ASDM60N80KQ

60V N-Channel MOSFET

General Features

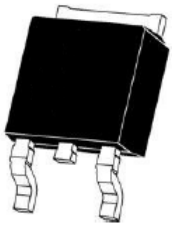
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

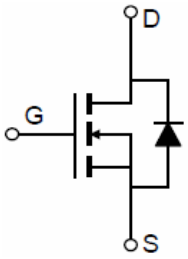
- PWM
- Load Switching

Product Summary

V_{DS}	60	V
$R_{DS(on),Typ}$@ V_{GS}=10 V	6.0	mΩ
I_D	80	A



TO-252-2L top view



Schematic diagram

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	80	A
Drain Current-Continuous(T_C=100℃)	I_D (100)℃	52	A
Pulsed Drain Current	I_{DM}	320	A
Maximum Power Dissipation	P_D	108	W
Derating factor		0.73	W/℃
Single pulse avalanche energy (Note 5)	E_{AS}	130	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case (Note 2)	$R_{\theta JC}$	1.4	℃/W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=30A	-	6.0	7.9	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	3360	-	pF
C_{oss}	Output Capacitance		-	232	-	pF
C_{rss}	Reverse Transfer Capacitance		-	209	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=30A, V_{GS}=10V	-	90	-	nC
Q_{gs}	Gate-Source Charge		-	9	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	18	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=30V, I_D=30A, R_G=1.8Ω, V_{GS}=10V	-	9	-	ns
t_r	Turn-on Rise Time		-	7	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	40	-	ns
t_f	Turn-off Fall Time		-	15	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=30A, dI/dt=100A/μs	-	33	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	46	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition : T_J=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,Rg=25Ω,I_{AS}=22.8A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Figure1: Output Characteristics

