

**DESCRIPTION**

The AM100N03D is available in TO-252 Package.

VDSS	RDS(ON)	ID
30V	2.8mΩ	100A

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM100N03DVR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

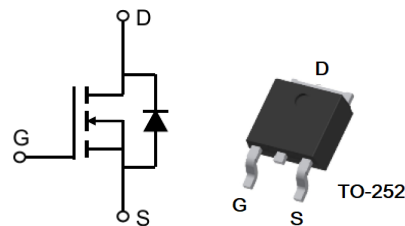
V _{DS} , Drain-to-Source Voltage		30V
V _{GS} , Gate-to-Source Voltage		±20V
I _D , Continuous Drain Current	T _C = 25°C	100A
	T _C = 100°C	60A
I _{DM} , Pulsed Drain Current ⁽¹⁾		400A
E _{AS} , Single Pulsed Avalanche Energy ⁽²⁾		144mJ
P _D , Power Dissipation	T _C = 25°C	65.7W
R _{θJC} , Thermal Resistance, Junction to Case		1.9°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) E_{AS} condition: Starting T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=24A

FEATURE

- 30V, 100A
R_{DS(ON)} Typ.= 2.80mΩ @ V_{GS} = 10V
R_{DS(ON)} Typ.= 4mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent R_{DS(ON)} and Low Gate Charge
- 100% UIS TESTED! I
- 100% ΔV_{ds} TESTED!

PIN DESCRIPTION

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

**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	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, 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	1.6	2.2	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 30A	-	2.8	3.8	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	4	5.2	
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} = 15V, V _{GS} =0V, f=1.0MHz	-	3197	-	pF
Output Capacitance	C _{oSS}		-	355	-	
Reverse Transfer Capacitance	C _{rSS}		-	280	-	
Total Gate Charge	Q _g	V _{DS} = 15V , I _D =30A V _{GS} =0V ~ 10V	-	58	-	nC
Gate-Source Charge	Q _{gs}		-	12	-	
Gate-Drain(“Miller”) Charge	Q _{gd}		-	13	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, I _D = 30A R _{GEN} =3Ω, V _{GS} = 10V	-	11	-	ns
Turn-On Rise Time	t _r		-	29	-	
Turn-Off Delay Time	t _{d(off)}		-	47	-	
Turn-Off Fall Time	t _f		-	18	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	100	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	-	-	-	400	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S = 30A	-	-	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 30A	-	16	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	7	-	nC

