DESCRIPTION

The AM30N10 is available in TO-252 package.

BVDSS	RDSON	ID
100V	34mΩ	30A

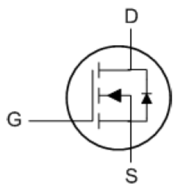
FEATURE

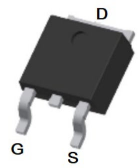
- Super Low Gate Charge
- $R_{DS(ON), typ.}$=34mΩ@V_{GS}=10V
- Excellent Cdv/dt effect decline

ORDERING INFORMATION

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

PIN DESCRIPTION





TO-252

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

ABSOLUTE MAXIMUM RATINGS

V_{DS}, Drain-Source Voltage	+100V
V_{GS}, Gate-Source Voltage	±20V
I_D@T_C=25℃, Continuous Drain Current, V_{GS} @ 10V(1)	30A
I_D@T_C=100℃, Continuous Drain Current, V_{GS} @ 10V(1)	15A
I_D@T_A=25℃, Continuous Drain Current, V_{GS} @ 10V(1)	8A
I_D@T_A=70℃, Continuous Drain Current, VGS @ 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℃, Total Power Dissipation(3)	34.7W
P_D@T_A=25℃, Total Power Dissipation(3)	2W
T_{STG}, Storage Temperature Range	-55℃~+150℃
T_J, Operating Junction Temperature Range	-55℃~+150℃
$R_{\theta JA}$, Thermal Resistance Junction-Ambient (1)	62℃/W
$R_{\theta JC}$, Thermal Resistance Junction-Case (1)	3.6℃/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 inch^2 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

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=250uA	100	-	-	V
BVDSS Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25℃ , I_D=1mA	-	0.098	-	V/℃
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 =250uA	1.0	-	2.5	V
$V_{GS\ (th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-4.57	-	mV/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V , V_{GS}=0V , T_A=25℃	-	-	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=55℃	-	-	5	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Forward Transconductance	gfs	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℃	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_F=10A , dI/dt=100A/μs , T_A=25℃	-	37	-	nS
Reverse Recovery Charge	Q_{rr}		-	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 ≦ 300us , 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

