DESCRIPTION

The MXN3342 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.

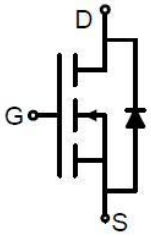
GENERAL FEATURES

- V_{DS}=30V, I_D=35A
  $R_{DS(ON)}$(Typ.)=10mΩ @ V_{GS}=4.5V
  $R_{DS(ON)}$(Typ.)=6.5mΩ @ V_{GS}=10V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

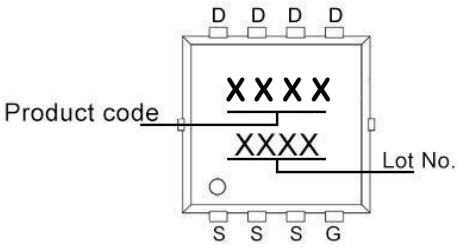
APPLICATION

- PWM applications
- Load switch
- Power management
- Battery

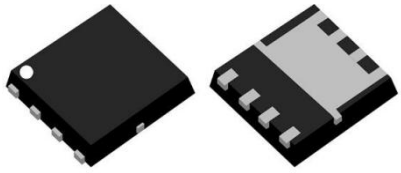
PINOUT



Schematic diagram



Marking and pin Assignment


DFN3X3-8L top view

ORDERING INFORMATION

Part Number	StorageTemperature	Package	Devices Per Reel
MXN3342	-55°C to 150°C	DFN3X3-8L	5000

ABSOLUTE MAXIMUM RATINGS(T_A=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	35	A
Drain Current-Continuous(T_C=100°C)	I_D	25	A
Pulsed Drain Current(Note1)	I_{DM}	100	A
Maximum Power Dissipation	P_D	25	W
Avalanche Current	I_{AS}	37	A
Avalanche Energy (L=0.1mH)	E_{AS}	68	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE

Thermal Resistance, Junction-to-Case(Note2)	$R_{\theta JC}$	5	°C/W

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 2. Surface Mounted on FR4 Board, t ≤ 10 sec.

ELECTRICAL CHARACTERISTICS(T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
On Characteristics(Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.6	2.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=16A	-	10	13	mΩ
		V_{GS}=10V, I_D=20A	-	6.2	7.5	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=10A	-	32	-	S
Dynamic Characteristics(Note4)						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, F=1.0MHz	-	1300	-	pF
Output Capacitance	C_{oss}		-	175	-	pF
Reverse Transfer Capacitance(Note4)	C_{rss}		-	121	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, R_L=1Ω, V_{GS}=10V,R_G=3Ω	-	4.2	-	nS
Turn-on Rise Time	t_r		-	8.2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	31	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=15V, I_D=10A, V_{GS}=10V	-	28	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	nC
Gate-Drain Charge	Q_{gd}		-	7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage(Note 3)	V_{SD}	V_{GS}=0V, I_S=-1A	-	-	-1.2	V
Diode Forward Current(Note 2)	I_S		-	-	25	A

Note 2. Surface Mounted on FR4 Board, t ≤ 10 sec.

Note 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Note 4. Guaranteed by design, not subject to product.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1. Switching Test Circuit