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



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

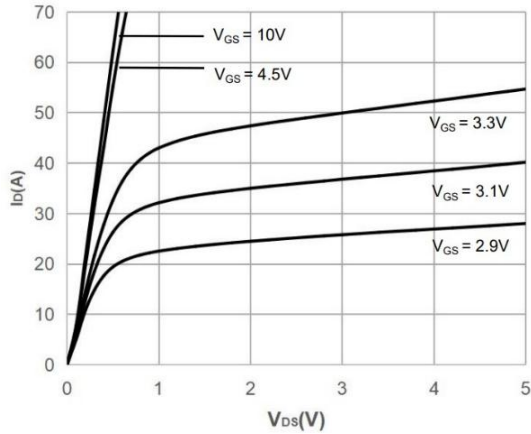


Fig 2. Typical Transfer Characteristics

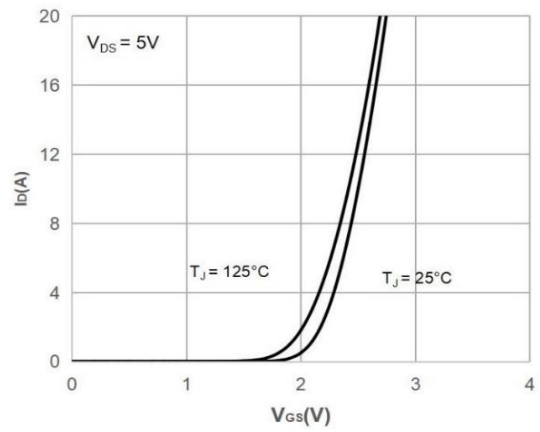


Fig 3. On-Resistance vs. Drain Current

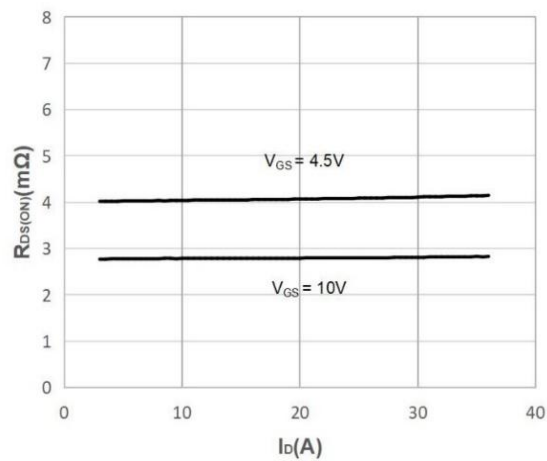


Fig 4. Body Diode Characteristics

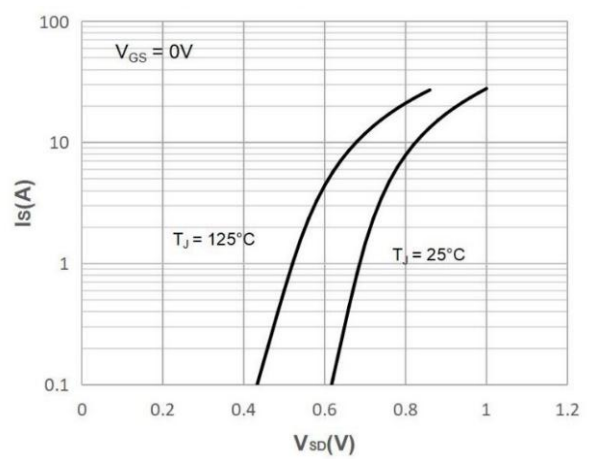


Fig 5. Gate Charge Characteristics

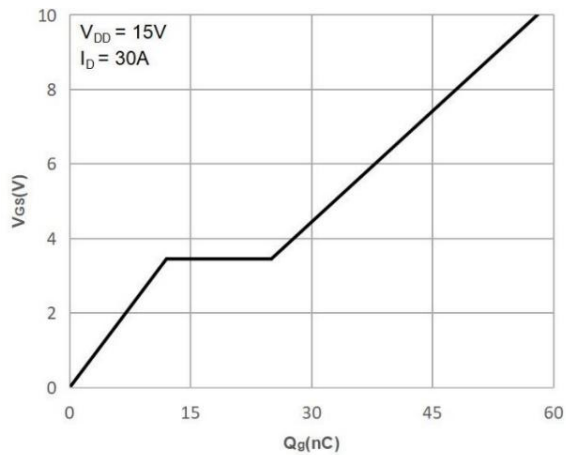


Fig 6. Capacitance Characteristics

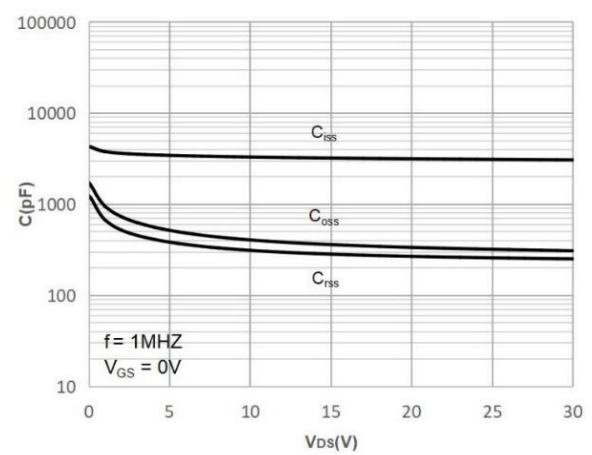




Fig 7. Normalized Breakdown Voltage
vs. Junction Temperature

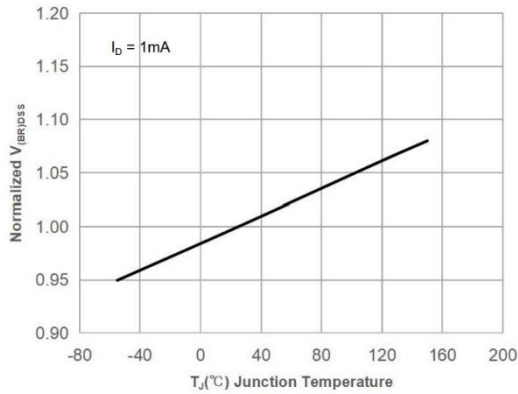


Fig 8. Normalized On-Resistance
vs. Junction Temperature

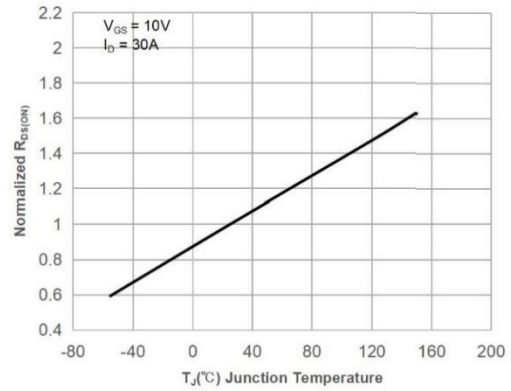
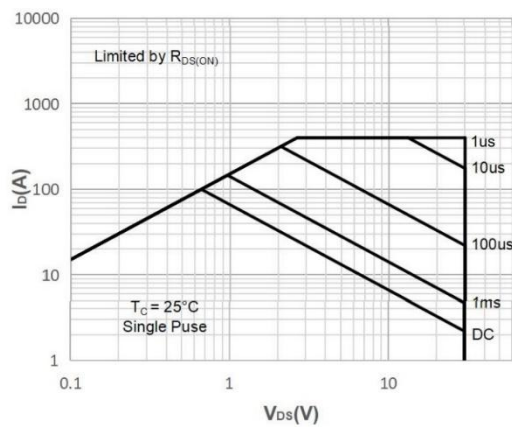