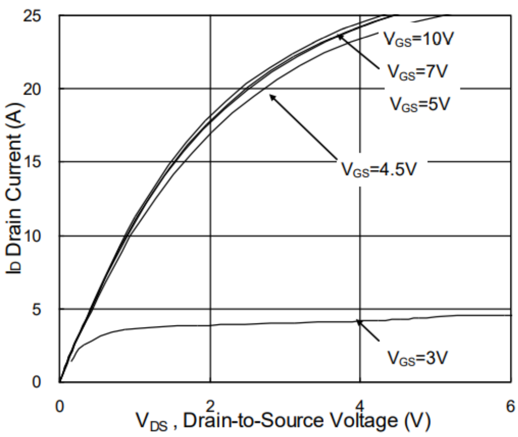


Fig 2. On-Resistance vs. Gate-Source

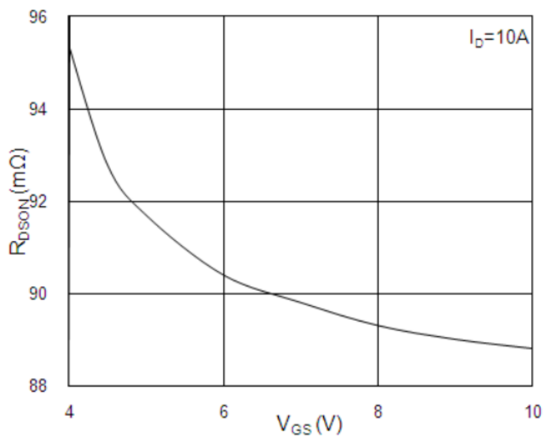


Fig3. Forward Characteristics of Reverse

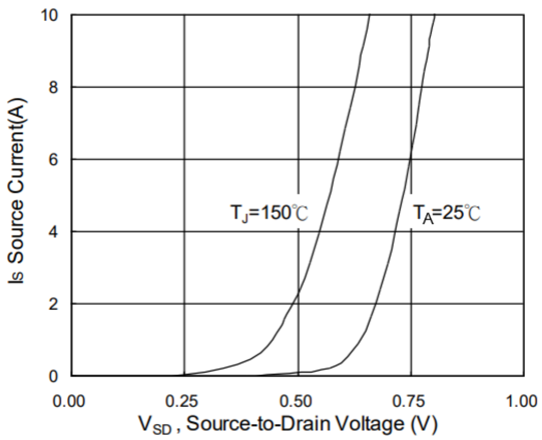


Fig4. Gate-Charge Characteristics

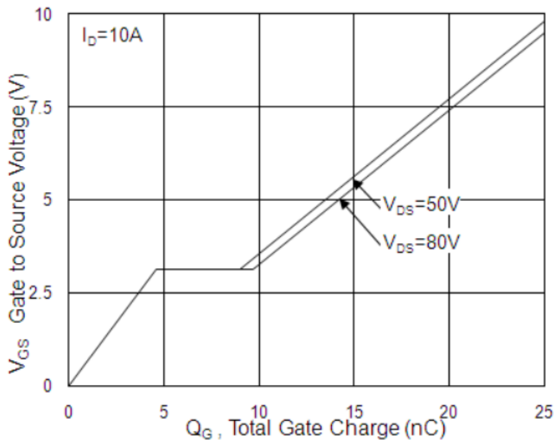


Fig5. Normalized $V_{GS(th)}$ vs. T_J

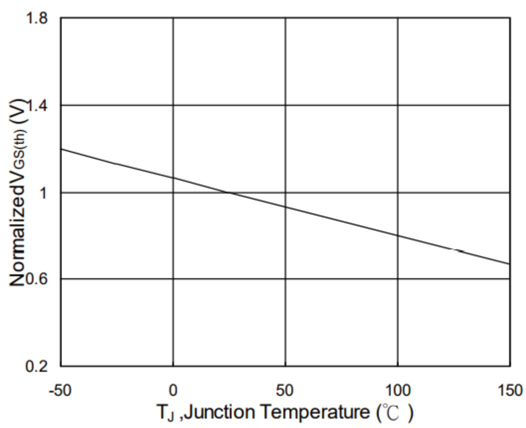


Fig6. Normalized R_{DSON} vs. T_J

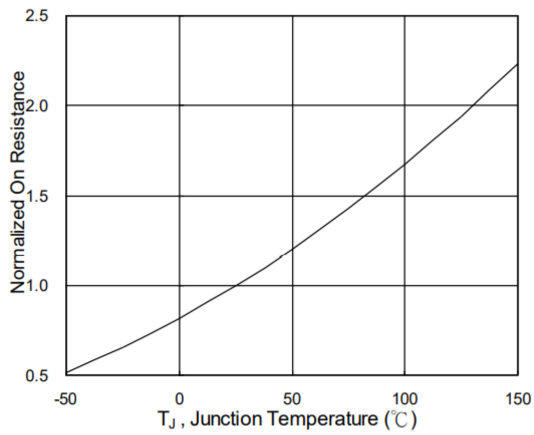


Fig 7. Capacitance

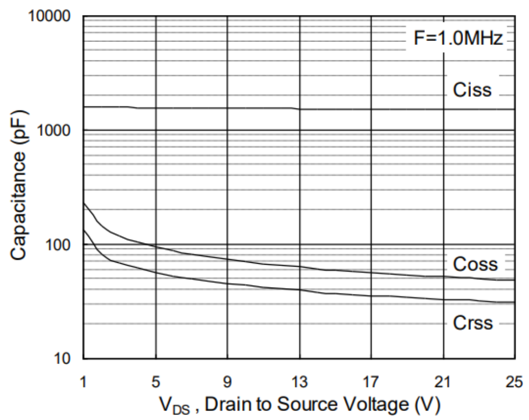


