

DESCRIPTION

The MXN08N04G uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.

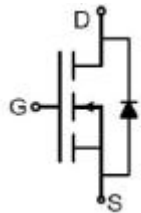
GENERAL FEATURES

- $V_{DS}=40V$, $I_D=43A$
 $R_{DS(ON)}(Typ.)=10.5m\Omega @ V_{GS}=4.5V$
 $R_{DS(ON)}(Typ.)=7.9m\Omega @ V_{GS}=10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

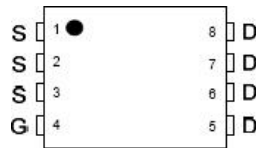
APPLICATION

- PWM applications
- Load switch
- Power management

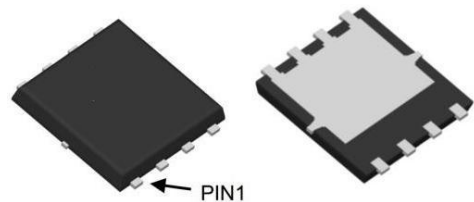
PINOUT



Schematic diagram



Pin Assignment



DFN5X6-8L top & bottom view

ORDERING INFORMATION

Device	Storage Temperature	Package	Devices Per Reel
MXN08N04G	-55°C to 150°C	DFN5X6-8L	2500

KEY PERFORMANCE PARAMETERS ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	40	V
Gate-Source Voltage ($V_{DS}=0V$)	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^\circ C$)	I_D	43	A
Drain Current-Continuous ($T_C=100^\circ C$)	I_D	27	A
Drain Current-Continuous@Current-Pulsed ^(Note1)	$I_{DM(pluse)}$	172	A
Maximum Power Dissipation ($T_C=25^\circ C$)	P_D	44.6	W
Maximum Power Dissipation ($T_C=100^\circ C$)	P_D	17.8	W
Single Pulse Avalanche Energy ^(Note2)	E_{AS}	196	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

THERMAL CHARACTERISTIC

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.8	$^\circ C/W$

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 2. E_{AS} condition: $T_J=25^\circ C, V_{DD}=30V, V_G=10V, R_G=25\Omega$,



N-Channel Enhancement Mode Power MOSFET **MXN08N04G**

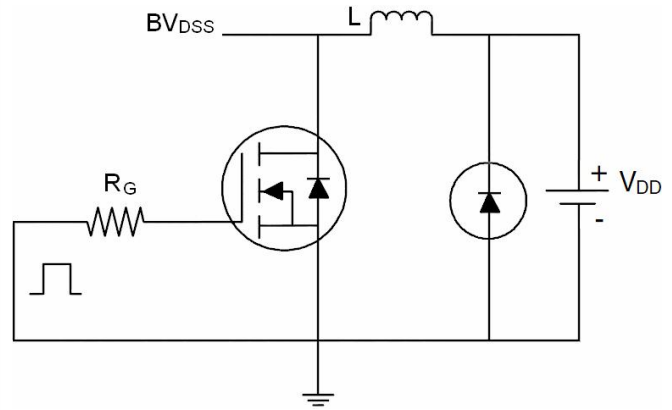
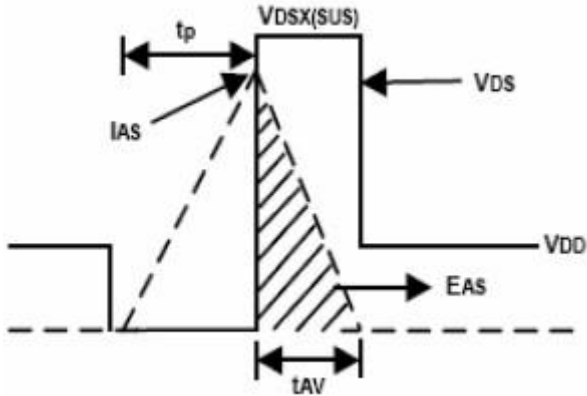


ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

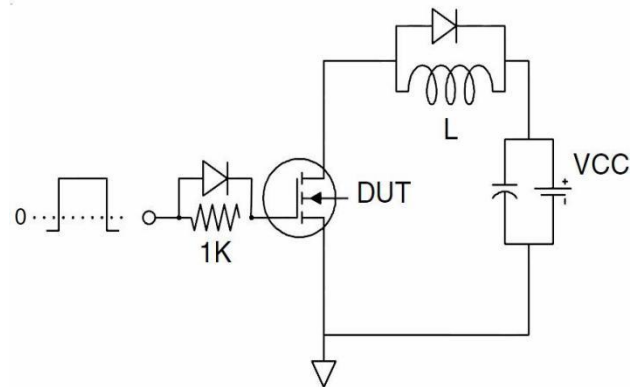
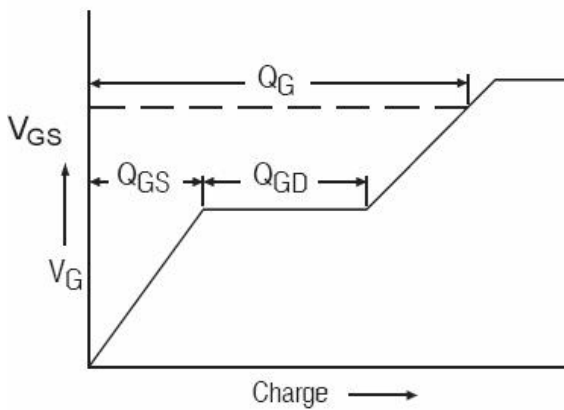
Parameter	Symbol	Condition	Min	Typ	Max	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=20A$	-	10.5	15	m Ω
		$V_{GS}=10V, I_D=20A$	-	7.9	11	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=15A$	-	27	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1.0MHz$	-	2080	-	pF
Output Capacitance	C_{oss}		-	160	-	pF
Reverse Transfer Capacitance	C_{rss}		-	130	-	pF
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, F=1.0MHz$	-	1.5	-	Ω
Total Gate Charge	Q_g	$V_{GS}=10V, I_D=14A, V_{DS}=25V$	-	48	-	nC
Gate-Source Charge	Q_{gs}		-	5.8	-	nC
Gate-Drain Charge	Q_{gd}		-	12.8	-	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=20V, R_L=1\Omega, V_{GS}=10V, R_{GEN}=3\Omega$	-	13	-	nS
Turn-on Rise Time	t_r		-	37	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Source-Drain Diode Characteristics						
Source-Drain Current(Body Diode)	I_{SD}		-	-	43	A
Forward On Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=20A$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=20A, di/dt=100A/\mu s$	-	13	-	nS
Reverse Recovery Charge	Q_{rr}		-	5.2	-	nC

TEST CIRCUIT

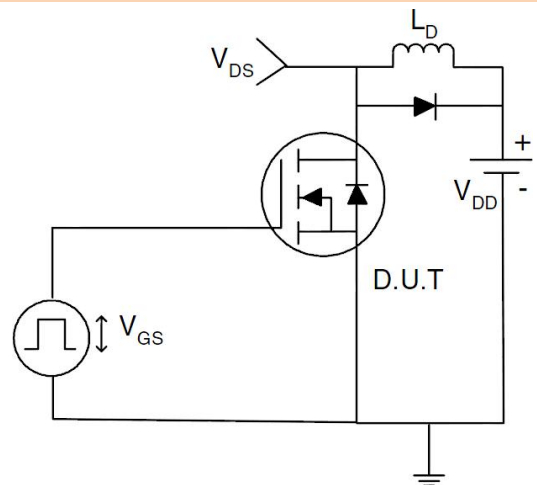
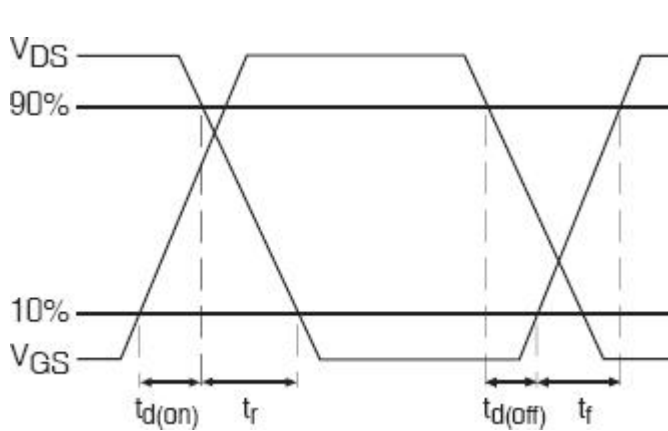
1) EAS Test Circuits



