Description

The XM2N200 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

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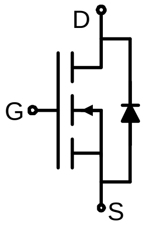
V_{DSS}	$R_{DS(ON)}$ @10V (typ)	I_D
190V	356.6mΩ	2A

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- RoHS Compliant

Application

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



Schematic diagram

TO-92

Ordering Information

Part Number	Marking	Case	Packaging
XM2N200	XM2N200	TO-92	1000pcs/Carton

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	190	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	2	A
Drain Current-Pulsed (Note 1)	I_{DM}	8	A
Maximum Power Dissipation	P_D	3	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	41.7	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	190	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=190V,V_{GS}=0V	-	-	1	μA

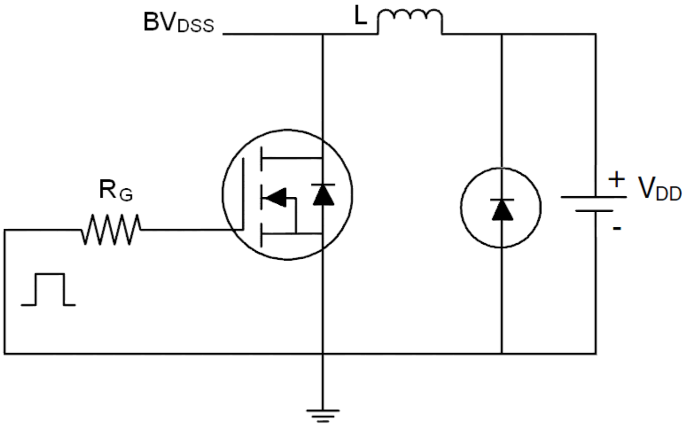
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	2	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1A	-	356.6	540	mΩ
		V_{GS}=4.5V, I_D=1A	-	362.3	560	
Forward Transconductance	g_{FS}	V_{DS}=15V,I_D=2A	-	8	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	1325	-	PF
Output Capacitance	C_{oss}		-	90	-	PF
Reverse Transfer Capacitance	C_{rss}		-	3	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=100V, R_L=15Ω V_{GS}=10V,R_G=2.5Ω	-	10	-	nS
Turn-on Rise Time	t_r		-	12	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	nS
Turn-Off Fall Time	t_f		-	15	-	nS
Total Gate Charge	Q_g	V_{DS}=100V,I_D=2A, V_{GS}=10V	-	12		nC
Gate-Source Charge	Q_{gs}		-	2.5	-	nC
Gate-Drain Charge	Q_{gd}		-	3.8	-	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		-	-	2	A

Notes:

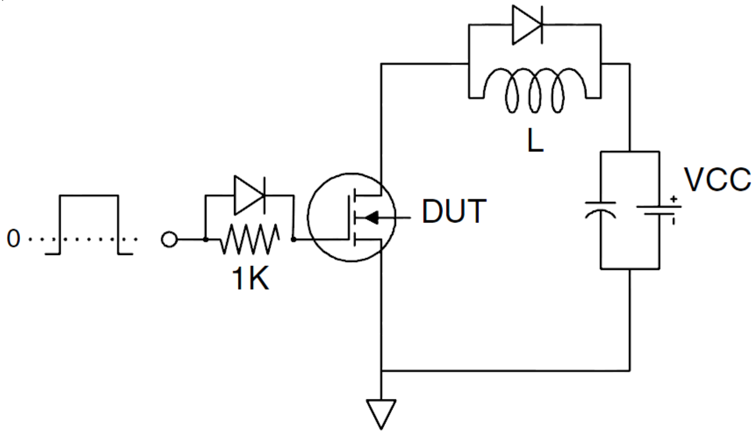
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Test Circuit

