

DESCRIPTION

The MXD060N08 uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

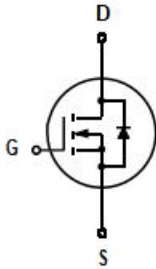
GENERAL FEATURES

- $V_{DS}=80V$, $I_D=80A$
 $R_{DS(ON)}(Typ.)=5.4m\Omega$ @ $V_{GS}=10V$
- Low drain-source on-resistance
- High speed power switching
- Enhanced body diode dv/dt capability
- Enhanced avalanche ruggedness

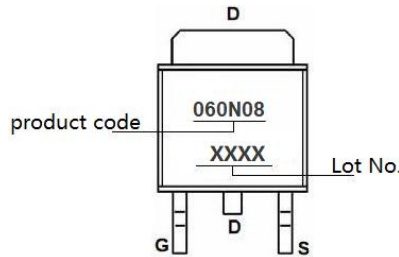
APPLICATION

- Synchronous rectification in SMPS
- Hard switching and High speed circuit
- DC/DC in telecoms and industrial

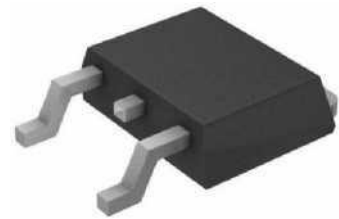
PINOUT



Schematic diagram



Marking and pin Assignment



TO-252-2L top view

ORDERING INFORMATION

Part Number	Storage Temperature	Package	Devices Per Reel
MXD060N08	-55°C to 175°C	TO-252-2L	-

ABSOLUTE MAXIMUM RATINGS ($T_J=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current ($T_C=25^\circ C$) ^(Note1)	I_D	80	A
Pulsed Drain Current ($T_C=25^\circ C$) ^(Note2)	$I_{D,pulse}$	240	A
Single Pulsed Avalanche Energy	E_{AS}	300	mJ
Total Power Dissipation ($T_C=25^\circ C$)	P_{tot}	150	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1	°C/W

Note 1. Limited by $T_{j,max}$. Maximum Duty Cycle $D = 0.50$

Note 2. Pulse width t_p limited by $T_{j,max}$



N-Channel Enhancement Mode Power MOSFET **MXD060N08**



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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=10mA$	80	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	-	1000	nA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	-	3.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	5.4	6.0	m Ω
Gate Resistance	R_g	$F=1.0MHz$	-	1.2	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=40V, V_{GS}=0V, F=1.0MHz$	-	3730	-	pF
Output Capacitance	C_{oss}		-	674	-	pF
Reverse Transfer Capacitance	C_{rss}		-	24	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=40V, I_D=20A, V_{GS}=10V, R_G=10\Omega$	-	16.5	-	nS
Turn-on Rise Time	t_r		-	13.7	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	35.9	-	nS
Turn-Off Fall Time	t_f		-	13.5	-	nS
Total Gate Charge	Q_g	$V_{DS}=40V, I_{DS}=20A, V_{GS}=10V$	-	15.9	-	nC
Gate-Source Charge	Q_{gs}		-	13.3	-	nC
Gate-Drain Charge	Q_{gd}		-	55.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=1A$	-	0.7	-	V
Reverse Recovery Time	t_{rr}	$V_R=40V, I_F=20A, diF/dt=200A/\mu s$	-	40.9	-	nS
Reverse Recovery Charge	Q_{rr}		-	106.8	-	nC