Fig 8. Safe Operating Area

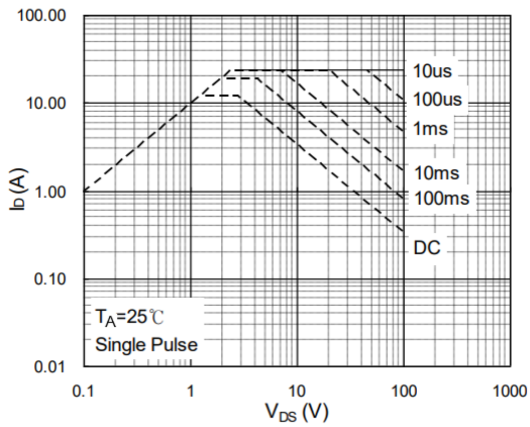


Fig9. Normalized Maximum Transient Thermal Impedance

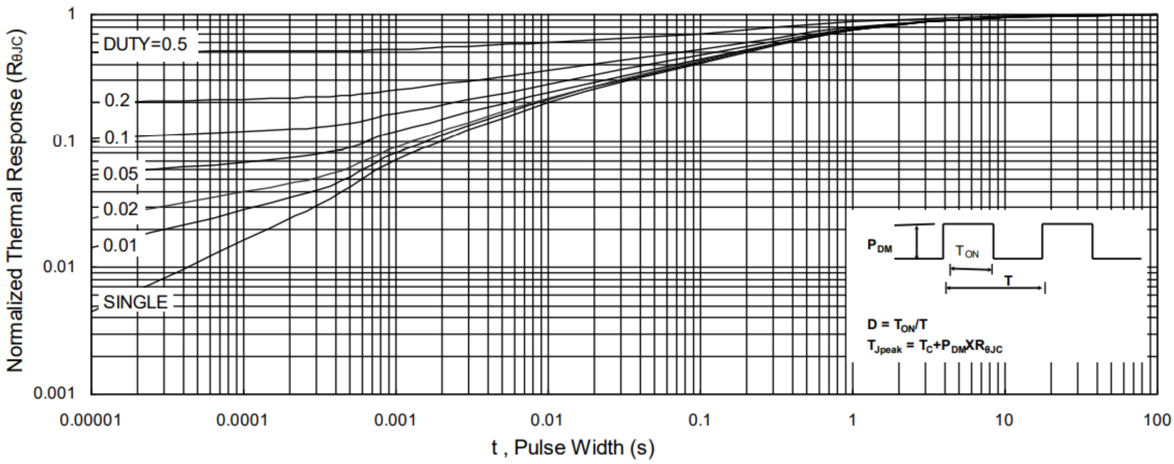


Fig10. Switching Time Waveform

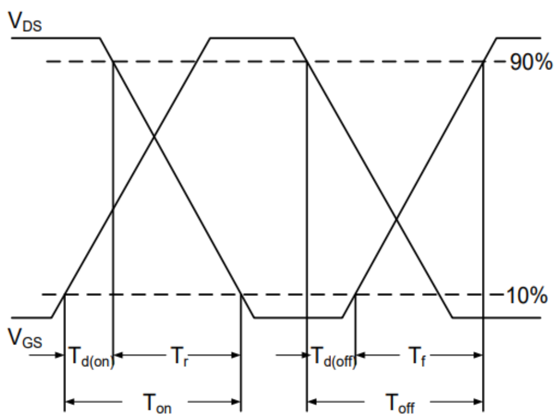
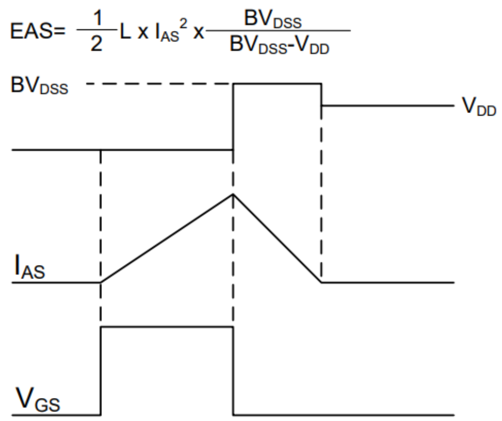
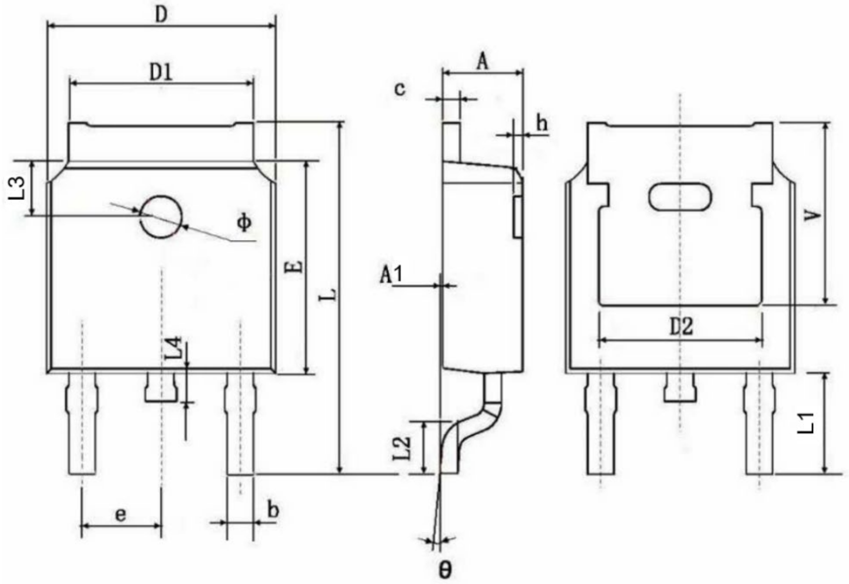


Fig11. Unclamped Inductive Switching Waveform



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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