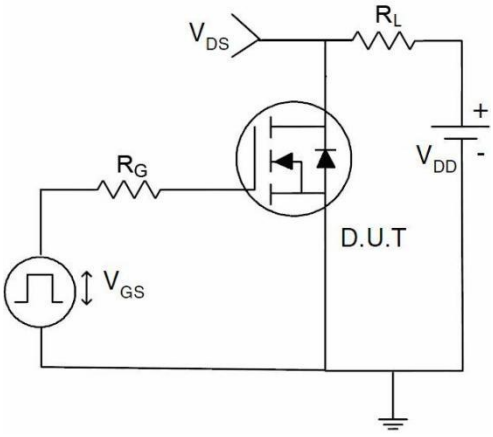


Figure 2. Switching Waveform

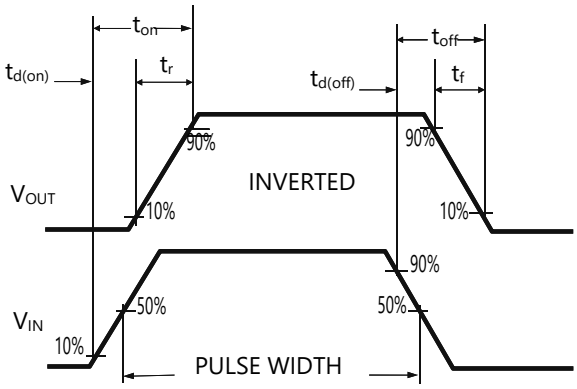


Figure 3. Power De-rating

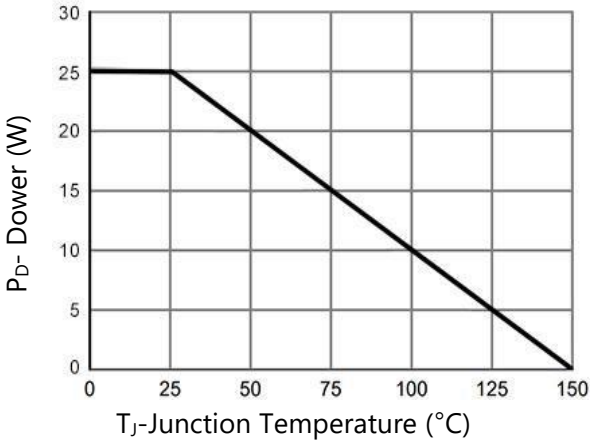


Figure 4. Drain Current

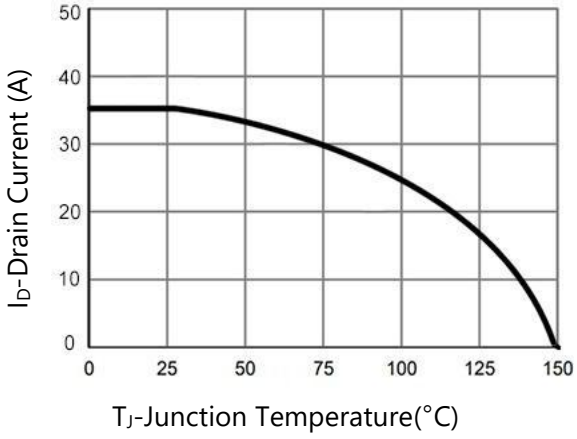


Figure 5. Output Characteristics

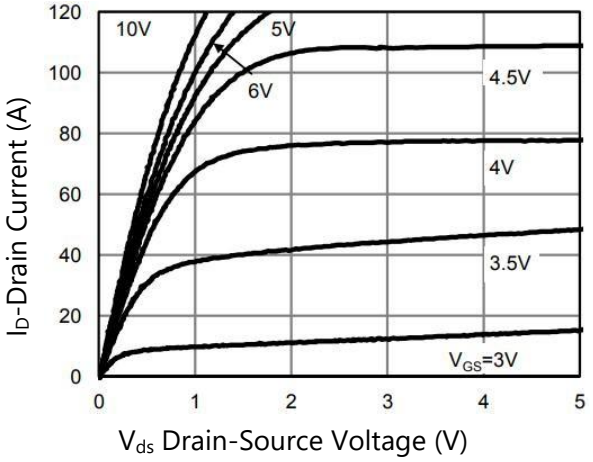
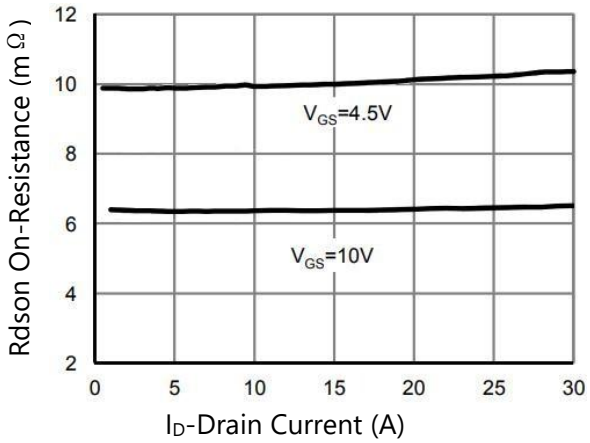


