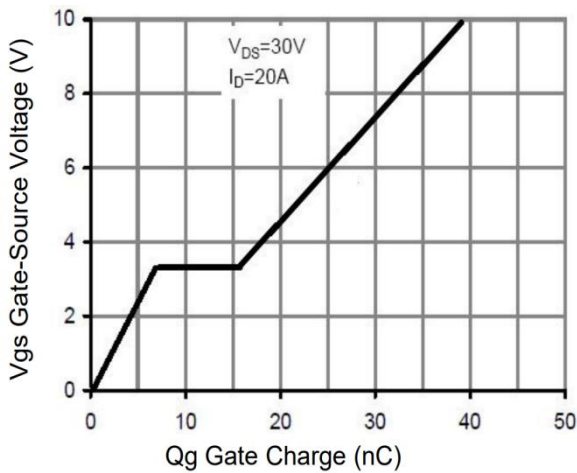


Figure 5 Gate Charge

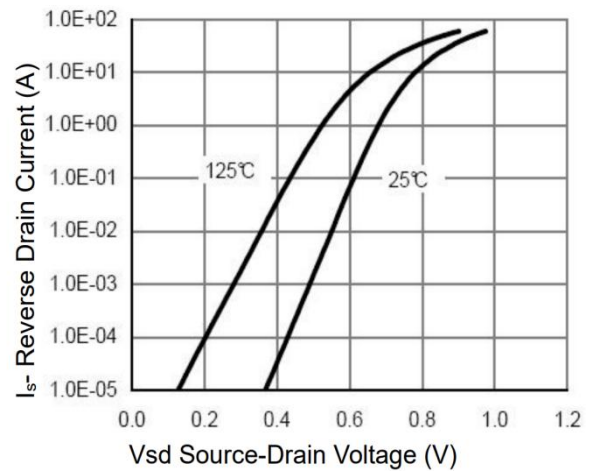


Figure 6 Source- Drain Diode Forward

Typical Characteristics

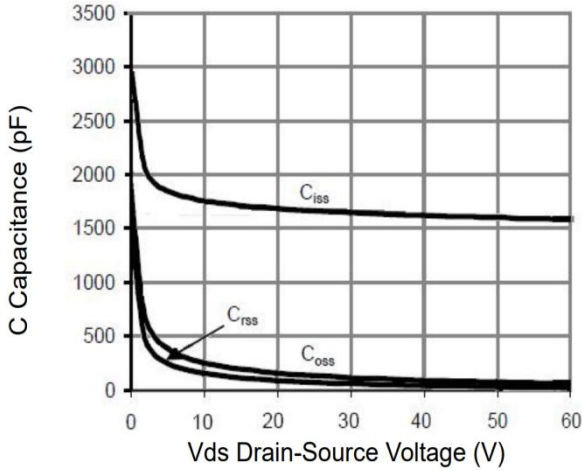


Figure 7 Capacitance vs Vds

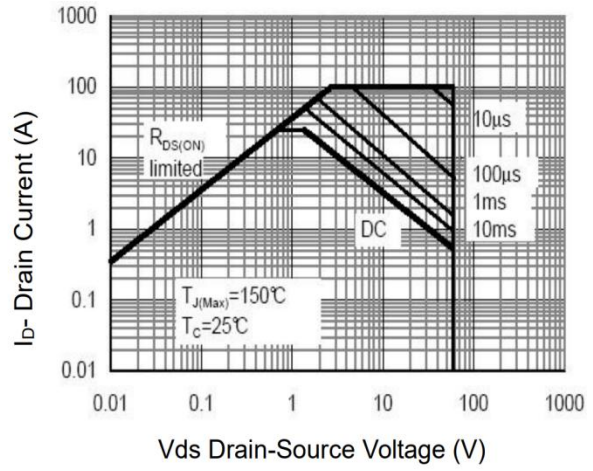


Figure 8 Safe Operation Area