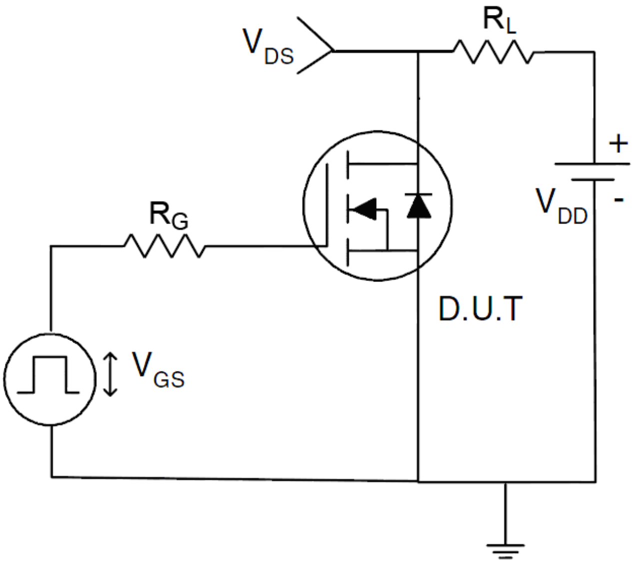
1）E_{AS} test circuit



2）Gate charge test circuit



3）Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (Curves)