Figure 6. R_{dson} vs Drain Current



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 7. Transfer Characteristics

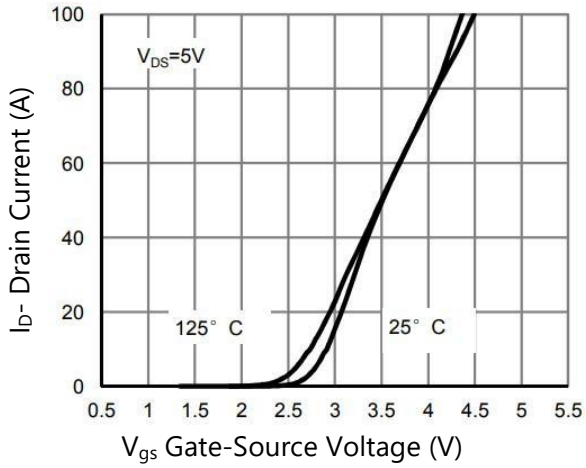


Figure 8. R_{dson} vs Junction Temperature

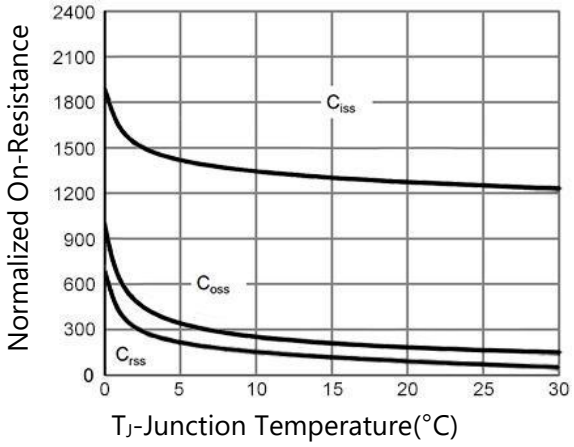


Figure 9. Rdson vs V_{gs}

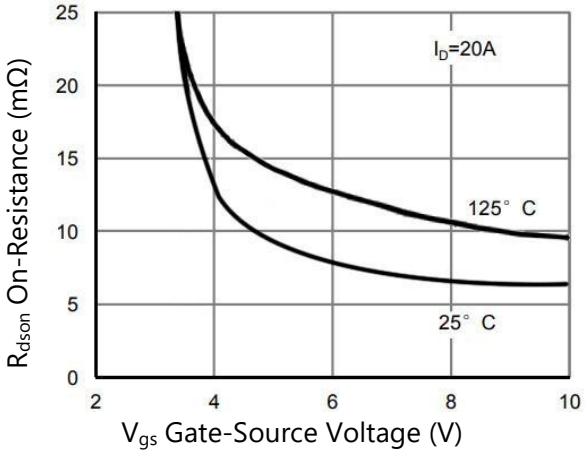


Figure 10. Capacitance vs V_{DS}

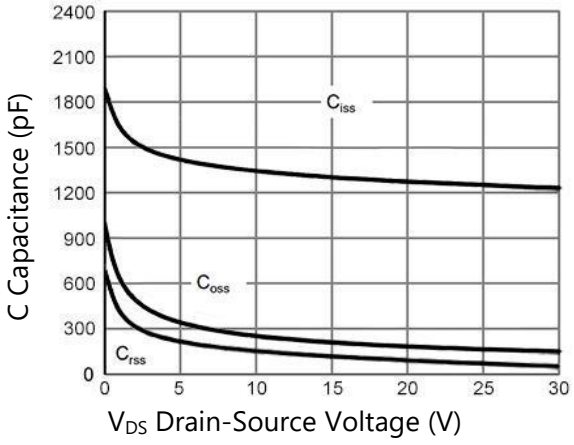


Figure 11. Gate Charge

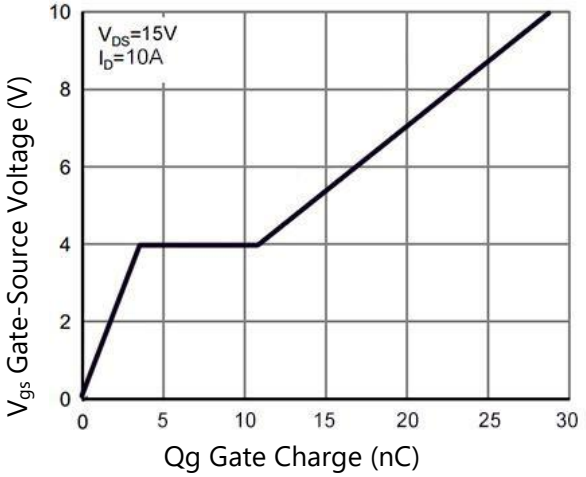
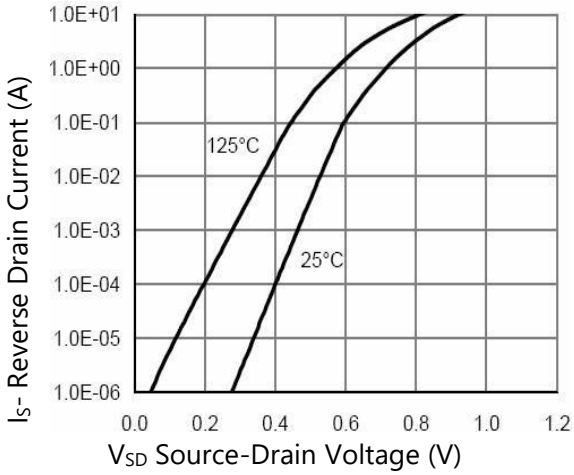


