

**DESCRIPTION**

The AM30N10 is available in TO-252 package.

BVDSS	RDSON	ID
100V	34mΩ	30A

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Tube	D	AM30N10DR
		AM30N10DVR
Note	V: Halogen free Package R: Tape & Tube	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

V _{DS} , Drain-Source Voltage	+100V
V _{GS} , Gate-Source Voltage	±20V
I _D @T _C =25°C, Continuous Drain Current, V _{GS} @ 10V ⁽¹⁾	30A
I _D @T _C =100°C, Continuous Drain Current, V _{GS} @ 10V ⁽¹⁾	15A
I _D @T _A =25°C, Continuous Drain Current, V _{GS} @ 10V ⁽¹⁾	8A
I _D @T _A =70°C, Continuous Drain Current, V _{GS} @ 10V ⁽¹⁾	5.4A
I _{DM} , Pulsed Drain Current ⁽²⁾	40A
EAS, Single Pulse Avalanche Energy ⁽³⁾	6.1 mJ
I _{AS} , Avalanche Current	20A
P _D @T _C =25°C, Total Power Dissipation ⁽³⁾	34.7W
P _D @T _A =25°C, Total Power Dissipation ⁽³⁾	2W
T _{STG} , Storage Temperature Range	-55°C~+150°C
T _J , Operating Junction Temperature Range	-55°C~+150°C
R _{θJA} , Thermal Resistance Junction-Ambient ⁽¹⁾	62°C/W
R _{θJC} , Thermal Resistance Junction-Case ⁽¹⁾	3.6°C/W

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.

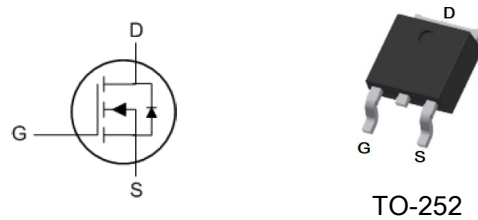
(1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

(2) The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

(3) The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=11A

FEATURE

- Super Low Gate Charge
- R_{DS(ON)}, typ.=34mΩ@V_{GS}=10V
- Excellent Cdv/dt effect decline

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
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100	-	-	V
BVDSS Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.098	-	V/°C
Static Drain-Source On-Resistance ⁽²⁾	R _{DS(ON)}	V _{GS} =10V, I _D =10A	-	34	40	mΩ
		V _{GS} =4.5V, I _D =8A	-	40	50	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	1.0	-	2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-4.57	-	mV/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V, T _A =25°C	-	-	1	μA
		V _{DS} =80V, V _{GS} =0V, T _J =55°C	-	-	5	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =10A	-	13	-	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	2	-	Ω
Total Gate Charge (10V)	Q _g	V _{DS} =80V, V _{GS} =10V, I _D =10A	-	26.2	-	nC
Gate-Source Charge	Q _{gs}		-	4.6	-	
Gate-Drain Charge	Q _{gd}		-	5.1	-	
Turn-On Delay Time	T _{d(on)}	V _{DD} =50V, V _{GS} =10V, R _G =3.3Ω, I _D =10A	-	4.2	-	ns
Rise Time	T _r		-	8.2	-	
Turn-Off Delay Time	T _{d(off)}		-	35.6	-	
Fall Time	T _f		-	9.6	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	1535	-	pF
Output Capacitance	C _{oss}		-	60	-	
Reverse Transfer Capacitance	C _{rss}		-	37	-	
Diode Characteristics						
Continuous Source Current ⁽¹⁾⁽³⁾	I _S	V _G =V _D =0, Force Current	-	-	30	A
Pulsed Source Current ⁽²⁾⁽³⁾	I _{SM}		-	-	35	A
Diode Forward Voltage ⁽²⁾	V _{SD}	V _{GS} =0V, I _S =1A, T _A =25°C	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _F =10A, di/dt=100A/μs,	-	37	-	nS
Reverse Recovery Charge	Q _{rr}	T _A =25°C	-	27.3	-	nC