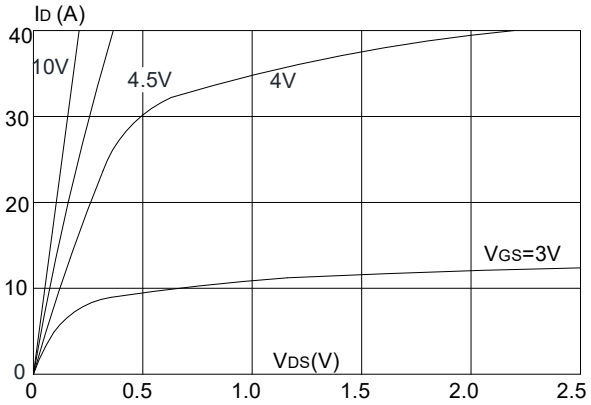


Figure 2: Typical Transfer Characteristics

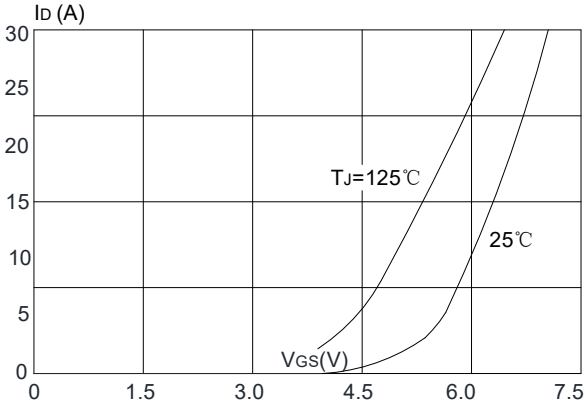


Figure 3: On-resistance vs. Drain Current

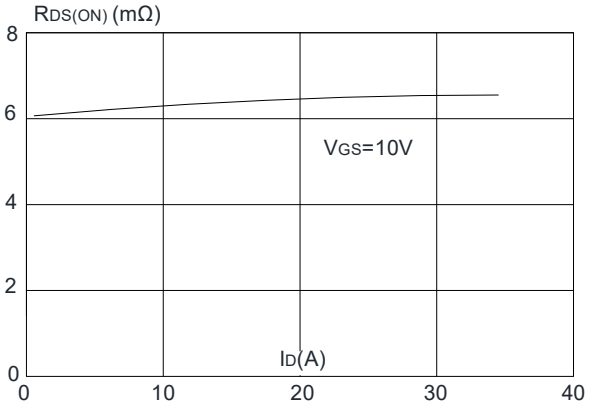


Figure 4: Body Diode Characteristics

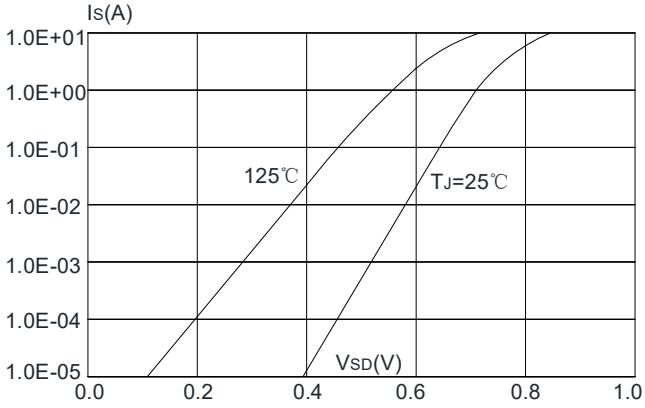


Figure 5: Gate Charge Characteristics

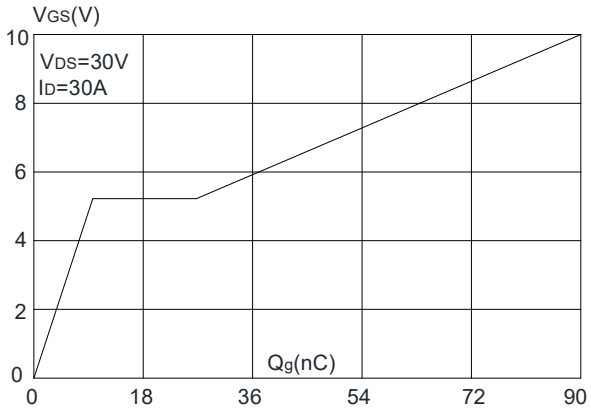


Figure 6: Capacitance Characteristics

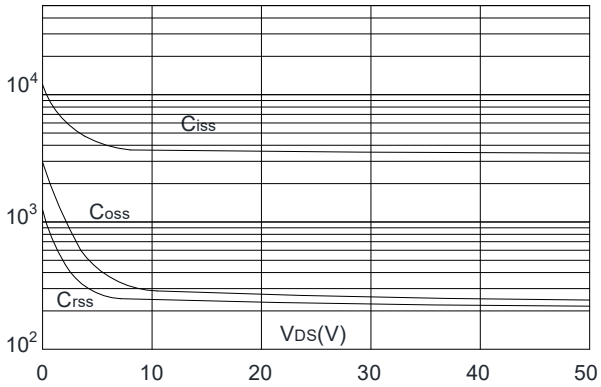


