

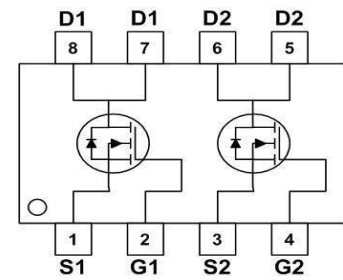


MXN30D12M

Dual N-Channel Enhancement Mode Power MOSFET

Description

The MXN30D12M uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications

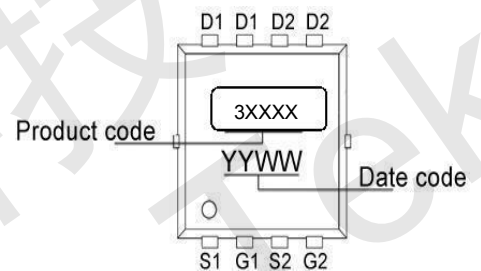


General Features

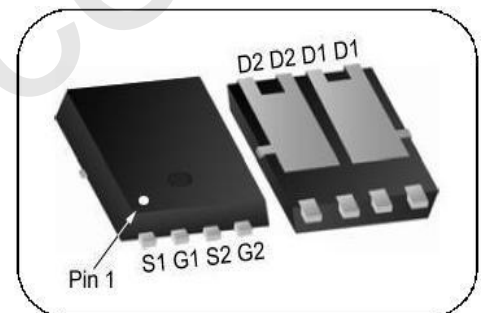
- ◆ $V_{DS} = 30V$, $I_D = 12A$
- ◆ @ $V_{GS} = 4.5V$ $R_{DS(ON)}(Typ.) = 14m\Omega$
- ◆ @ $V_{GS} = 2.5V$ $R_{DS(ON)}(Typ.) = 18m\Omega$

- ◆ High density cell design fo ultra low Rdson
- ◆ Fully characterized Avalanche voltage and current

Schematic diagram



Marking and pin Assignment



PDFN3.3x3.3-8L

Absolute Maximum Ratings (TA=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	12	A
Drain Current-Continuous($T_c = 70^\circ C$)	$I_D (70^\circ C)$	9	A
Pulsed Drain Current	I_{DM}	48	A
Maximum Power Dissipation	P_D	1.7	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$



Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	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	I _{GSS}	V _{DS} =0V, V _{GS} =±12V	-	-	±100	μA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	1.2	1.8	2.5	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-4A	11	12	14	
		V _{GS} =-4.5V, I _D =-4A	14	15.5	18	
Forward transconductance	g _{fs}	V _{GS} =-5V, I _D =-4.2A	-	24	-	mΩ
Dynamic Characteristics						
Input capacitance	C _{ISS}	V _{DS} =-10V, V _{GS} =0V f=1.0MHz	-	940	-	pF
Output capacitance	C _{OSS}		-	131	-	
Reverse transfer capacitance	C _{RSS}		-	109	-	
Switching Characteristics						
Turn-on delay time	t _{D(ON)}	V _{DD} =-15V I _D =-4.2A V _{GEN} =-10V R _L =10ohm R _{GEN} =6ohm	-	4.2	-	ns
Rise time	t _r		-	8.2	-	
Turn-off delay time	t _{D(OFF)}		-	31	-	
Fall time	t _f		-	4	-	
Total gate charge	Q _g	V _{DS} =-15V, I _D =-4.2A V _{GS} =-4.5V	-	9.63	-	nC
Gate-source charge	Q _{gs}		-	3.88	-	
Gate-drain charge	Q _{gd}		-	3.44	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =1A	-	-	1	V
Diode Forward Current (Note 2)	I _S		-	-	9	A

