DESCRIPTION

The AM15N10 is available in TO-252 Package

BVDSS	RDSON	ID
100V	85mΩ	15A

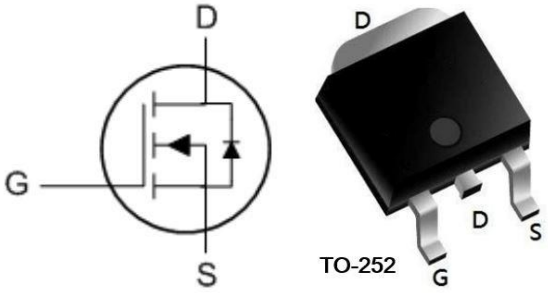
FEATURE

- Advanced high cell density Trench Technology
- $R_{DS(ON)typ.}$=85mΩ @ V_{GS}=10V
- Excellent dv/dt effect decline
- Super Low Gate Charge

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM15N10DR
		AM15N10DVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

PIN DESCRIPTION



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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current, V_{GS} @10V (1)	T_C = 25℃	I_D	15	A
	T_C = 100℃		7.7	A
	T_A=25℃		3	A
	T_A=70℃		2.4	A
Pulsed Drain Current (2)		I_{DM}	24	A
Single Pulsed Avalanche Energy (3)		E_{AS}	6.1	mJ
Avalanche Current		I_{AS}	11	A
Total Power Dissipation T_C=25℃ (4)		P_D	34.7	W
Total Power Dissipation T_A=25℃ (4)			2	W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +175	℃
THERMAL DATA				
Thermal Resistance Junction-ambient (1)		$R_{\theta JA}$	62	℃/W
Thermal Resistance Junction-Case (1)		$R_{\theta JC}$	3.6	℃/W

(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

(4) The power dissipation is limited by 150℃ junction temperature

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.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	100	-	-	V
BVDSS Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	I_D=1mA	-	0.098	-	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V , V_{GS}=0V , T_J=25℃	-	-	1	μA
		V_{DS}=80V , V_{GS}=0V , T_J=55℃	-	-	5	
Gate-Source 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	1.0	-	2.5	V
V_{GS} (th) Temperature Coefficient	$\triangle V_{GS(th)}$		-	-4.57	-	mV/℃
Static Drain-Source on-Resistance (2)	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A	-	85	112	mΩ
		V_{GS}=4.5V, I_D=8A	-	105	120	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz	-	1535	-	pF
Output Capacitance	C_{oss}		-	60	-	
Reverse Transfer Capacitance	C_{rss}		-	37	-	
Total Gate Charge (10V)	Q_g	V_{DS}=80V, I_D=10A, V_{GS}= 10V	-	26.2	-	nC
Gate-Source Charge	Q_{gs}		-	4.6	-	
Gate-Drain Charge	Q_{gd}		-	5.1	-	
Gate Resistance	Rg	V_{DS}=0V +, V_{GS}=0V, f=1MHz	-	2	-	Ω
SWITCHING CHARACTERISTICS						
Turn-on Delay Time	$t_{d\ (ON)}$	V_{DS}=50V, I_D=10A, R_G=3.3Ω, V_{GS}=10V	-	4.2	-	nS
Turn-on Rise Time	t_r		-	8.2	-	
Turn-Off Delay Time	$t_{d\ (OFF)}$		-	35.6	-	
Turn-Off Fall Time	t_f		-	9.6	-	

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
DIODE CHARACTERISTICS						
Continuous Source Current	I_S	$V_G=V_D=0V$, Force Current	-	-	15	A
Pulsed Source Current (2)(5)	I_{SM}		-	-	24	A
Diode Forward Voltage (2)	V_{SD}	$V_{GS}=0V$, $I_S=1A$, $T_J=25℃$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=10A$, dI/dt=100A/μs , $T_J=25℃$	-	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%

