

**DESCRIPTION**

The AM60N04D is available in TO-252 Package.

VDSS	RDSON	ID
40V	5.90mΩ	60A

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM60N04DVR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

V _{DS} , Drain-to-Source Voltage			40V
V _{GS} , Gate-to-Source Voltage			±20V
I _D , Continuous Drain Current	T _C = 25°C		60A
	T _C = 100°C		36A
I _{DM} , Pulsed Drain Current ⁽¹⁾			240A
E _{AS} , Single Pulse Avalanche Energy ⁽²⁾			72mJ
P _D , Power Dissipation	T _C = 25°C	48W	
R _{θJC} , Thermal Resistance, Junction to Case			2.6°C/W
T _{STG} , Storage Temperature Range			-55°C ~ +150°C
T _J , Junction Temperature Range			-55°C ~ +150°C

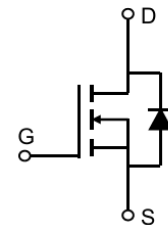
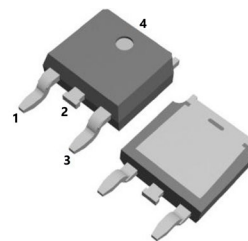
Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Repetitive Rating: pulse width limited by maximum junction temperature.

(2) E_{AS} condition: Starting T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=17A

FEATURE

- 40V, 60A
- R_{DS(ON)} Typ. = 5.9mΩ @ V_{GS} = 10V
- R_{DS(ON)} Typ. = 7.9mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent R_{DS(ON)} and Low Gate Charge

PIN DESCRIPTION**TO-252**

Pin #	Symbol	Function
1	G	Gate
2,4	D	Drain
3	S	Source

**ELECTRICAL CHARACTERISTICS**T_C = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	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} = ±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.50	2	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} =10V, I _D = 20A	-	5.90	7.70	mΩ
		V _{GS} =4.5V, I _D = 10A	-	7.90	10.30	
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{DS} =20V, V _{GS} =0V, f=1.0MHZ	-	2177	-	pF
Output Capacitance	C _{OSS}		-	150	-	
Reverse Transfer Capacitance	C _{RSS}		-	133	-	
Total Gate Charge	Q _g	V _{DS} = 20V , I _D =20V V _{GS} =0V ~ 10V	-	45	-	nC
Gate-Source Charge	Q _{gs}		-	8	-	
Gate-Drain Charge	Q _{gd}		-	11	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, R _G =3Ω, V _{GS} =10V, I _D = 20A	-	12	-	ns
Turn-On Rise Time	t _r		-	25	-	
Turn-Off Delay Time	t _{d(off)}		-	43	-	
Turn-Off Fall Time	t _f		-	10	-	
Reverse Diode						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	60	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	-	-	-	240	A
Drain to Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	-	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A	-	11	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt = 100A/us	-	5	-	nC

* Pulse test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%.