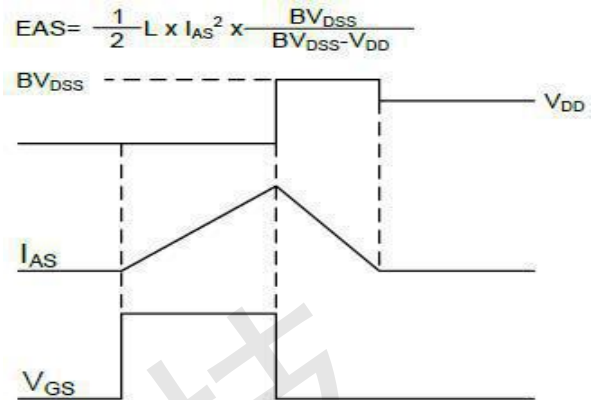
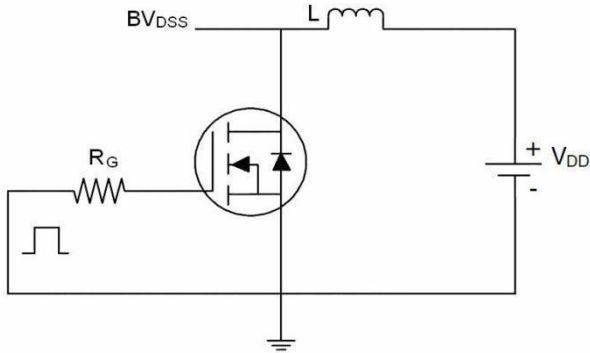
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

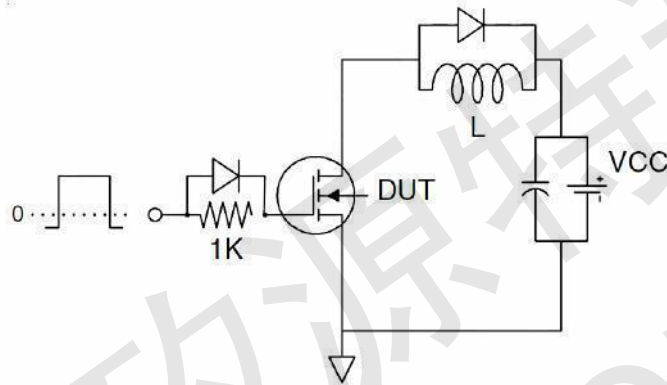


Test circuit

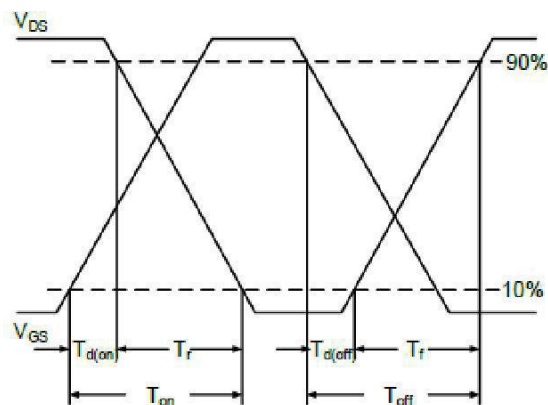
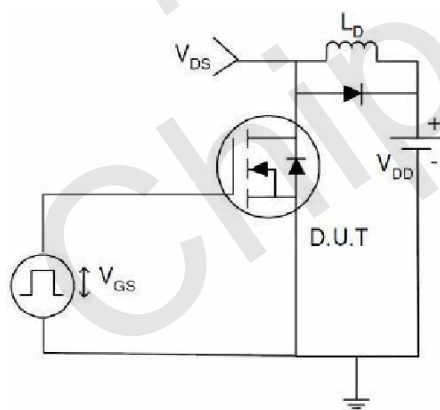
1) EAS test Circuits and waveform:



2) Gate charge test Circuit:



3) Switch Time Test Circuit and waveform





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

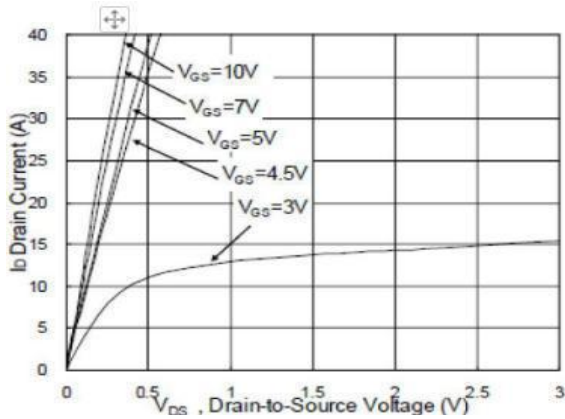


Figure 1 Output Characteristics

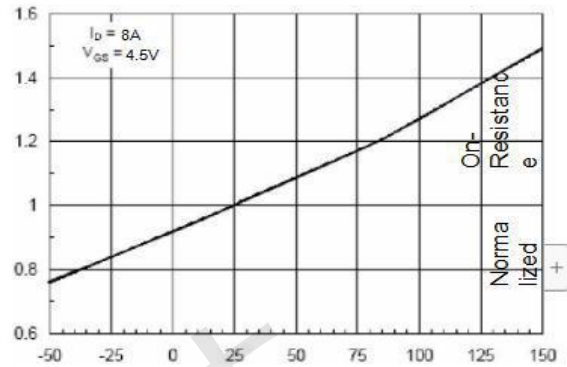


Figure 4 Rdson-Junction Temperature

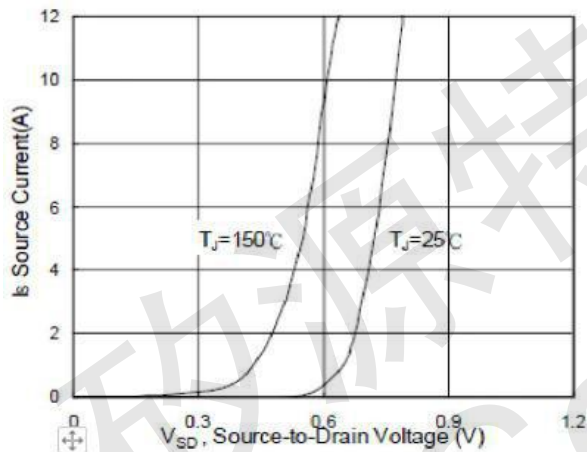


Figure 2 Transfer Characteristics