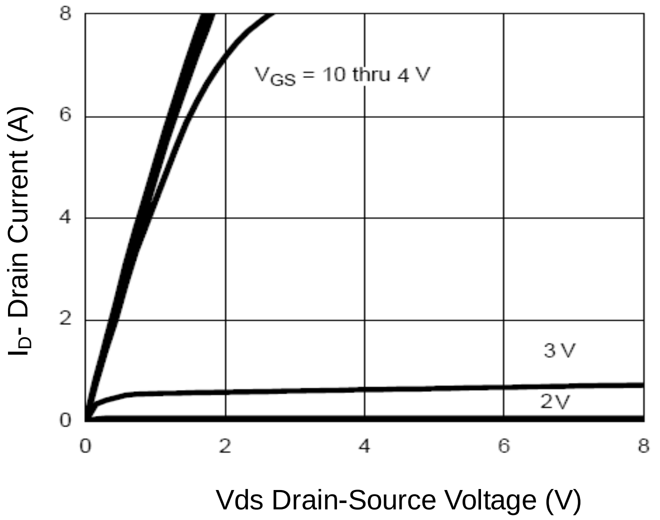


Figure 1 Output Characteristics

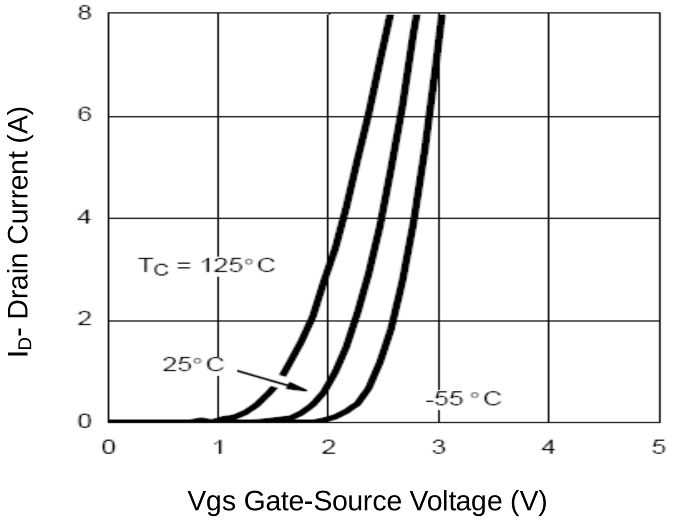


Figure 2 Transfer Characteristics

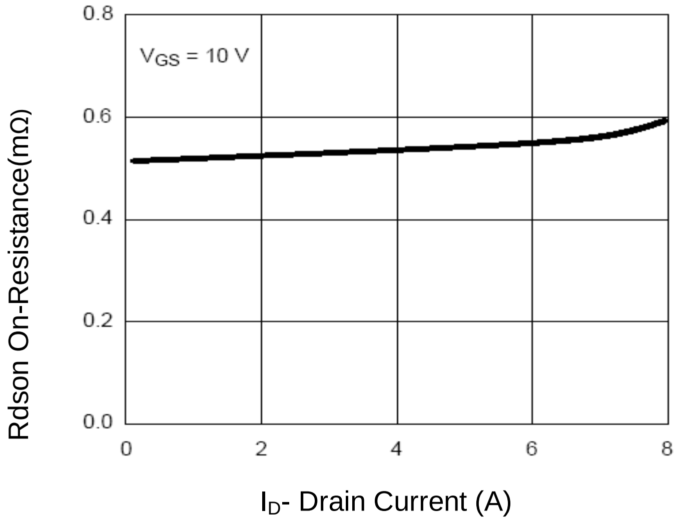


Figure 3 Rdson- Drain Current

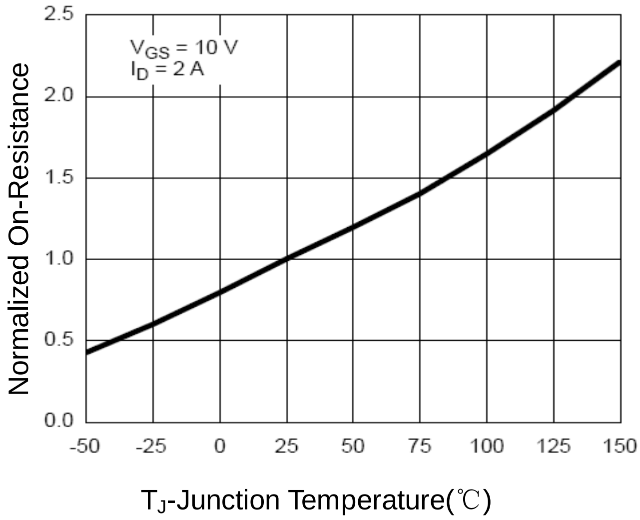


Figure 4 Rdson-JunctionTemperature

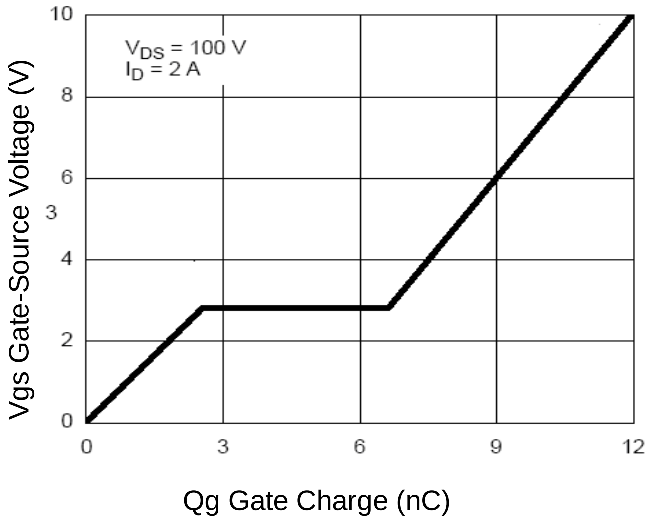


Figure 5 Gate Charge