(1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

(2) The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%

(3) The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

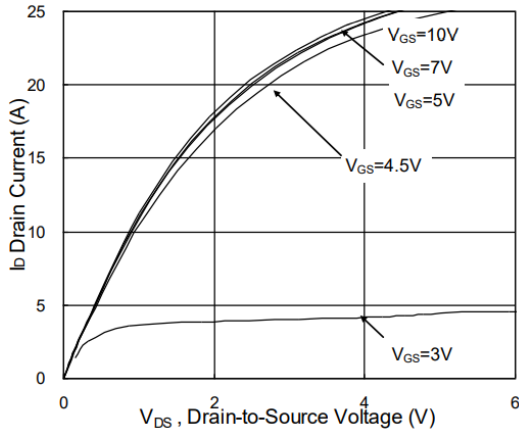


Fig 2. On-Resistance vs. Gate-Source

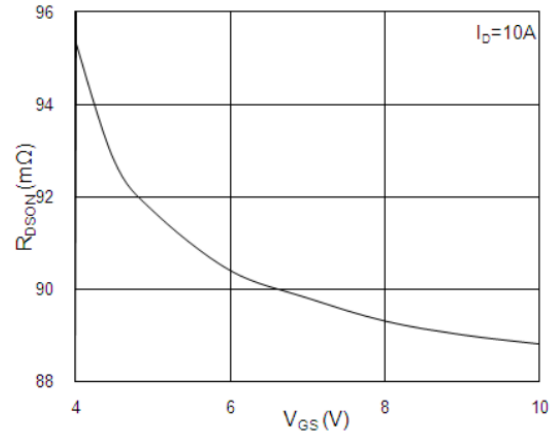


Fig3. Forward Characteristics of Reverse

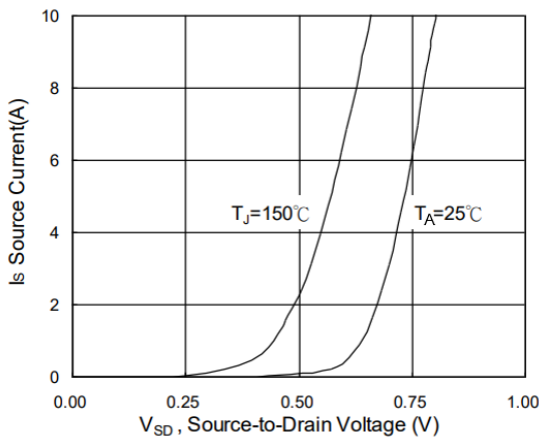


Fig4. Gate-Charge Characteristics

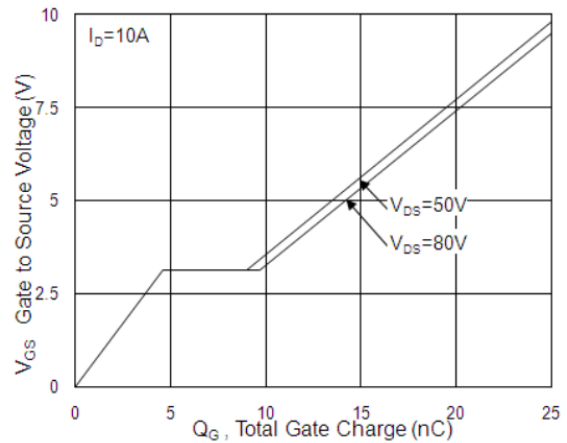