2) Gate Charge Test Circuit



3) Switch Time Test Circuit



TYPICAL PERFORMANCE CHARACTERISTICS

Figure1. Output Characteristics

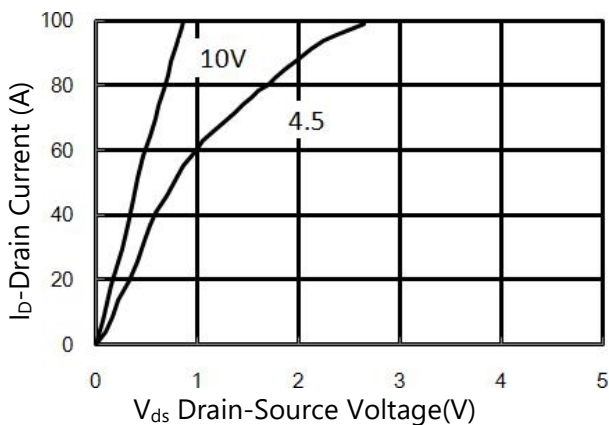


Figure2. Transfer Characteristics

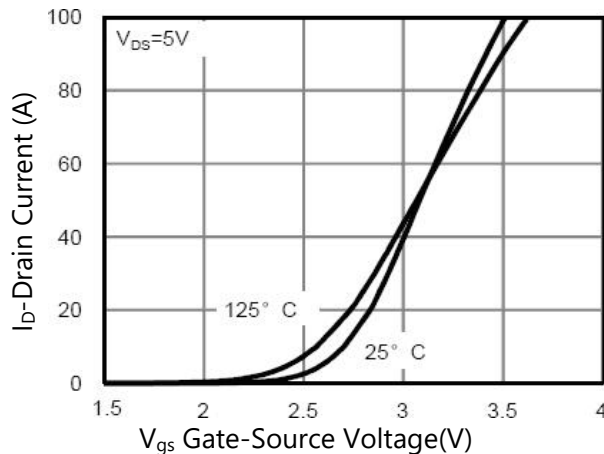


Figure3. BV_{DSS} vs Junction Temperature

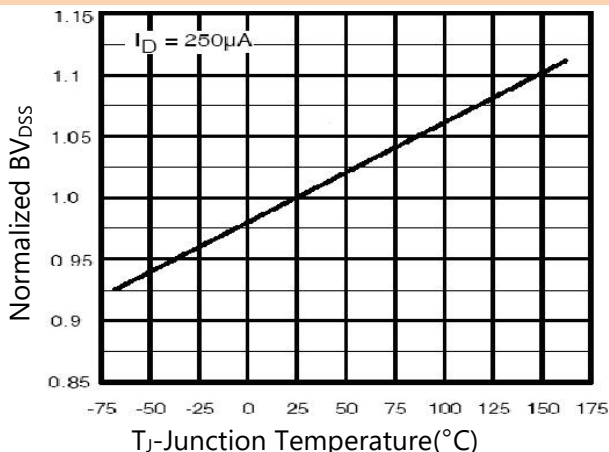


Figure4. Drain Current

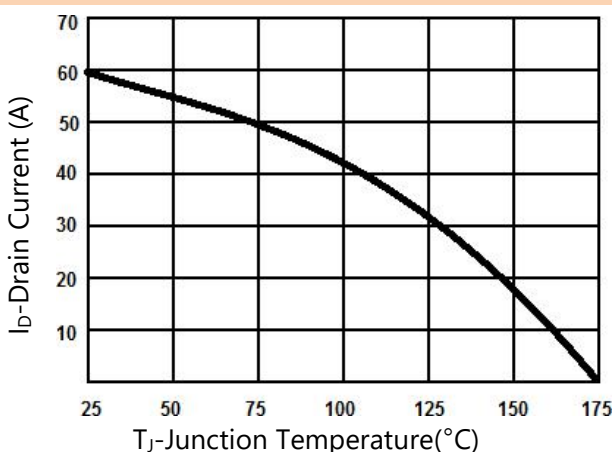


Figure5. V_{GS(th)} vs Junction Temperature

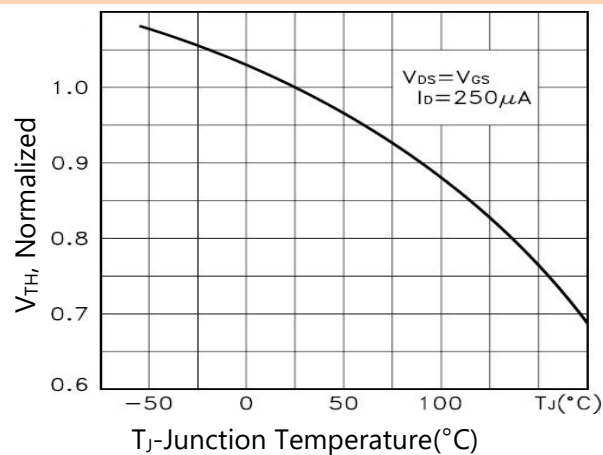
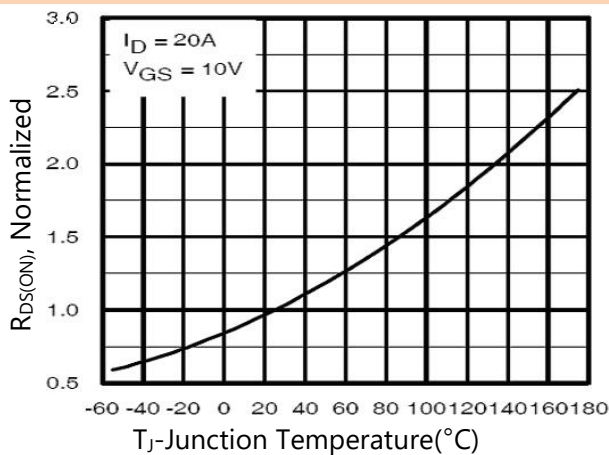


