

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-19V	7mΩ@-4.5V	-45A
	9mΩ@-2.5V	
	12mΩ@-1.8V	

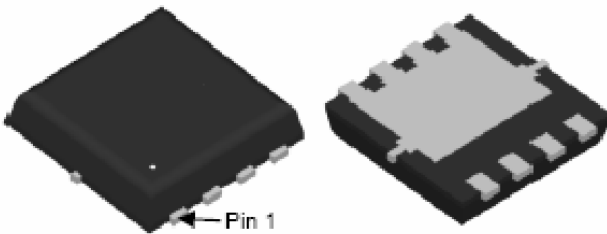
Feature

- High density cell design for ultra low Rdson
- High Speed switching

Application

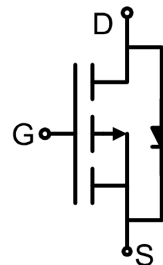
- Battery protection
- Load switching
- Power management

Package

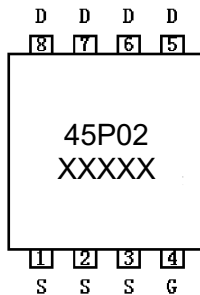


DFN3.3X3.3-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-19	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current	I _D	-45	A
Continuous Drain Current(T _C =100 °C)	I _D (100 °C)	-35	A
Pulsed Drain Current	I _{DM}	-200	A
Power Dissipation	P _D	80	W
Thermal Resistance,Junction-to-Case	R _{θJC}	1.6	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=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	-19			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4		-1.0	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = -4.5V, I _D = -20A		5.8	7	mΩ
		V _{GS} = -2.5V, I _D = -20A		7.2	9	
		V _{GS} = -1.8V, I _D = -20A		9	12	
Forward transconductance ¹⁾	g _{FS}	V _{DS} = -5V, I _D = -20A	80			S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		3500		pF
Output Capacitance	C _{oss}			577		
Reverse Transfer Capacitance	C _{rss}			445		
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -20A		55		nC
Gate-Source Charge	Q _{gs}			10		
Gate-Drain Charge	Q _{gd}			15		
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, V _{GS} = -4.5V, R _L = 0.5Ω, R _{GEN} = 3Ω		18		nS
Turn-on rise time	t _r			42		
Turn-off delay time	t _{d(off)}			85		
Turn-off fall time	t _f			23		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				-45	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -20A			-1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -10A		47		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ¹⁾		53		nC

Notes:

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

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

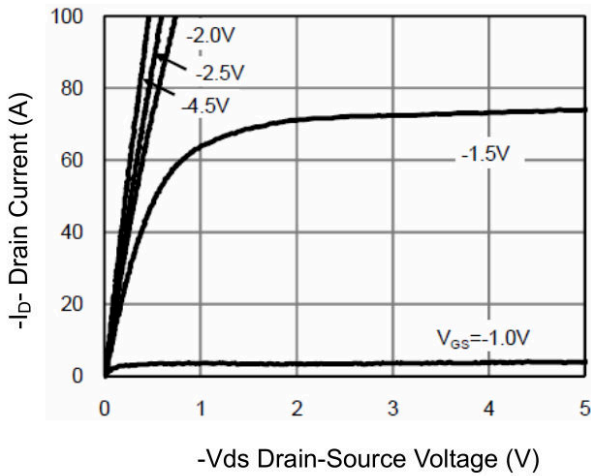


Figure 1 Output Characteristics

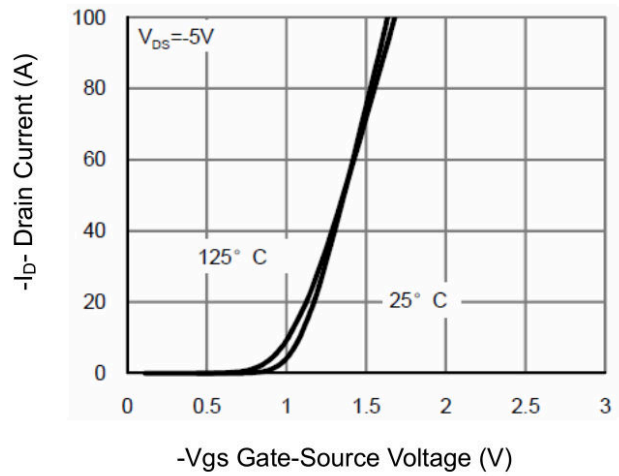


Figure 2 Transfer Characteristics

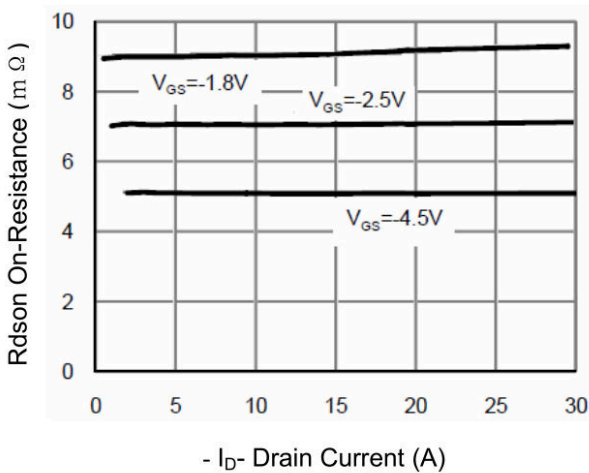


Figure 3 Rdson- Drain Current

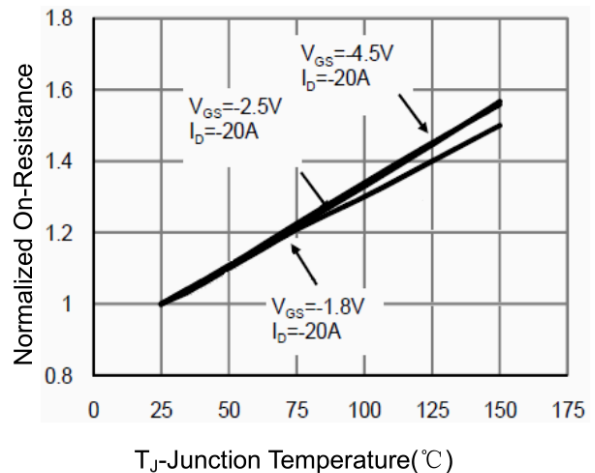


Figure 4 Rdson-Junction Temperature

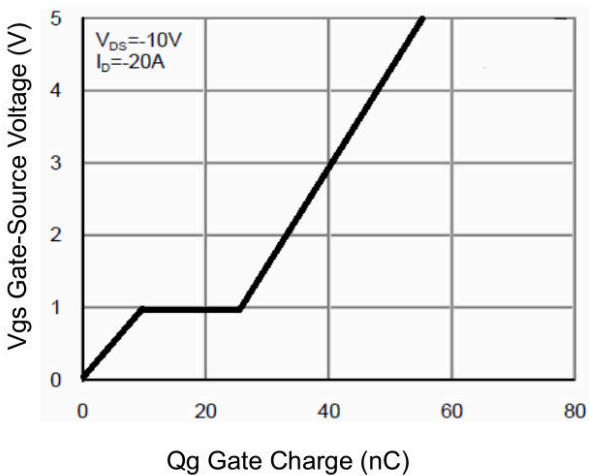


Figure 5 Gate Charge

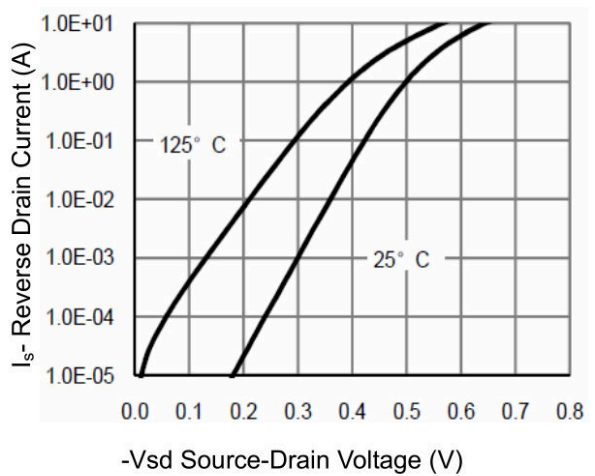
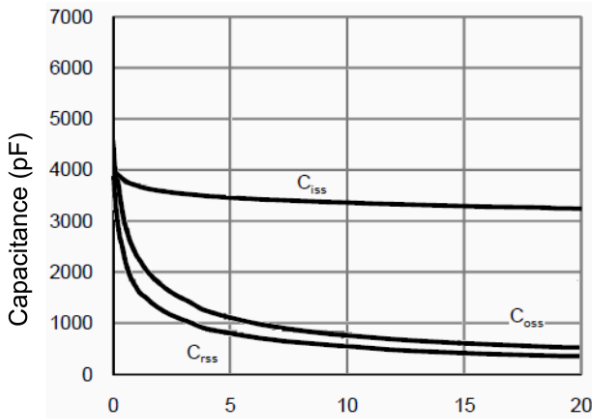