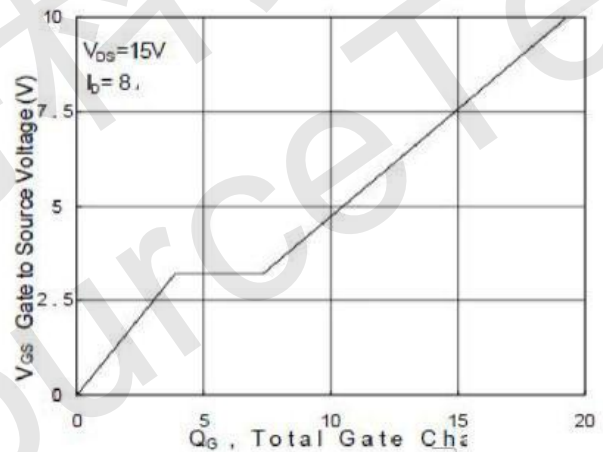


Figure 5 Gate Charge

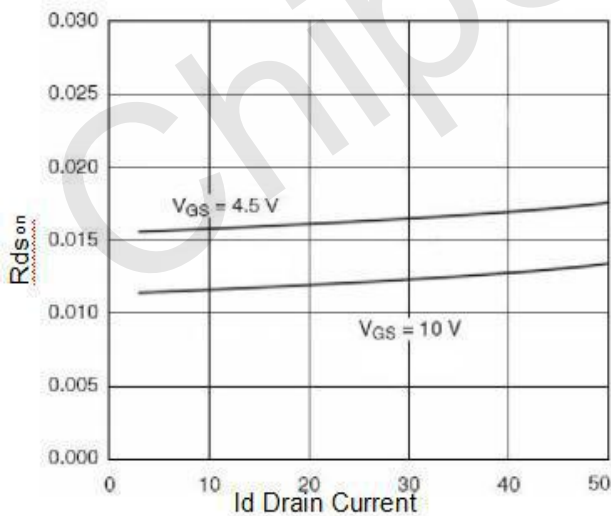


Figure 3 Rdson vs Id

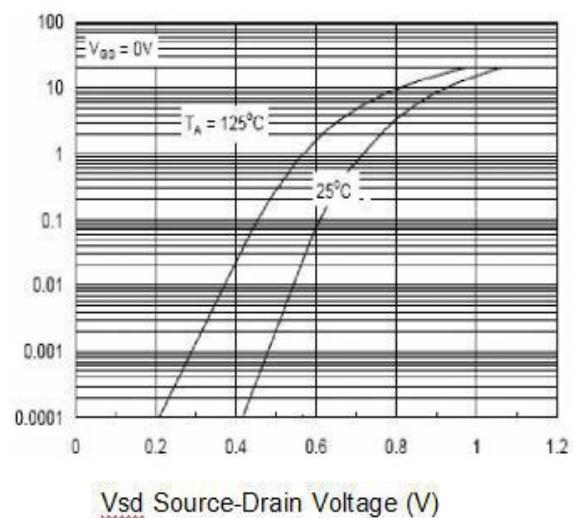


Figure 6 Source- Drain Diode Forward



MXN30D12M

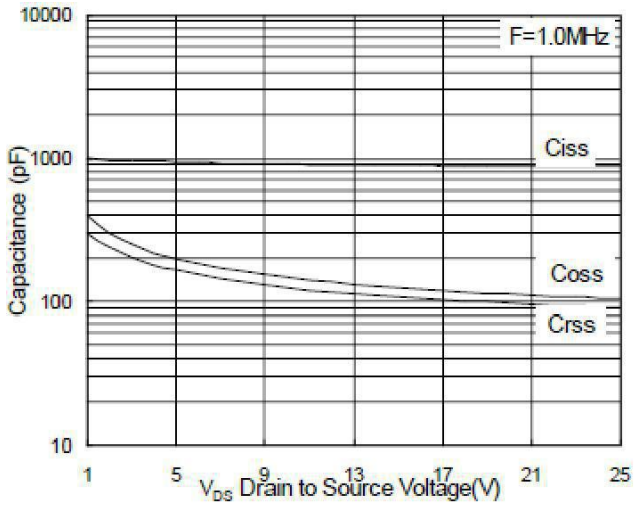


Figure 7 Capacitance vs Vds

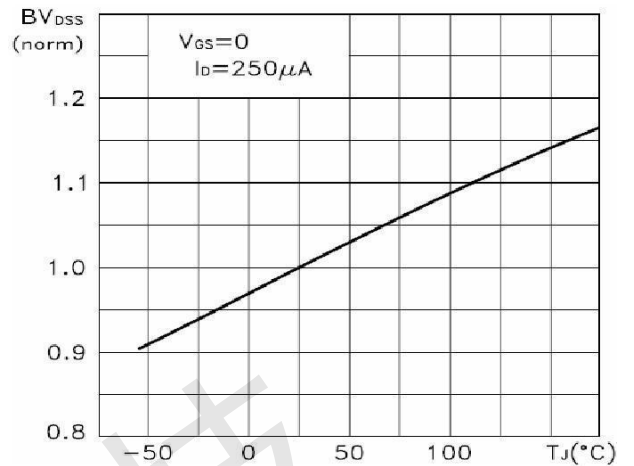