Fig 9. Maximum Safe Operating Area



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Fig 10. Maximum Continuous Drain Current
vs. Case Temperature

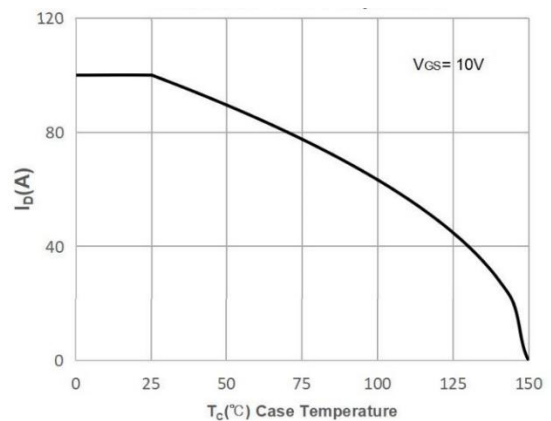


Fig 11. Normalized Maximum Transient Thermal
Impedance

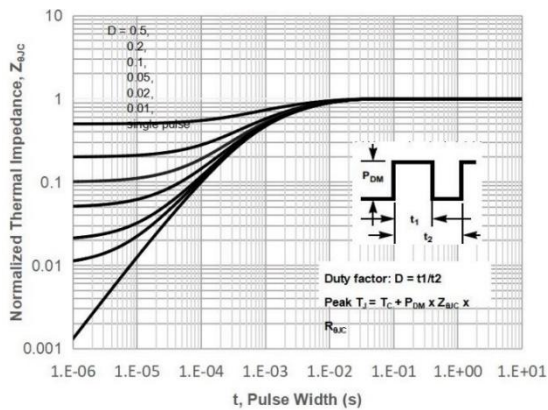


Fig 12. Peak Current Capacity

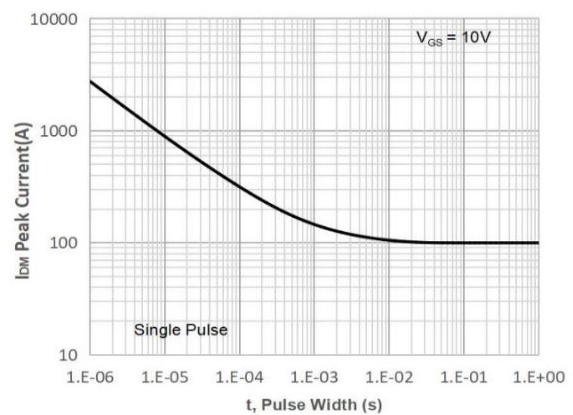




Fig 13. Gate Charge Test Circuit & Waveform

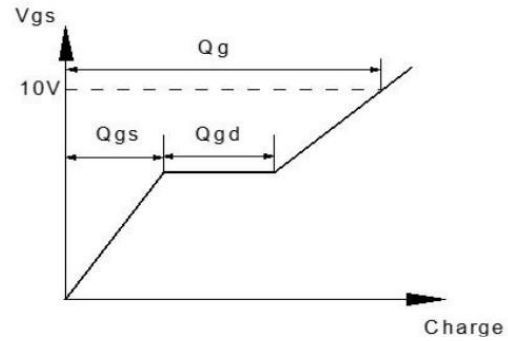
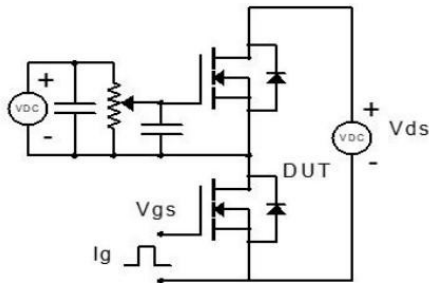