TEST CIRCUIT

Fig 1. Gate Charge Test Circuit & Waveform

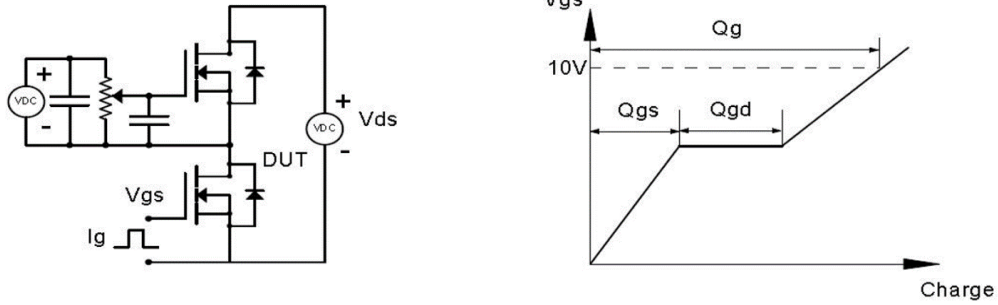


Fig 2. Resistive Switching Test Circuit & Waveforms

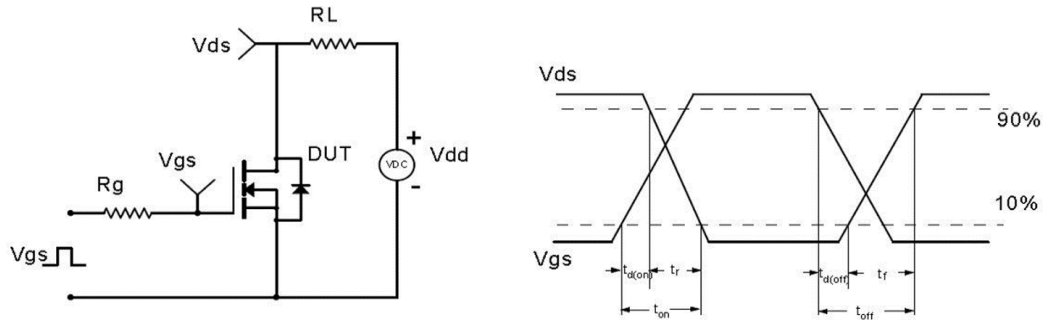


Fig 3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

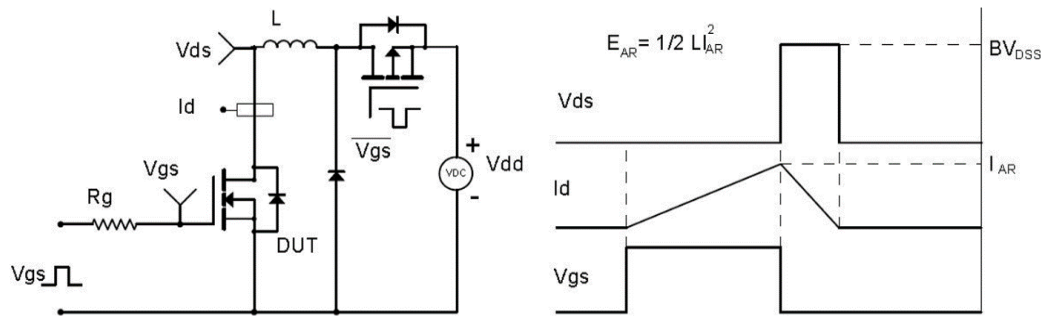
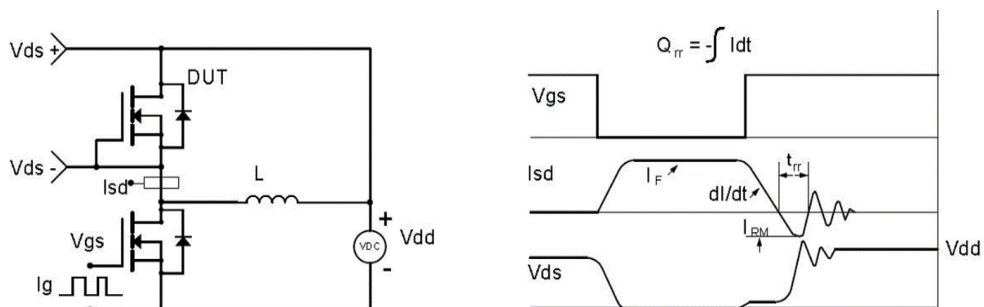


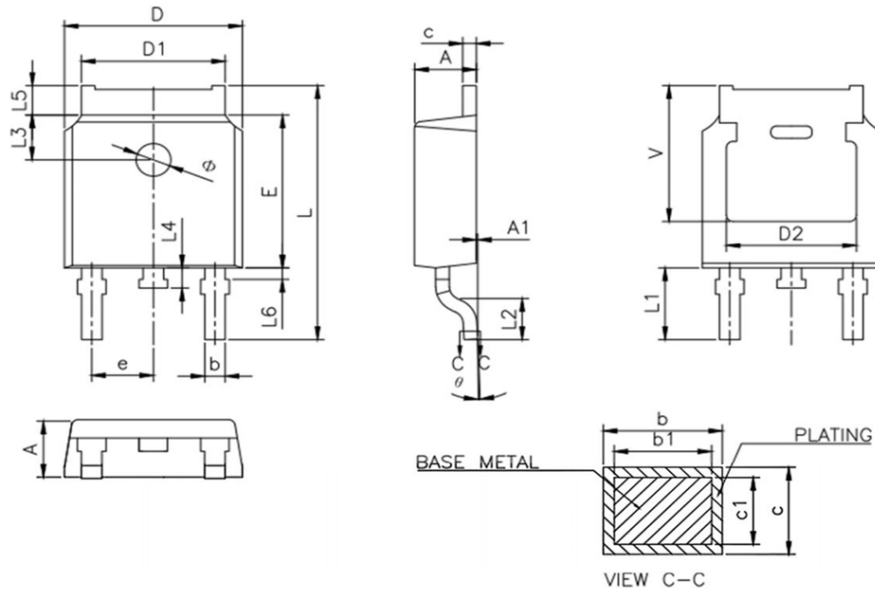
Fig 4. Diode Recovery Test Circuit & Waveforms





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.660	0.860
b1	0.650	0.810
c	0.470	0.600
c1	0.460	0.560
D	6.500	6.700
D1	5.100	5.460
D2	4.830 REF.	
E	6.000	6.200
e	2.186	2.386
L	9.800	10.400
L1	2.900 REF.	
L2	1.400	1.600
L3	1.800 REF.	
L4	0.600	1.000
L5	0.900	1.250
Φ	1.100	1.300
θ	0	8
V	5.400TYP	



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