TYPICAL OPERATING CHARACTERISTICS

Figure 1. Power Dissipation

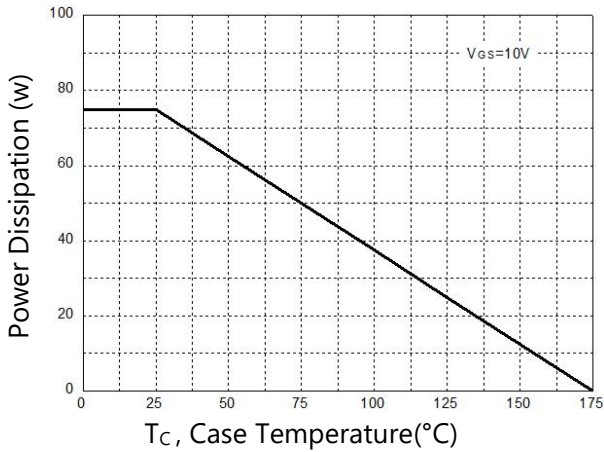


Figure 2. Drain Current

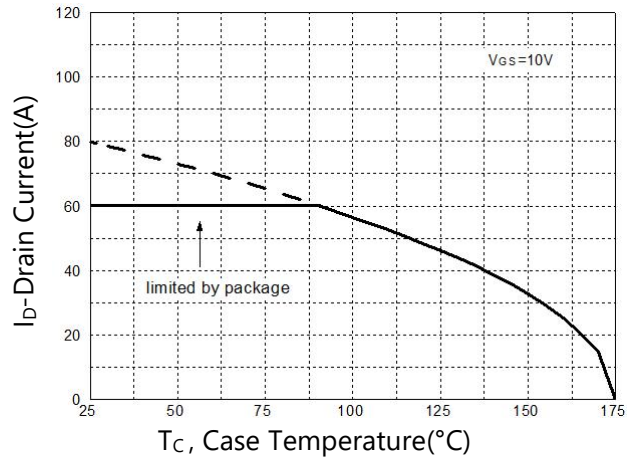


Figure 3. Safe Operation Area

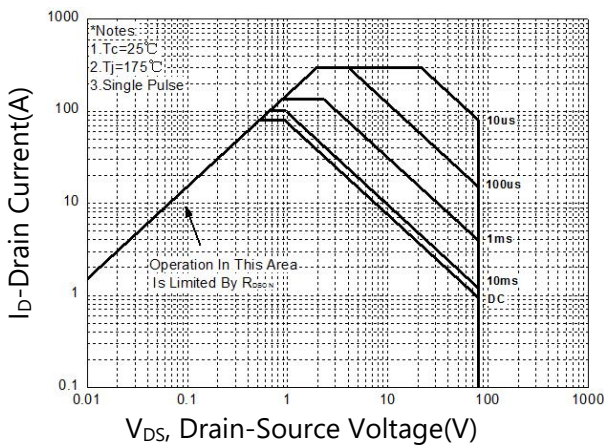


Figure 4. Thermal Transient Impedance

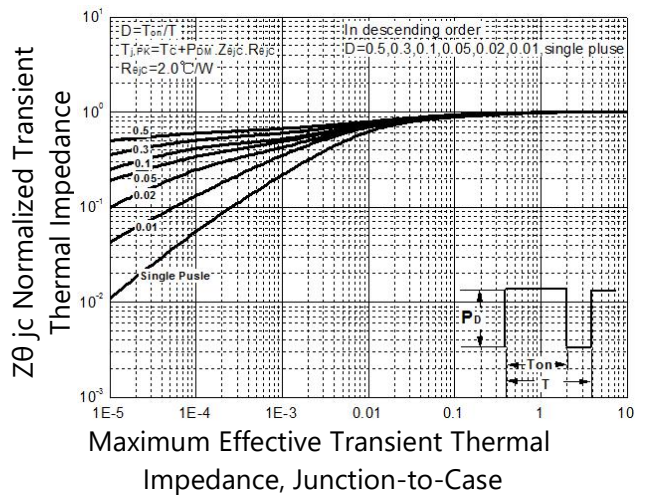


Figure 5. Output Characteristics

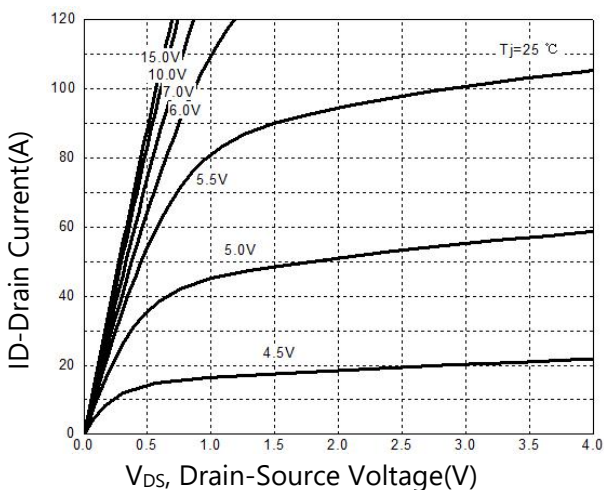
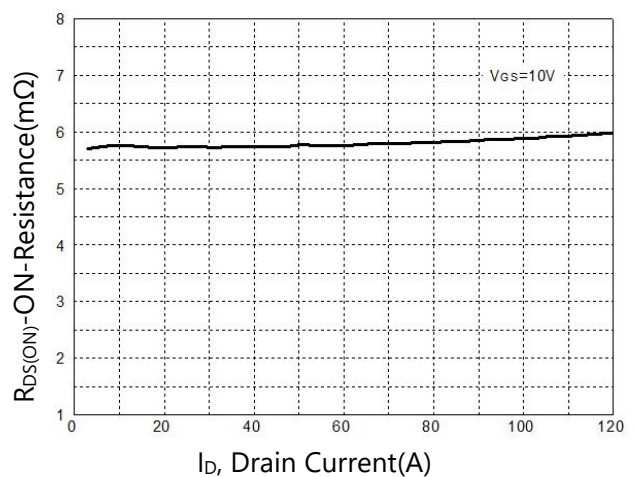


