

**DESCRIPTION**

The AM50N06D is available in TO-252 Package.

VDSS	RDS(ON)	ID
60V	13mΩ	50A

APPLICATIONS

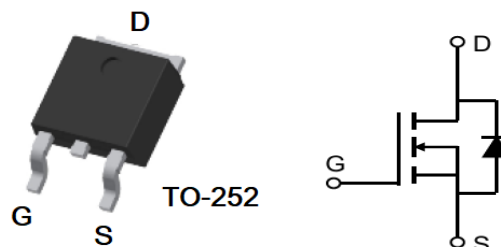
- Load Switch
- PWM Application
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM50N06DR
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURE

- 60V, 50A
- $R_{DS(ON)}$ Typ.= 13mΩ @ $V_{GS} = 10V$
- $R_{DS(ON)}$ Typ.= 15mΩ @ $V_{GS} = 4.5$
- Excellent $R_{DS(ON)}$ and Low Gate Charge

PIN DESCRIPTION

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

ABSOLUTE MAXIMUM RATINGS

$T_J = 25^{\circ}C$, unless otherwise specified.

V_{DS} , Drain-to-Source Voltage		60V
V_{GS} , Gate-to-Source Voltage		±20V
I_D , Continuous Drain Current	$T_C = 25^{\circ}C$	50A
	$T_C = 100^{\circ}C$	30A
I_{DM} , Pulsed Drain Current ⁽¹⁾		200A
E_{AS} , Avalanche Energy, Single Pulse ⁽²⁾		56mJ
P_D , Power Dissipation	$T_C = 25^{\circ}C$	73.5W
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case		1.7°C/W
T_{STG} , Storage Temperature Range		-55°C ~ +150°C
T_J , Junction Temperature Range		-55°C ~ +150°C

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

2. EAS condition: Starting $T_J=25^{\circ}C$, $V_{DD}=40V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=32.5A$



ELECTRICAL CHARACTERISTICS

T_J = 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	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, 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	1.4	2	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	13	17	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	15	20	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 25V, V _{GS} =0V, f=1.0MHZ	-	1715	-	pF
Output Capacitance	C _{oss}		-	111	-	
Reverse Transfer Capacitance	C _{rss}		-	101	-	
Total Gate Charge	Q _g	V _{DS} = 30V , I _D =30A V _{GS} =0V ~ 10V	-	38	-	nC
Gate-Source Charge	Q _{gs}		-	7	-	
Gate-Drain Charge	Q _{gd}		-	10	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =30V, I _D = 30A R _{GEN} =1.8Ω, V _{GS} = 10V	-	10	-	ns
Turn-On Rise Time	t _r		-	66	-	
Turn-Off Delay Time	t _{d(off)}		-	28	-	
Turn-Off Fall Time	t _f		-	90	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	50	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	-	-	-	200	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S = 20A	-	-	1.2	V
Body Diode Reverse Recovery Time	trr	I _F = 30A,	-	13	-	ns
Body Diode Reverse Recovery Charge	Qrr	di/dt = 100A/μs	-	9	-	nC