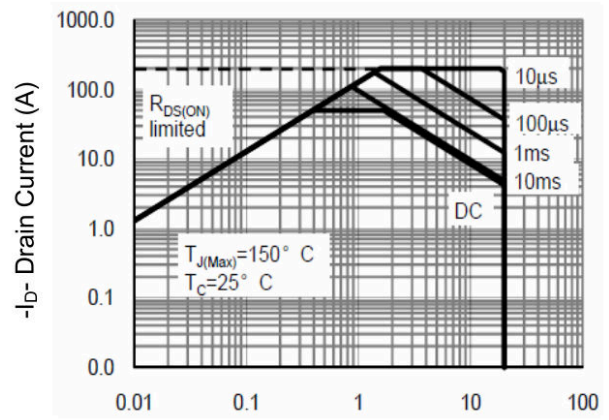
Figure 6 Source- Drain Diode Forward

Typical Characteristics



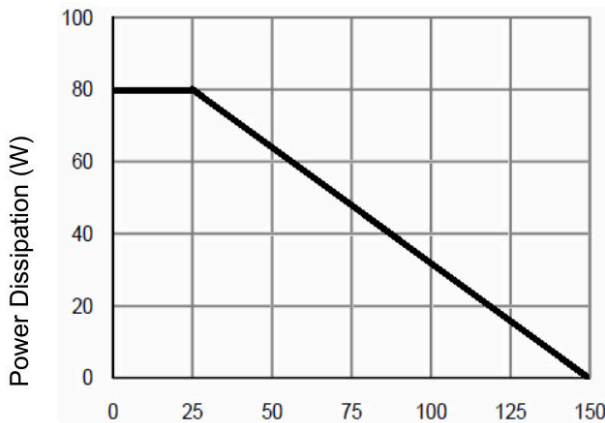
-Vds Drain-Source Voltage (V)

Figure 7 Capacitance vs Vds



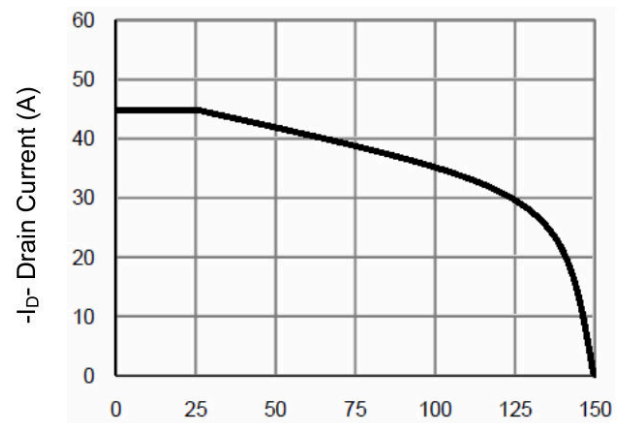
-Vds Drain-Source Voltage (V)