Figure 6. Drain-Source On Resistance



TYPICAL OPERATING CHARACTERISTICS

Figure 7. On-Resistance vs. Junction Temperature

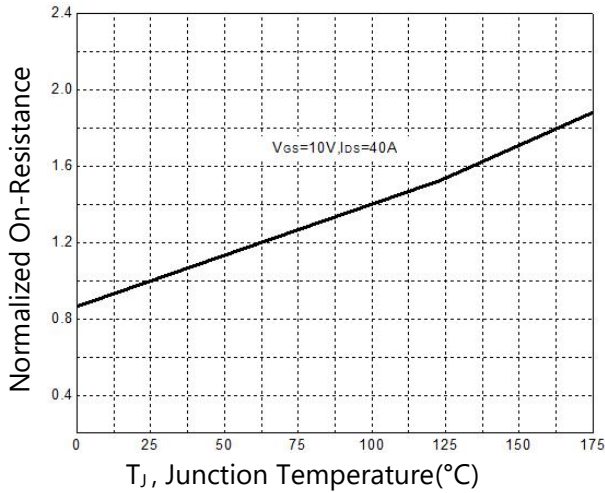


Figure 8. Source-Drain Diode Forward

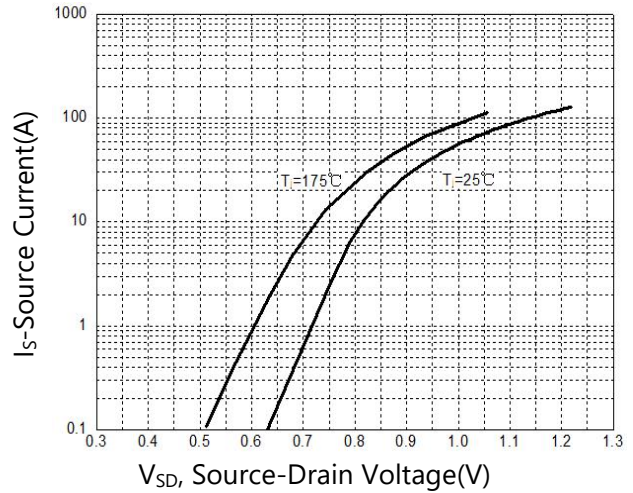


Figure 9. Capacitance Characteristics

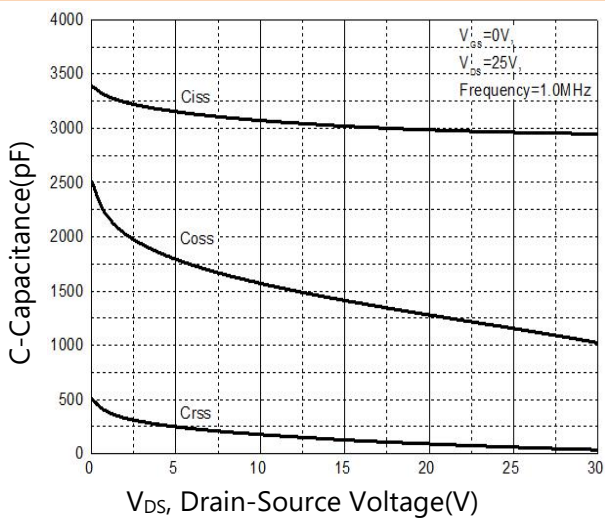
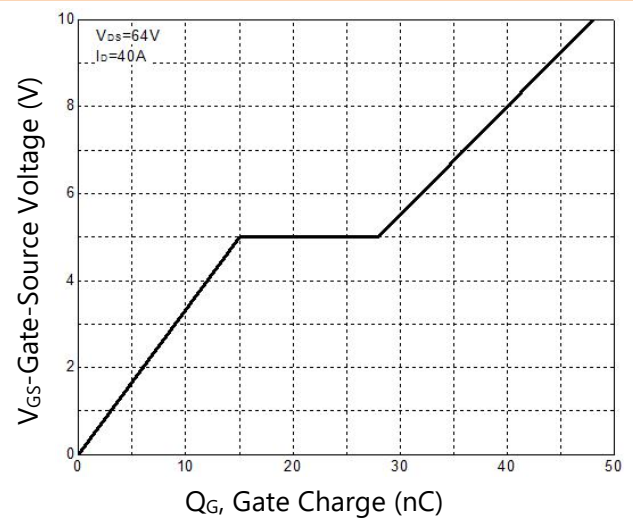