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



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Gate Charge Test Circuit

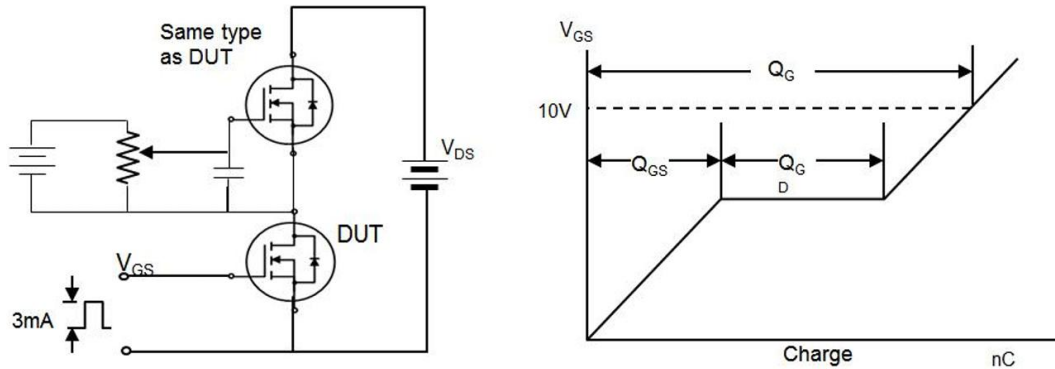


Fig 2. Resistive Switching Test Circuit & Waveform

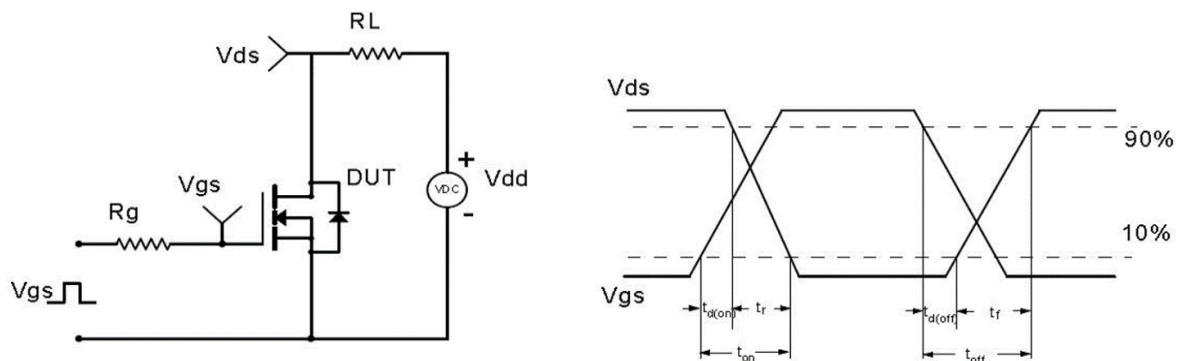


Fig 3. Unclamped Inductive Switching Test Circuit & Waveform

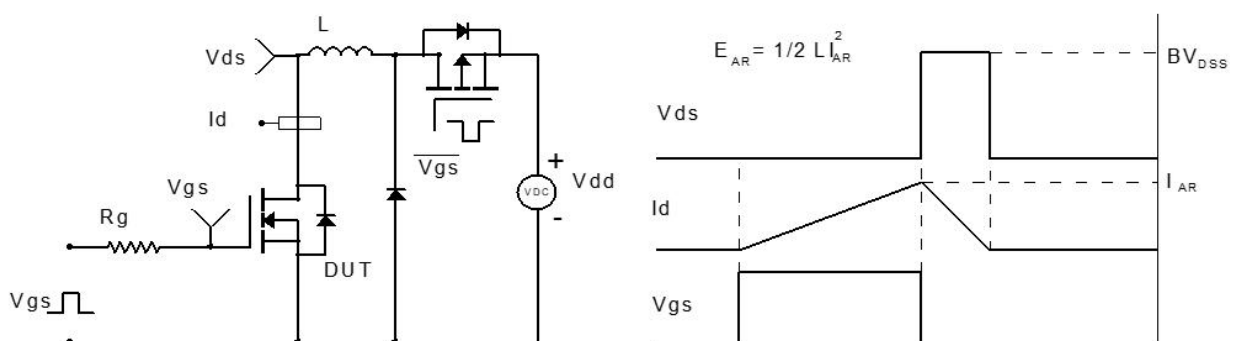
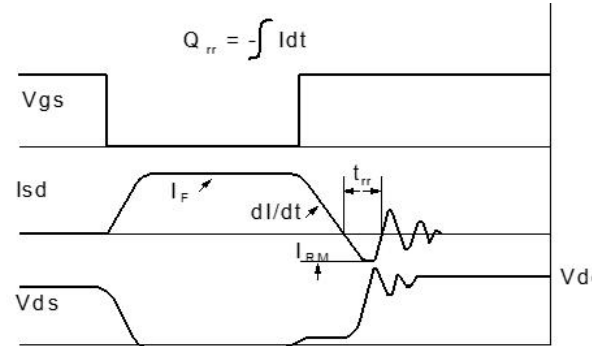
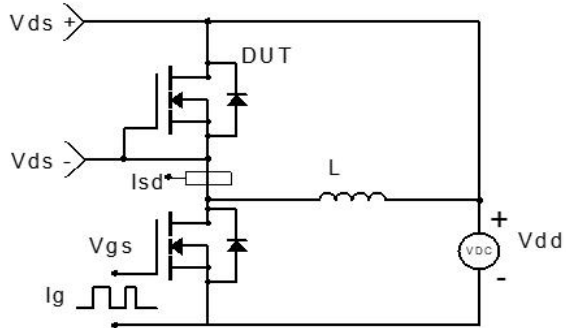




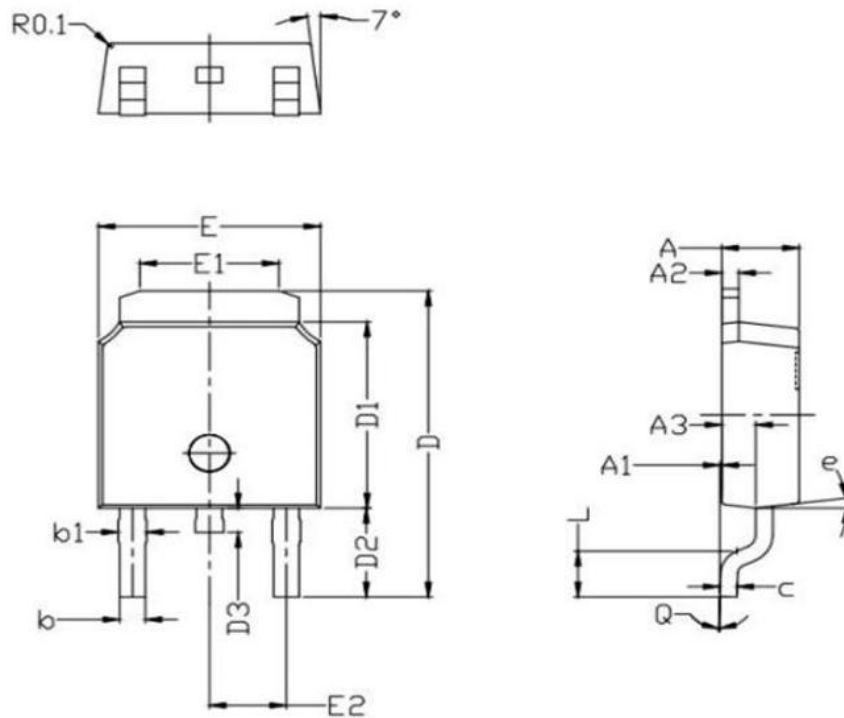
Fig 4. Diode Recovery Test Circuit & Waveform





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	2.250	2.400
A1	0.010	0.150
A2	0.500	0.550
A3	0.960	1.060
b	0.740	0.800
b1	0.880	0.950
c	0.500	0.550
D	9.800	10.350
D1	6.050	6.180
D2	2.850	2.950
D3	0.700	2.900
E	6.550	6.700
E1	4.050	4.200
E2	2.250	2.300
L	1.400	1.600
e	7.000	
Q	0°	5°



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