Figure 9 BVdss vs Junction Temperature

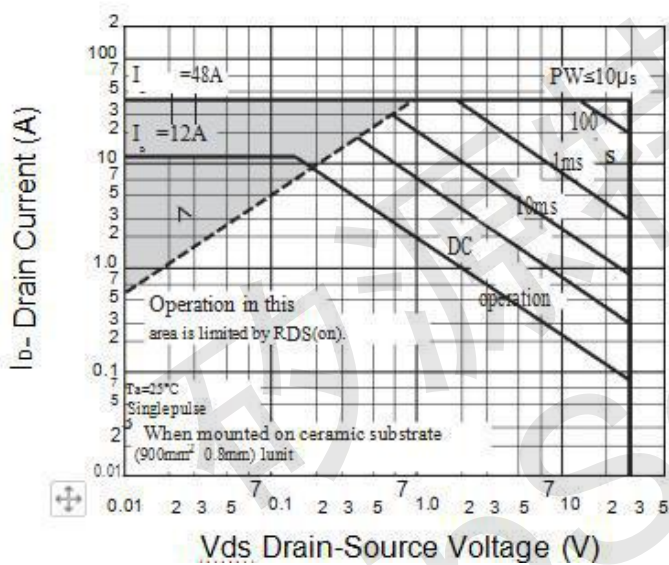


Figure 8 Safe Operation Area

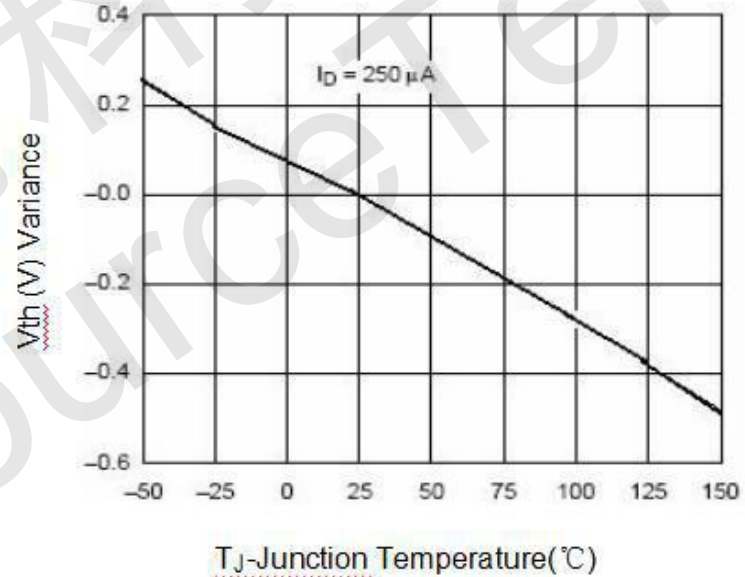


Figure 10 VGS(th) vs Junction Temperature

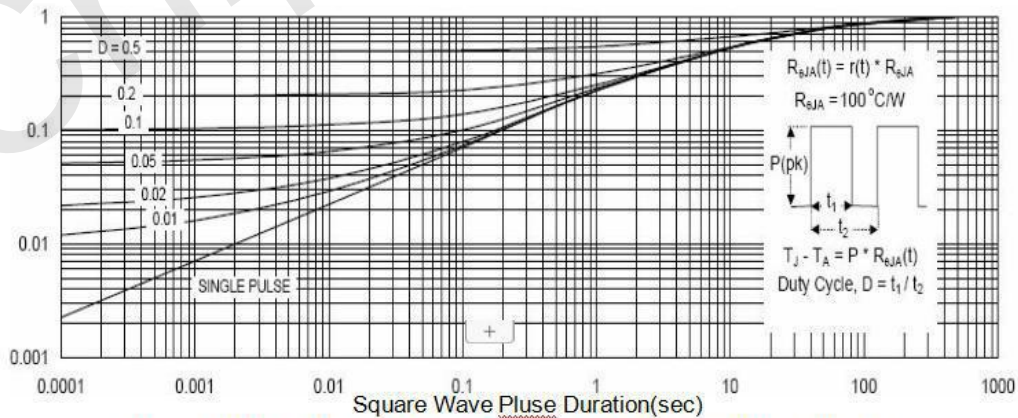


Figure 11 Normalized Maximum Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