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

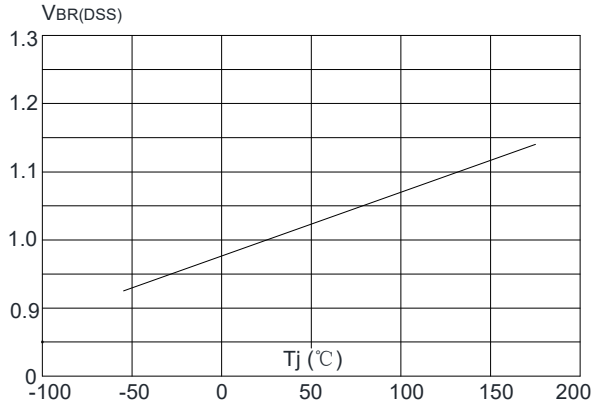


Figure 8: Normalized on Resistance vs. Junction Temperature

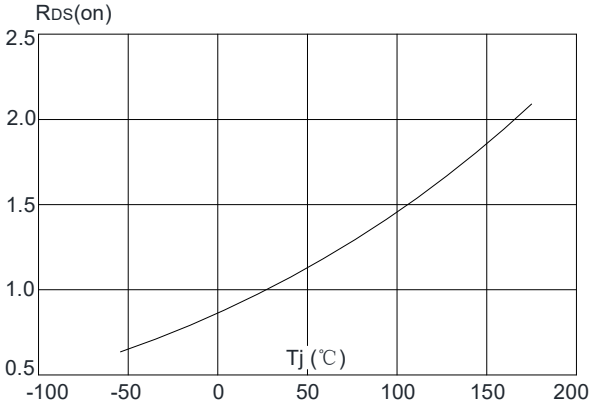


Figure 9: Maximum Safe Operating Area

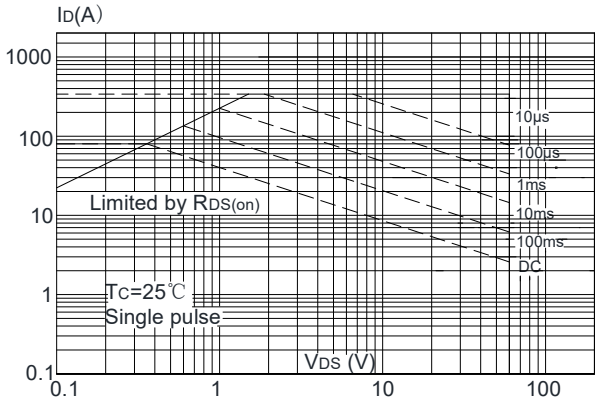


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

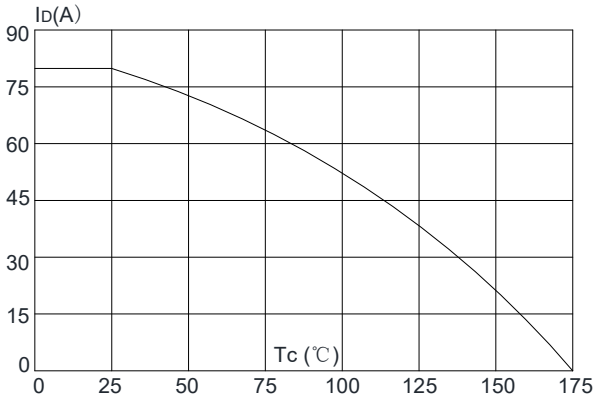
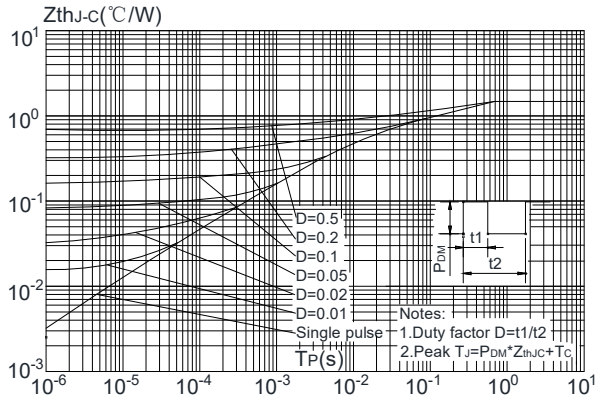