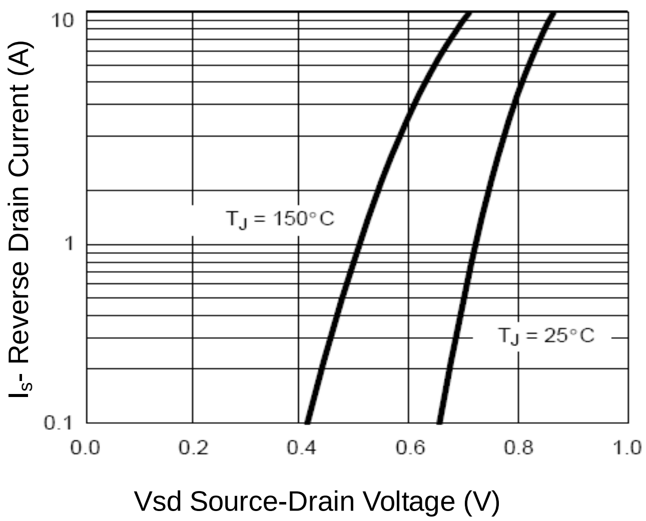


Figure 6 Source- Drain Diode Forward

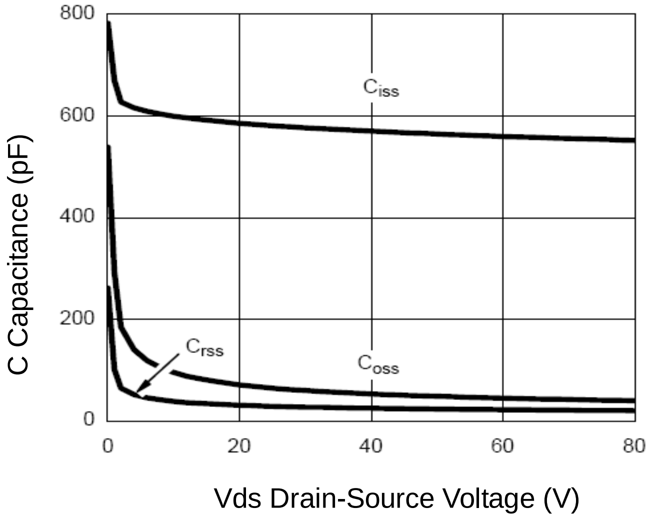


Figure 7 Capacitance vs Vds

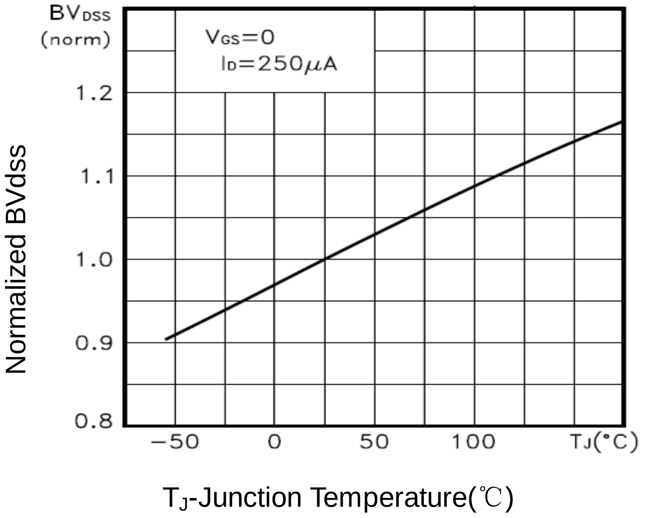


Figure 9 BV_{DSS} vs Junction Temperature

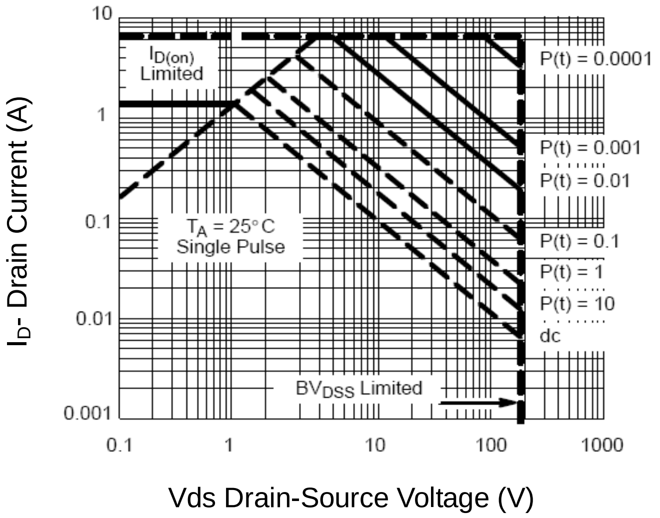


Figure 8 Safe Operation Area

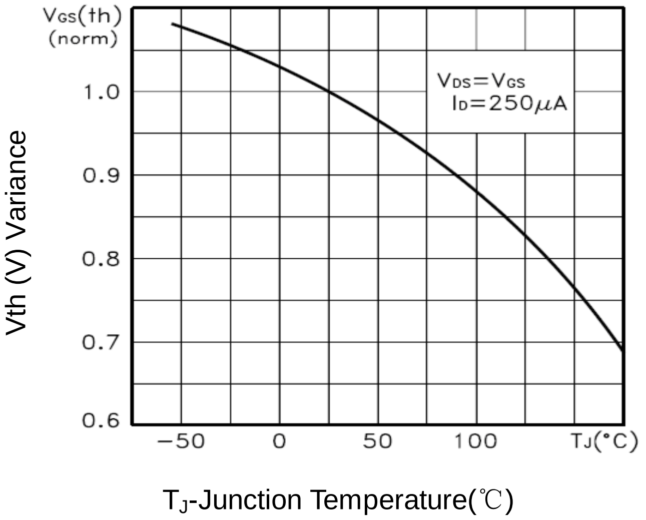