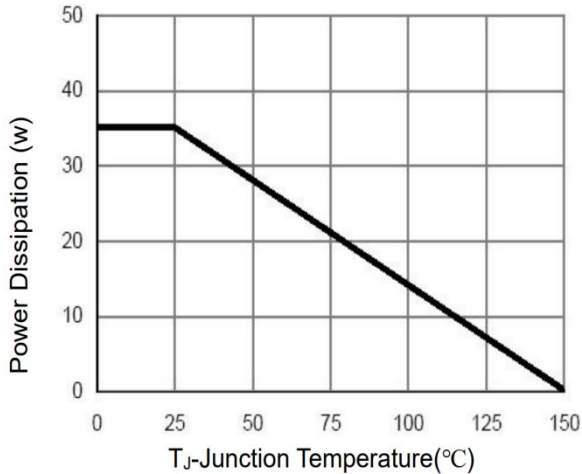


Figure 9 Power De-rating

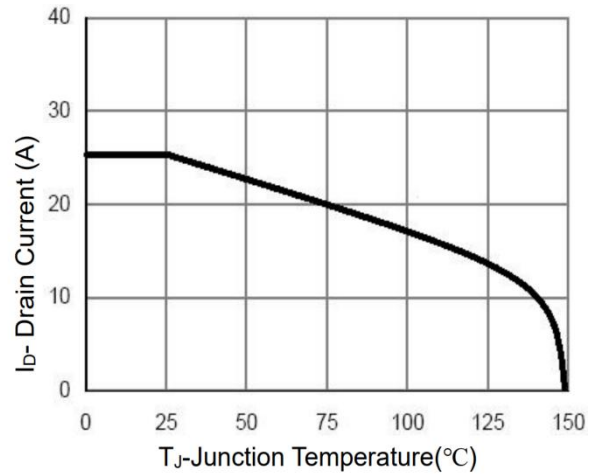


Figure 10 Current De-rating

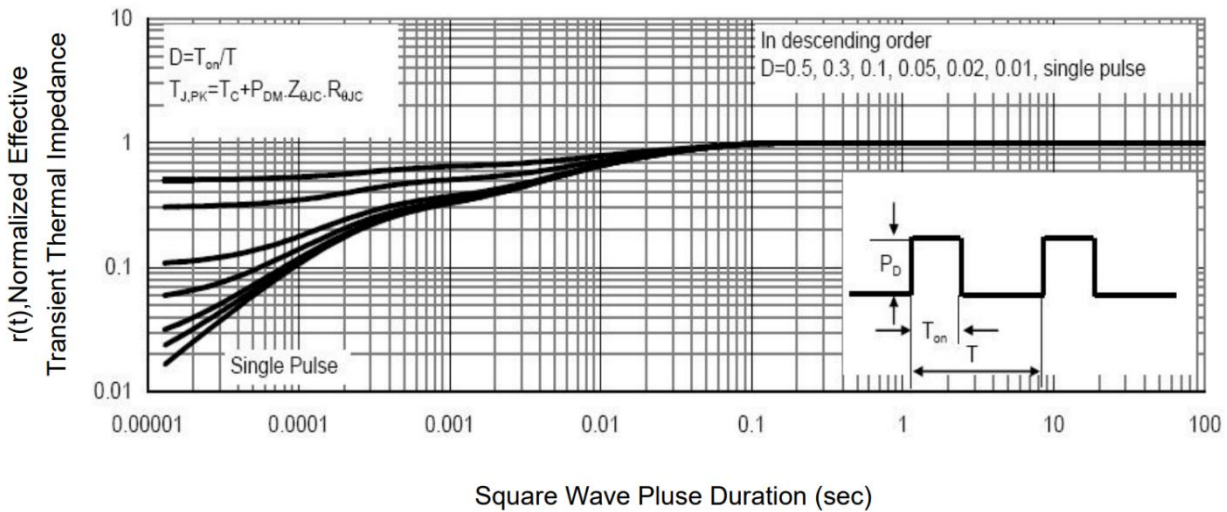
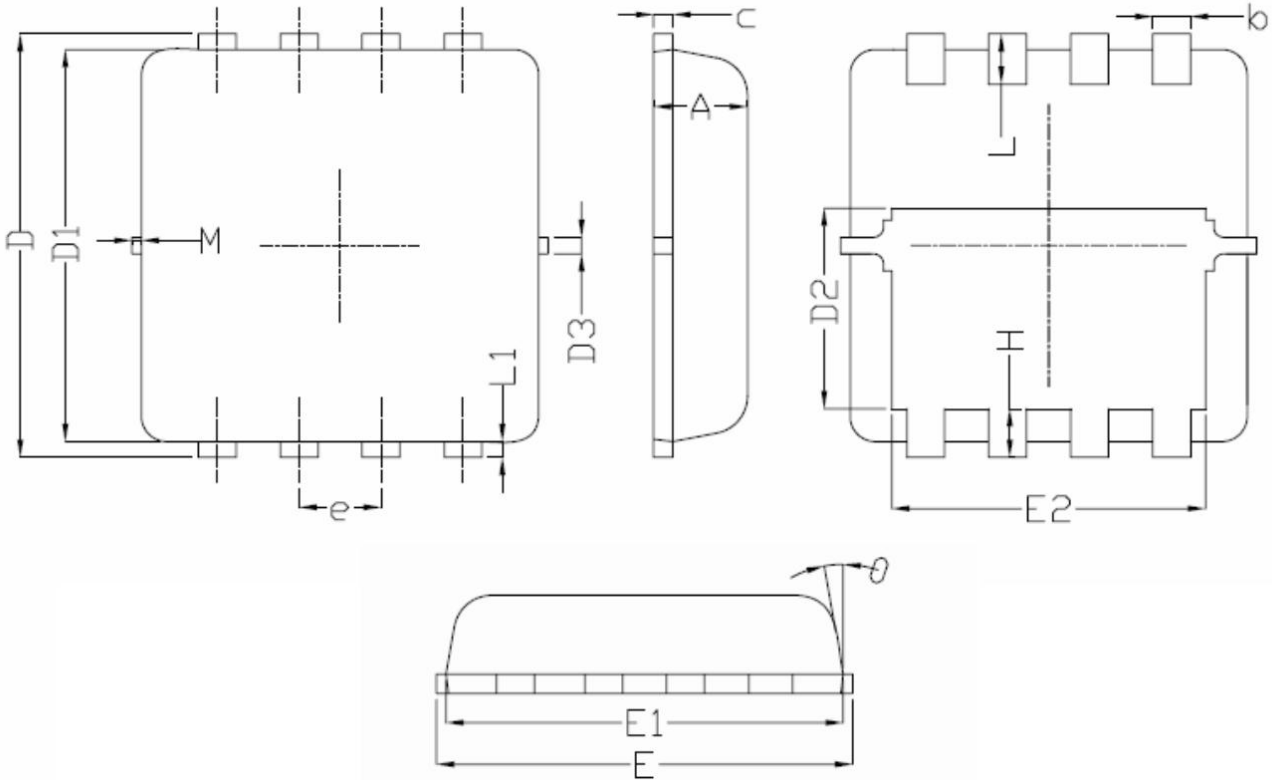


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
b	0.240	0.350	0.009	0.014
c	0.100	0.250	0.004	0.010
D	3.200	3.450	0.126	0.136
D1	3.000	3.200	0.118	0.126
D2	1.350	1.680	0.053	0.066
D3	0.130 BSC		0.005 BSC	
E	3.200	3.400	0.126	0.134
E1	3.000	3.250	0.118	0.128
E2	2.390	2.600	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.150 BSC		0.006 BSC	
M	0.000	0.150	0.000	0.006
θ	0°	12°	0°	12°