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

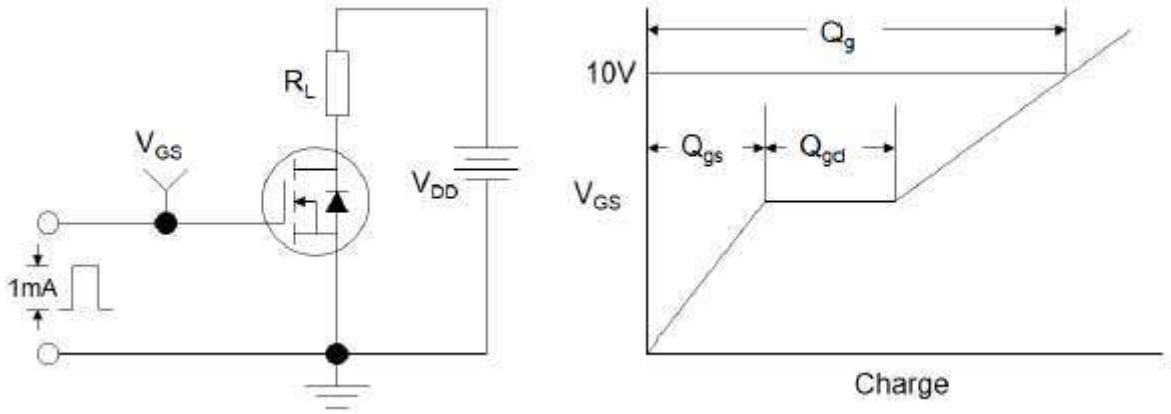


Figure1:Gate Charge Test Circuit & Waveform

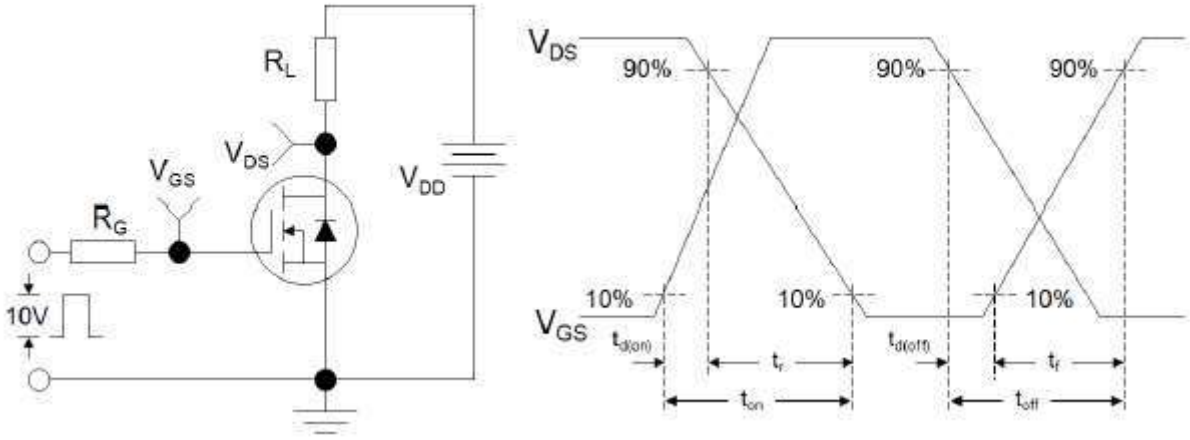


Figure 2: Resistive Switching Test Circuit & Waveforms

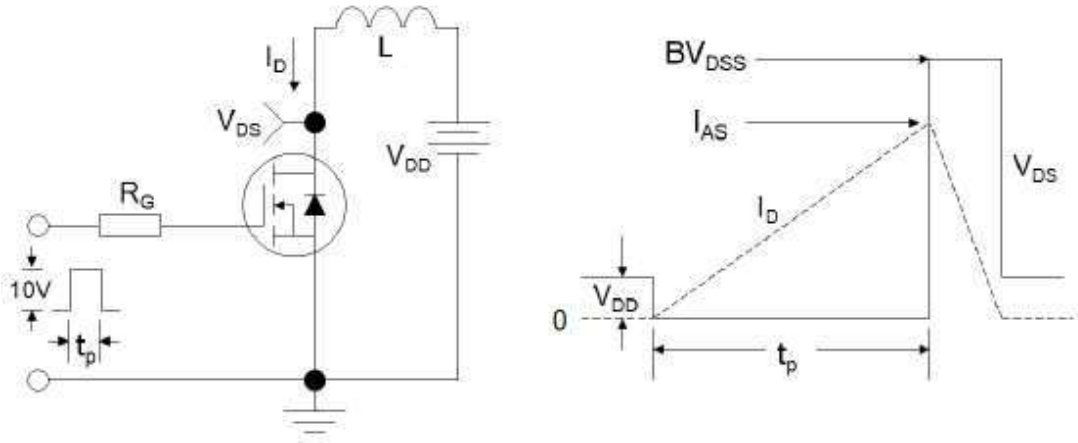
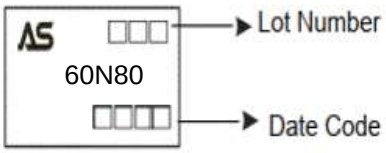