Fig5. Normalized $V_{GS(th)}$ vs. T_J

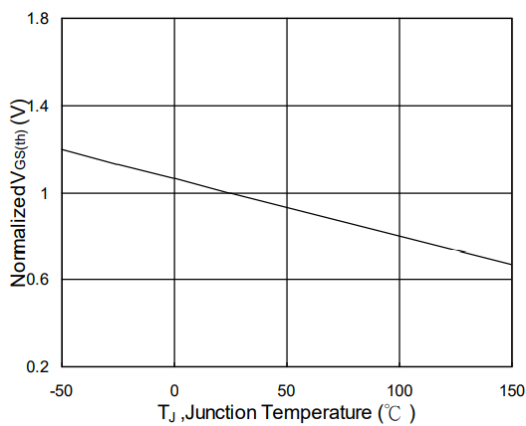


Fig6. Normalized $R_{DS(on)}$ vs. T_J

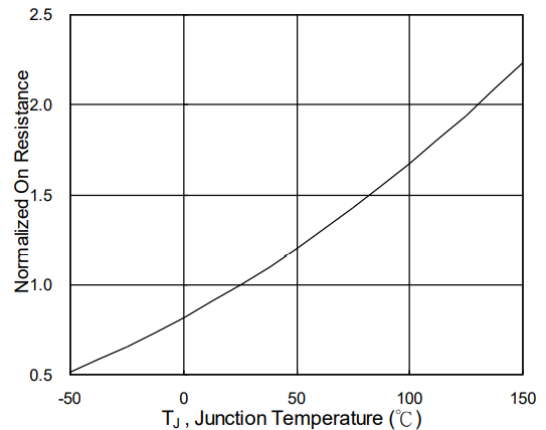




Fig 7. Capacitance

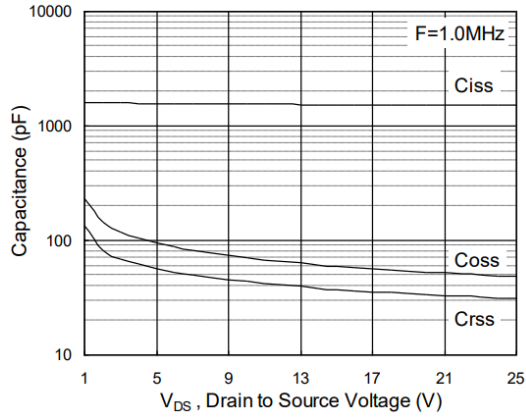


Fig 8. Safe Operating Area

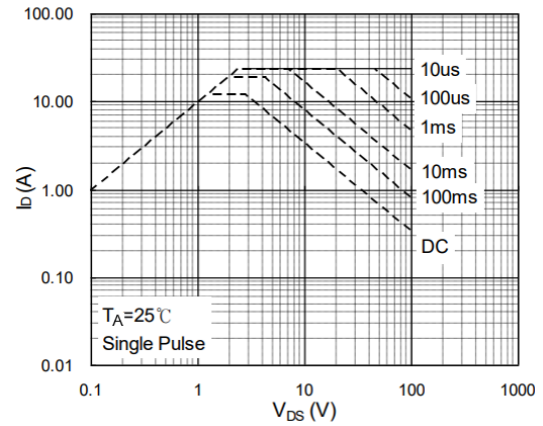


Fig9. Normalized Maximum Transient Thermal Impedance

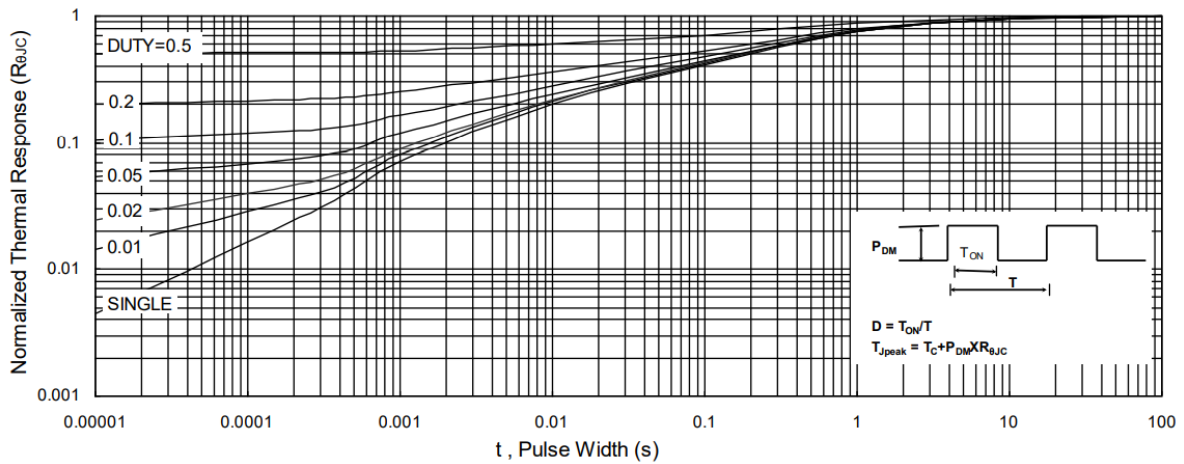


Fig10. Switching Time Waveform

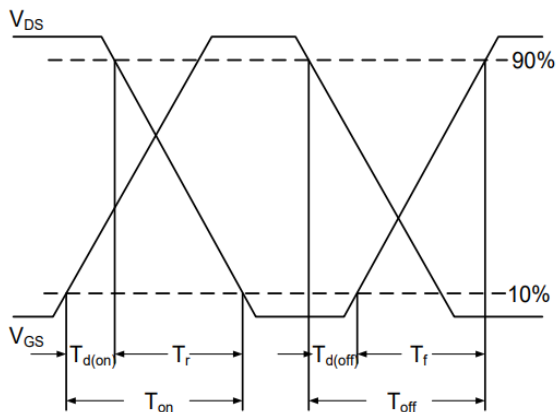