Figure 10 $V_{GS(th)}$ vs Junction Temperature

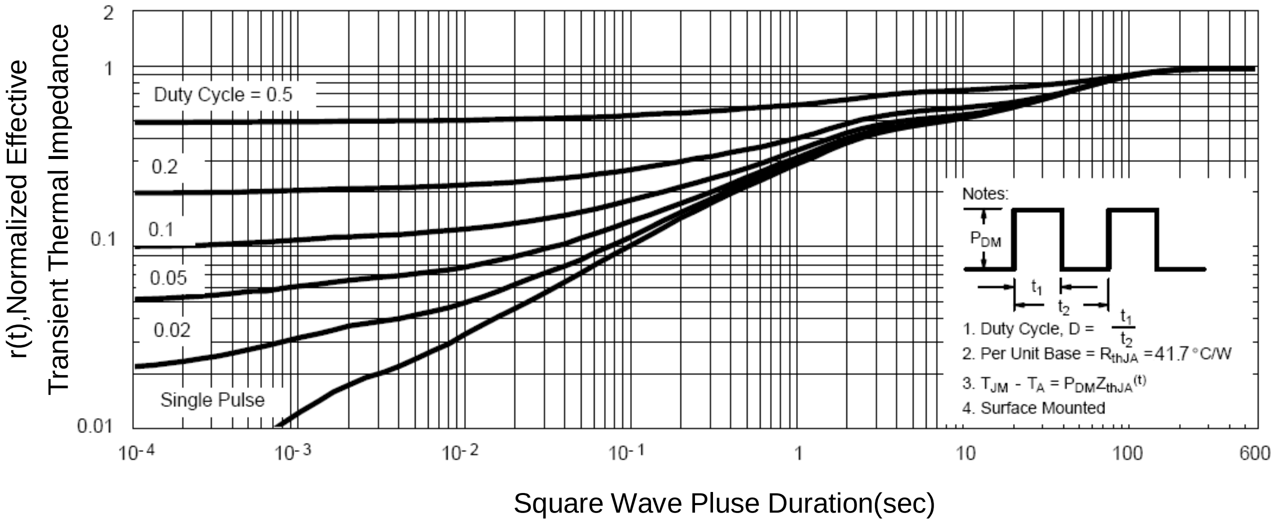
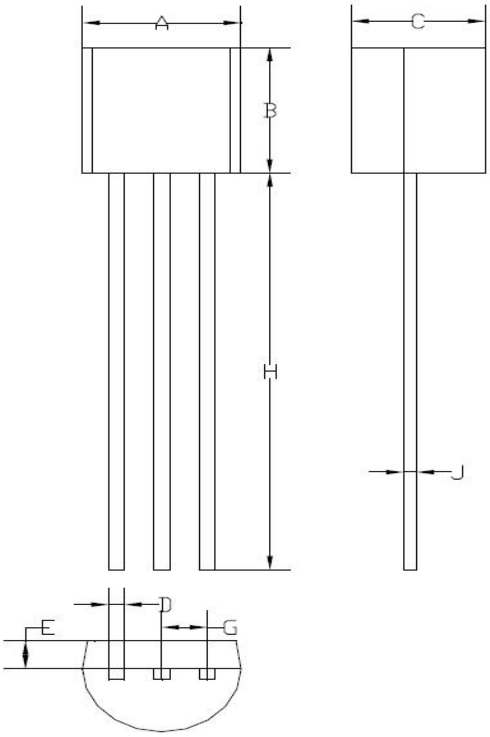


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-92 package information



TO-92			
Dim	MIN	NOM	MAX
A	4.59	4.60	-
B	4.58	4.60	4.62
C	3.50	3.55	3.60
D	2.50	2.55	2.60
E	-	1.25	1.30
G	1.24	1.27	1.30
H	14.28	14.30	14.32
J	0.38		
All Dimensions in mm			