Figure6. R_{DS(ON)} vs Junction Temperature



TYPICAL PERFORMANCE CHARACTERISTICS

Figure7. Gate Charge Waveforms

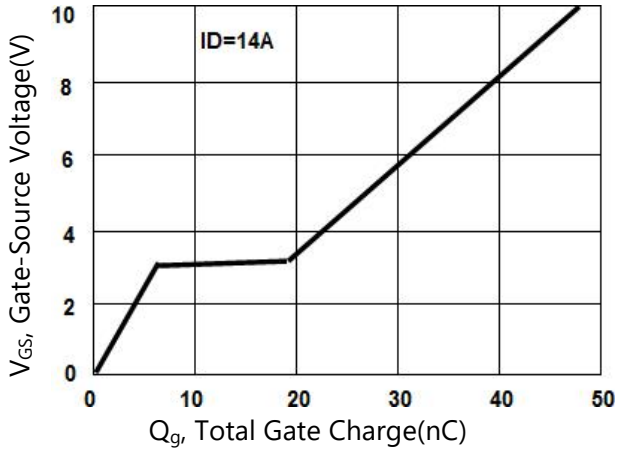


Figure8. Capacitance

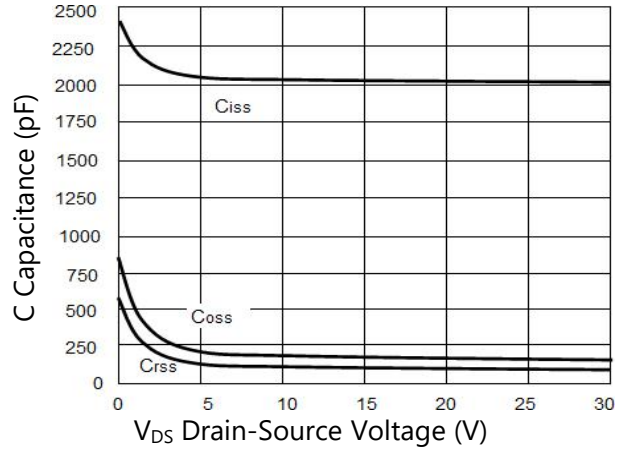


Figure9. Body Diode Forward

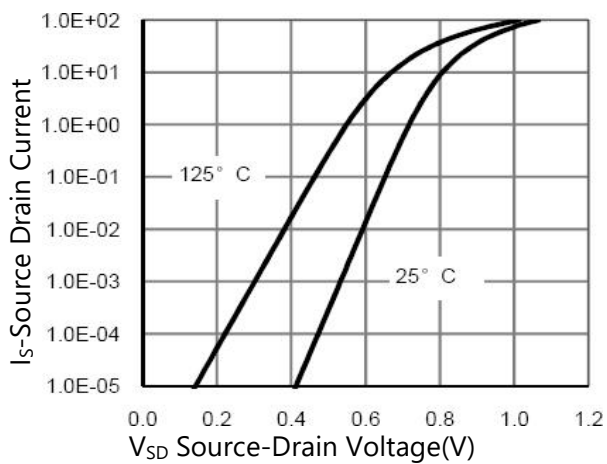
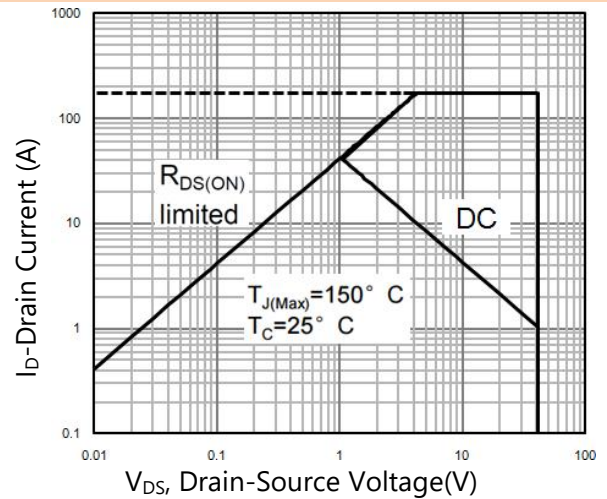


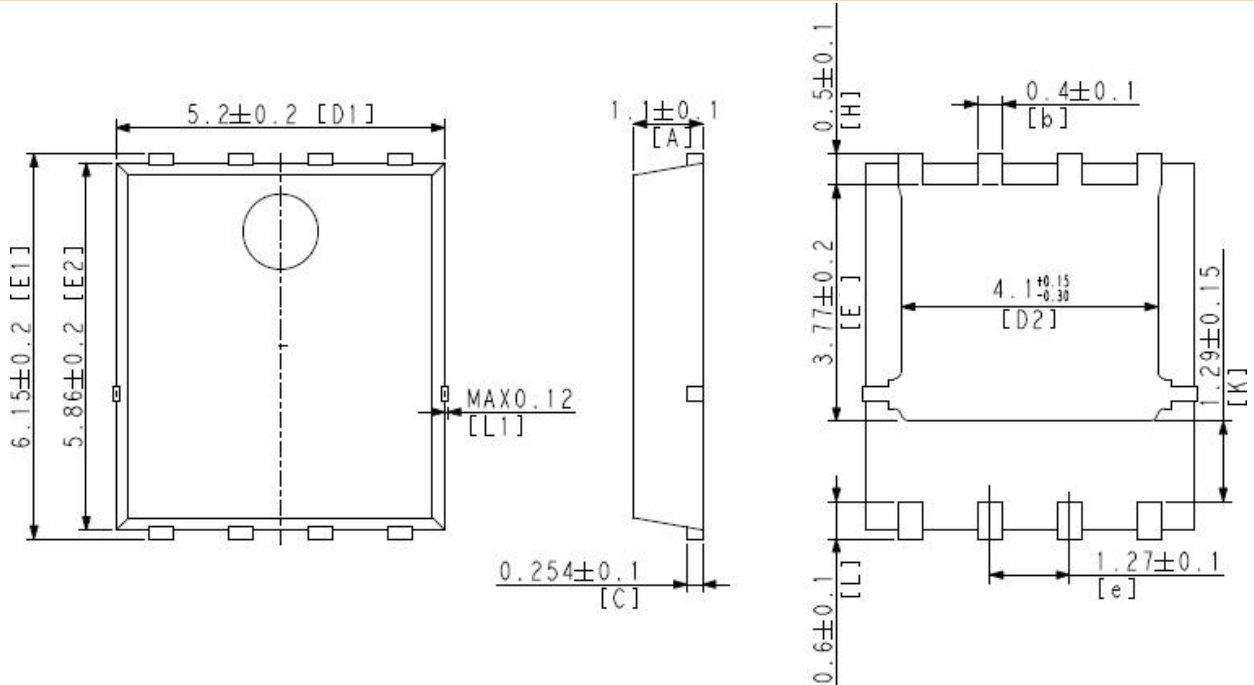
Figure10. Maximum Safe Operating Area





PACKAGE INFORMATION

DFN5X6-8L



SYMBOL	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.00	1.10	1.20
b	0.30	0.40	0.50
C	0.154	0.254	0.354
D1	5.00	5.20	5.40
D2	3.80	4.10	4.25
E	3.57	3.77	3.97
E1	5.95	6.15	6.35
E2	5.65	5.86	6.06
e	1.17	1.27	1.37
L	0.5	0.6	0.7
L1	-	-	0.12
H	0.4	0.5	0.6
K	1.14	1.29	1.44