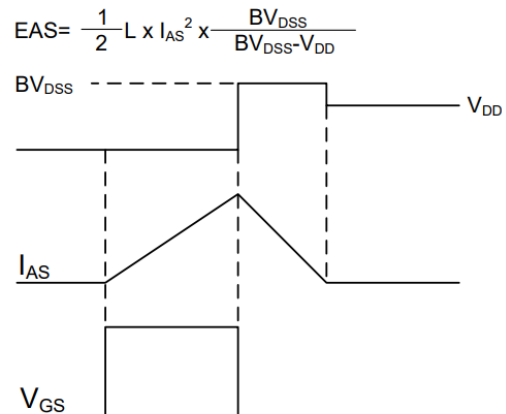


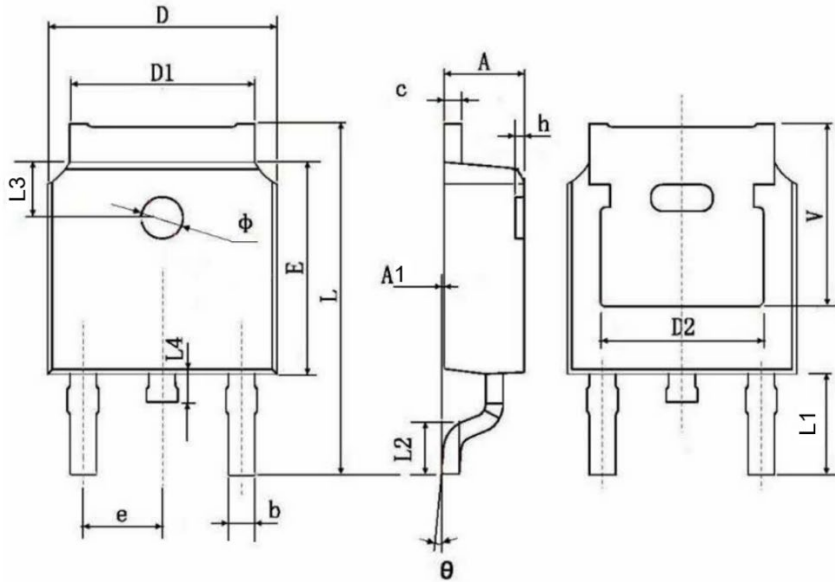
Fig11. Unclamped Inductive Switching Waveform





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.660	0.860
c	0.460	0.580
D	6.500	6.700
D1	5.100	5.460
D2	0.483TYP	
E	6.000	6.200
e	2.186	2.386
L	9.800	10.400
L1	2.900TYP	
L2	1.400	1.700
L3	1.600 TYP	
L4	0.600	1.000
Φ	1.100	1.300
θ	0°	8°
h	0.000	0.300
V	5.350TYP	



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