Fig 14. Resistive Switching Test Circuit & Waveform

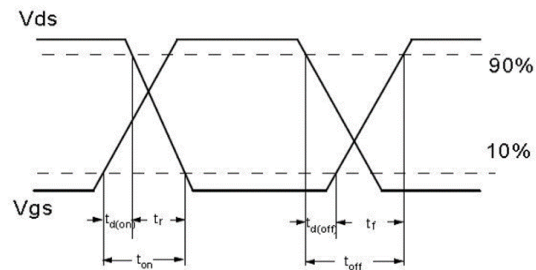
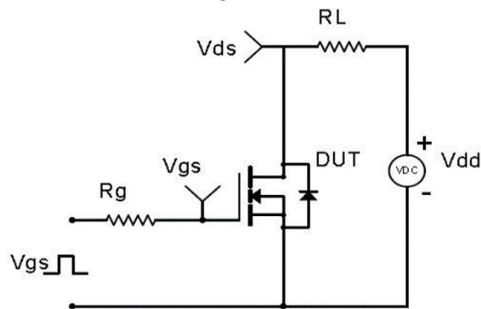


Fig 15. Unclamped Inductive Switching Test Circuit & Waveform

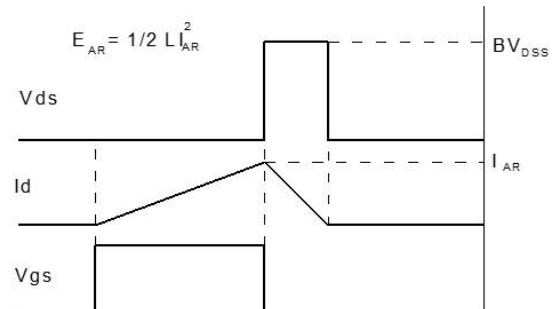
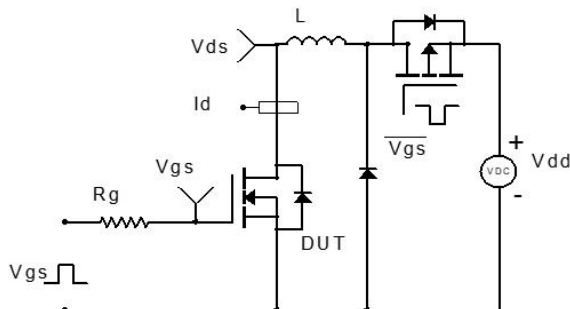
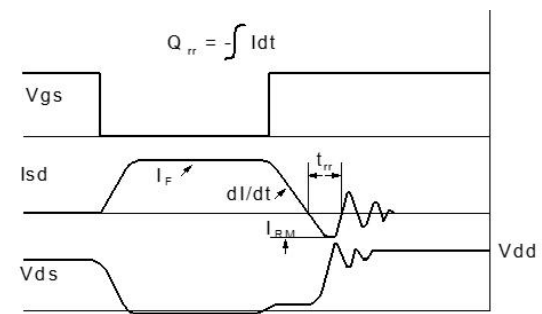
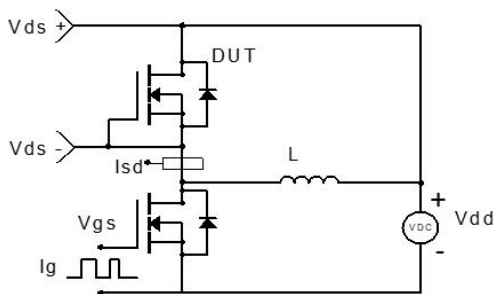


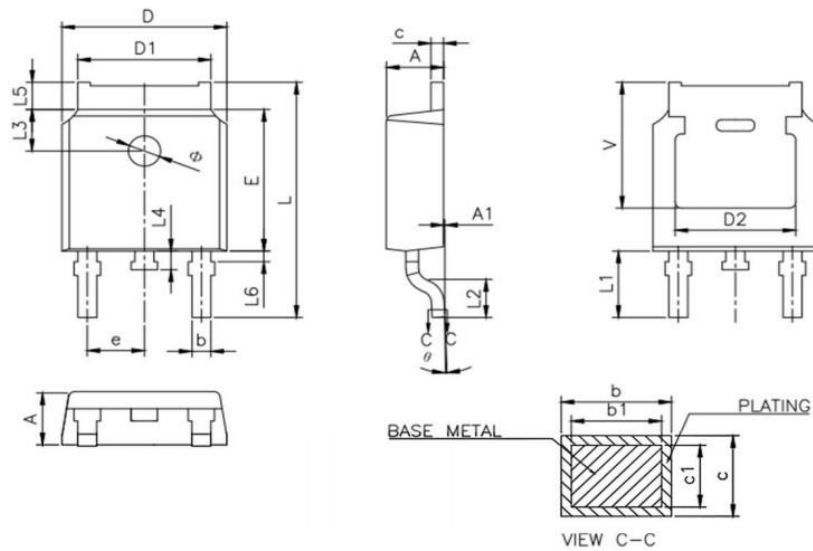
Fig 16. Diode Recovery Test Circuit & Waveform





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
L6	0.150	0.750
Φ	1.100	1.300
θ	0°	8°
V	5.400 REF.	

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