Figure 8 Safe Operation Area



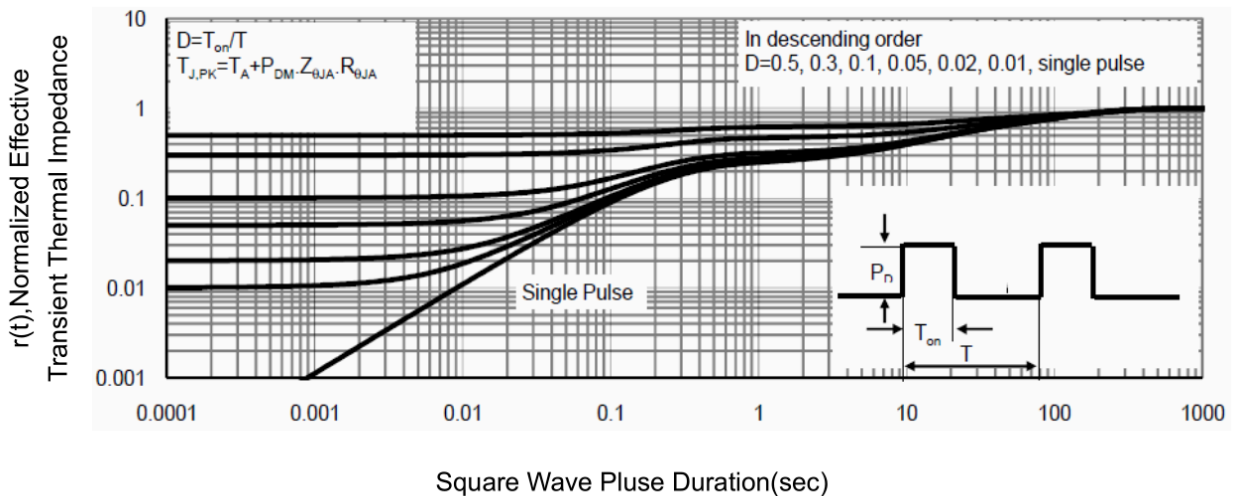
T_J-Junction Temperature(°C)

Figure 9 Power De-rating



T_J-Junction Temperature(°C)

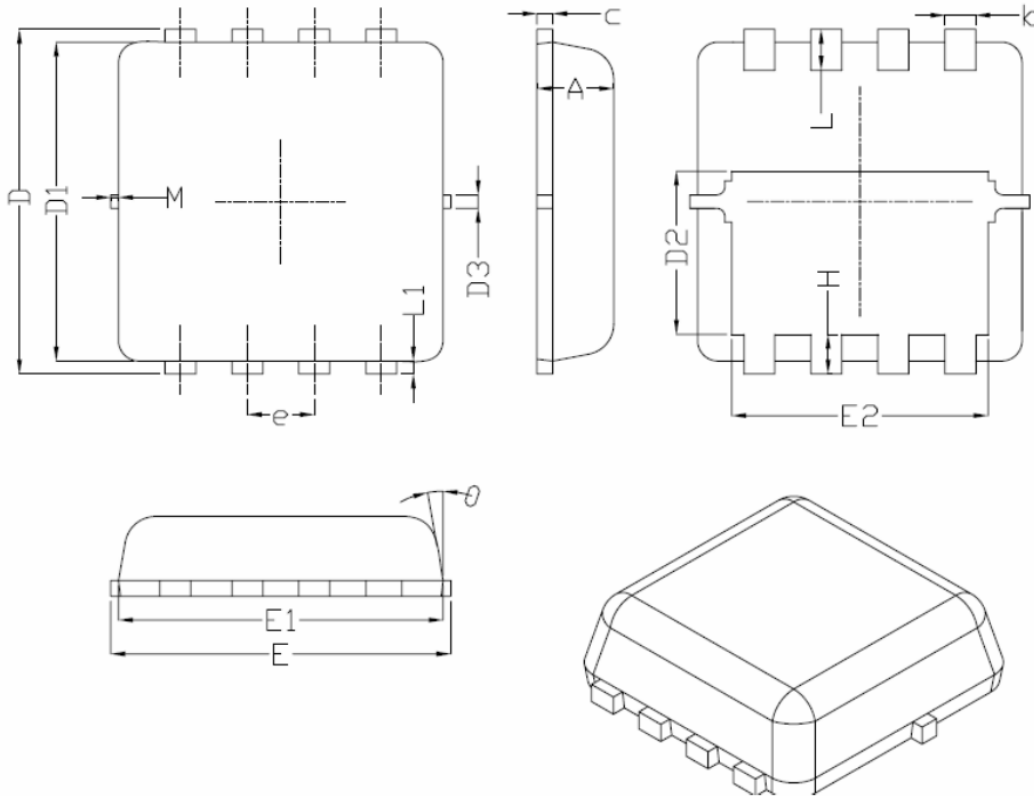
Figure 10 -Current De-rating



Square Wave Pluse Duration(sec)

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	0.028	0.031
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.250	3.450	0.128	0.136
D1	3.000	3.200	0.118	0.126
D2	1.480	1.680	0.058	0.066
D3	0.130 TYP.		0.005 TYP.	
E	3.200	3.400	0.126	0.134
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	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.130 TYP.		0.005 TYP.	
θ	0°	12°	0°	12°
M	-	0.150	-	0.006