Figure 12. Source- Drain Diode Forward



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 13. Safe Operation Area

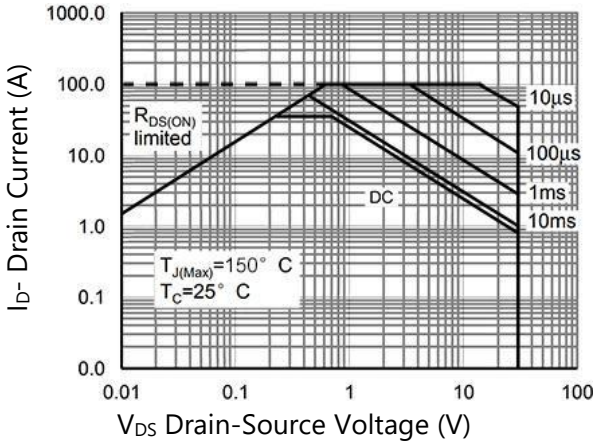
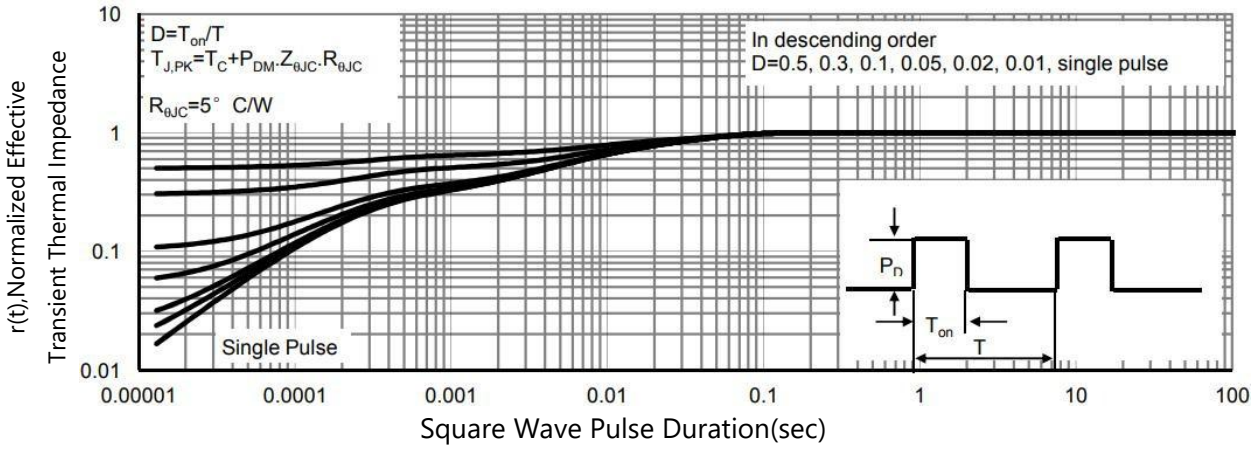
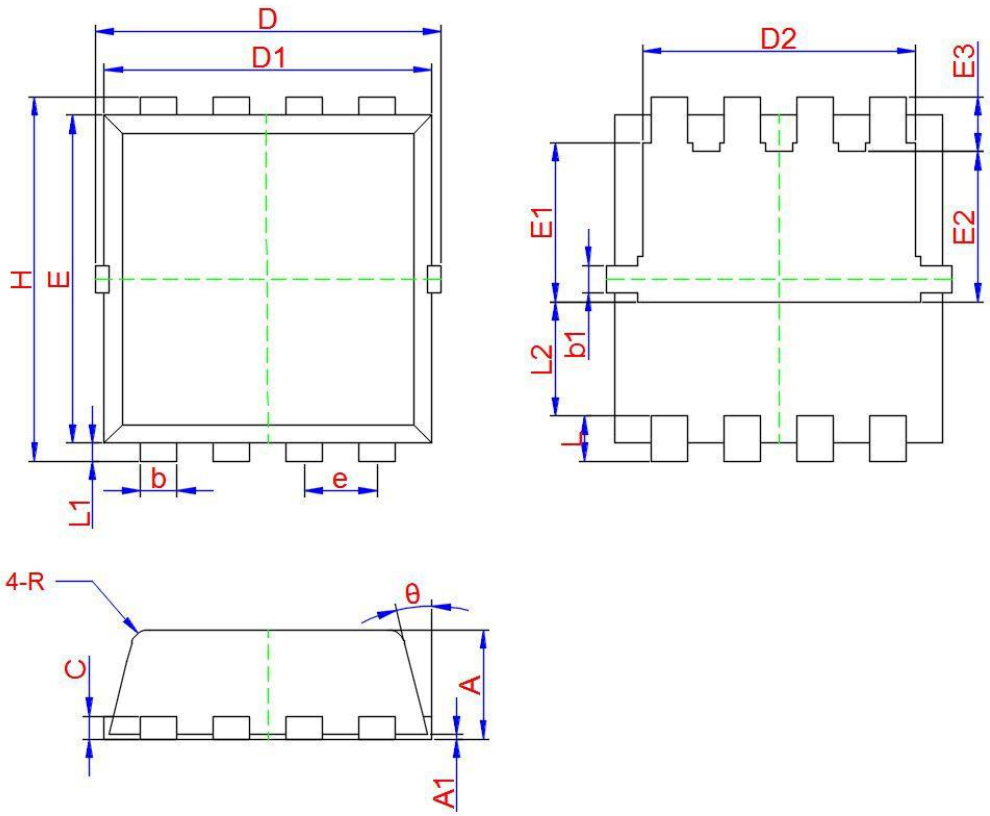


Figure 14. Normalized Maximum Transient Thermal Impedance



PACKAGE INFORMATION

DFN3X3-8L



Symbol	Dimensions InMillimeters			Symbol	Dimensions InMillimeters		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.700	0.800	0.900	e	0.650 TYP.		
A1	0.000	0.030	0.050	H	3.200	3.300	3.400
b	0.240	0.300	0.350	L	0.300	0.400	0.500
b1	0.080	0.130	0.180	L1	0.100	0.150	0.200
c	0.152 TYP.			L2	1.130 TYP.		
D	3.250	3.320	3.400	R	0.200 TYP.		
D1	3.050	3.150	3.250	θ	6°	10°	14°
D2	2.400	2.500	2.600				
E	3.000	3.100	3.200				
E1	1.350	1.450	1.550				
E2	1.200	1.300	1.400				
E3	0.400	0.500	0.600				