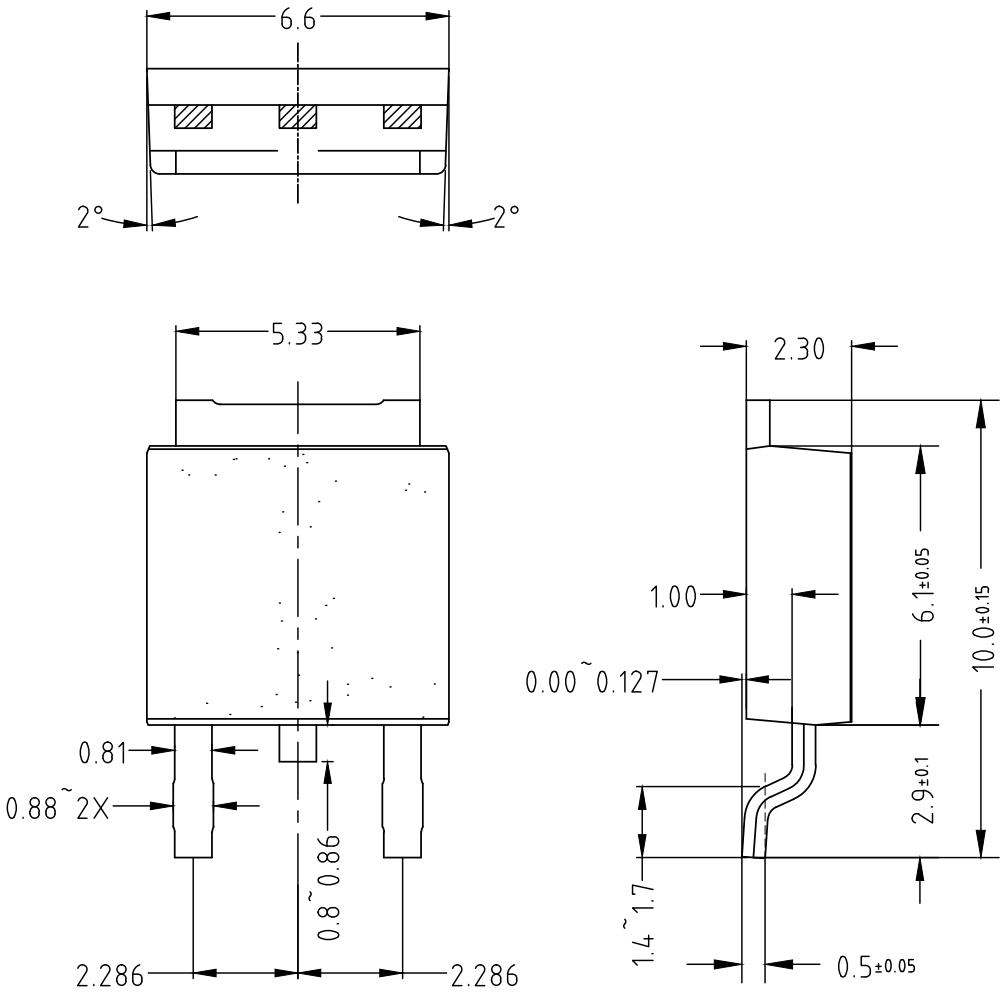
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM60N80KQ-R	60N80	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	

TO-252


6.6
2°
2°
5.33
0.81
0.88~2X
0.8~0.86
2.286
2.286
2.30
1.00
0.00~0.127
6.1±0.05
10.0±0.15
2.9±0.1
1.4~1.7
0.5±0.05

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