Figure 10. Gate Charge Characteristics



TEST CIRCUIT

Figure 1. Avalanche Test Circuit

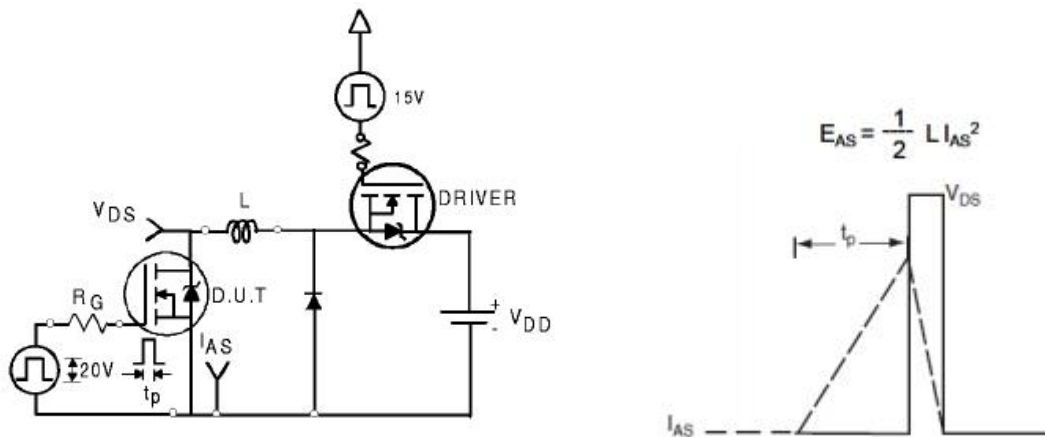


Figure 2. Switching Time Test Circuit

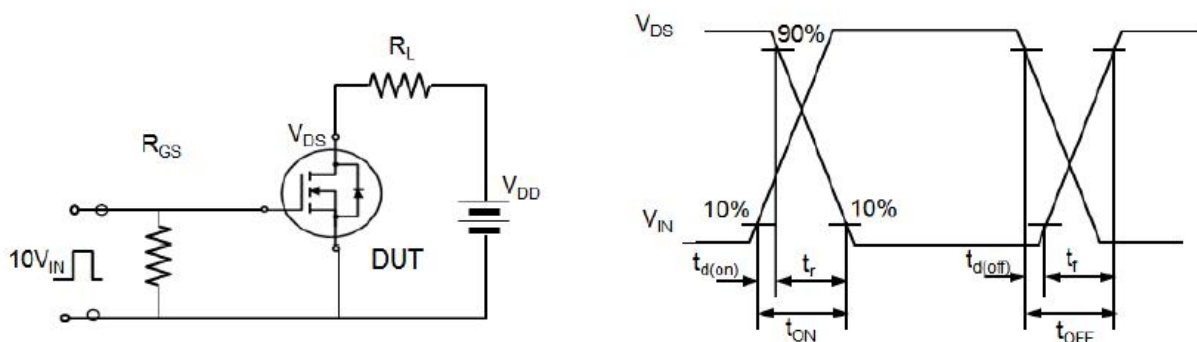
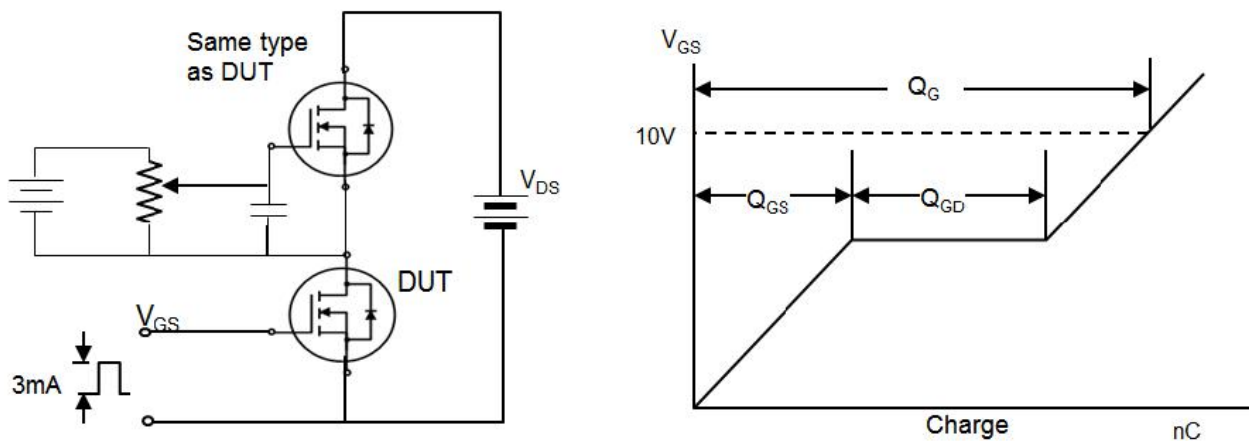
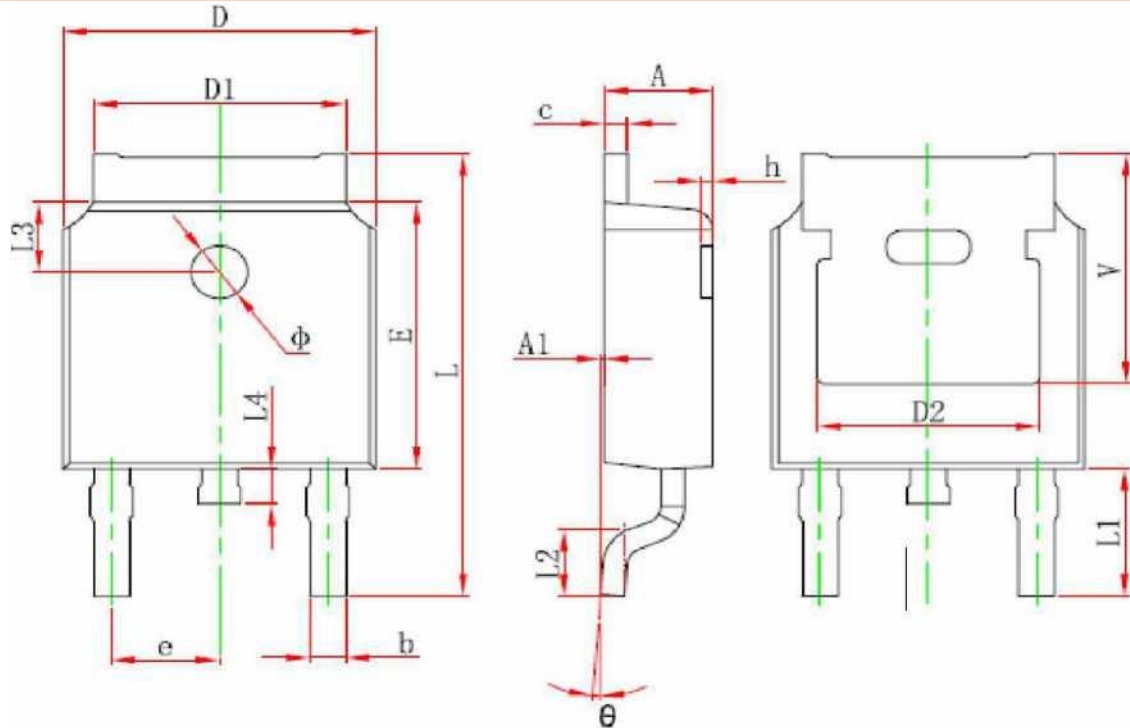


Figure 3. Gate Charge Test Circuit



PACKAGE INFORMATION

TO-252-2L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114	REF.
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
0	1.100	1.300	0.043	0.051
e	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	