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

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

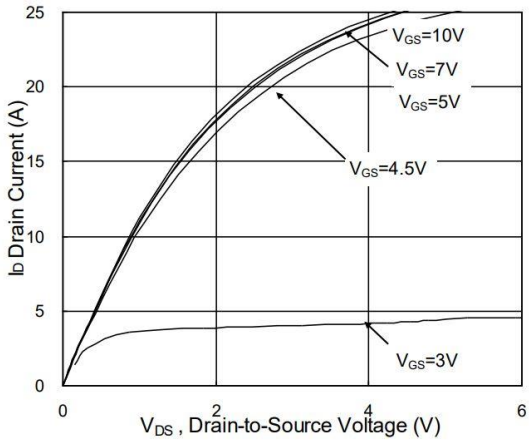


Fig 2. On-Resistance vs. Gate-Source

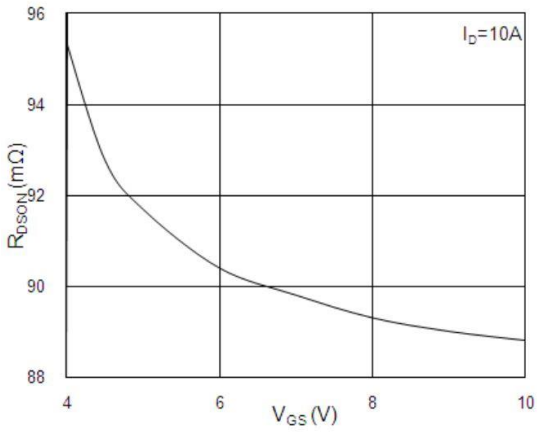


Fig 3. Forward Characteristics of Reverse

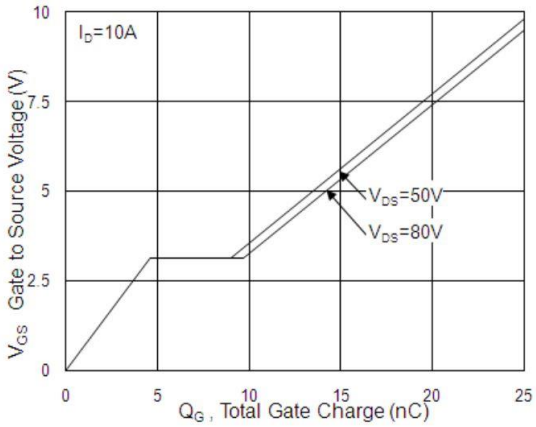


Fig 4. Gate-Charge Characteristics

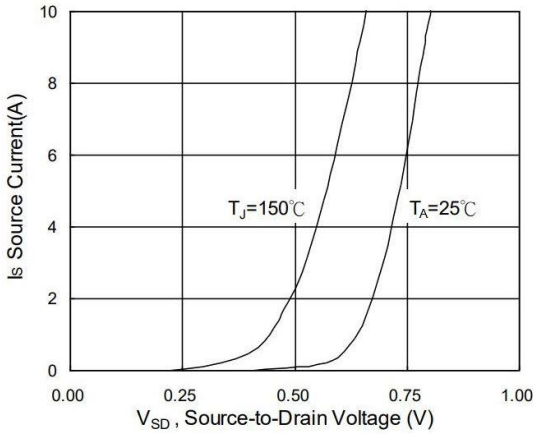


Fig 5. Normalized $V_{GS\,(th)}$ vs. T_J

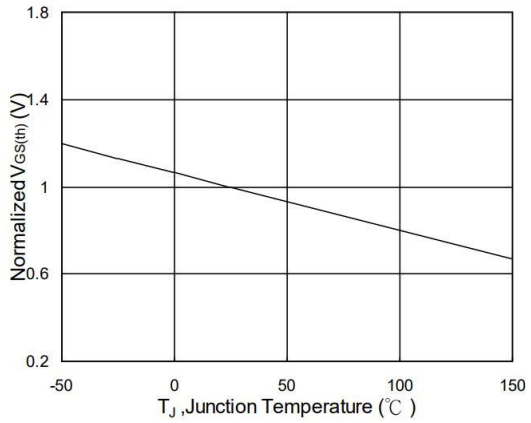


Fig 6. Normalized R_{DSON} vs. TJ

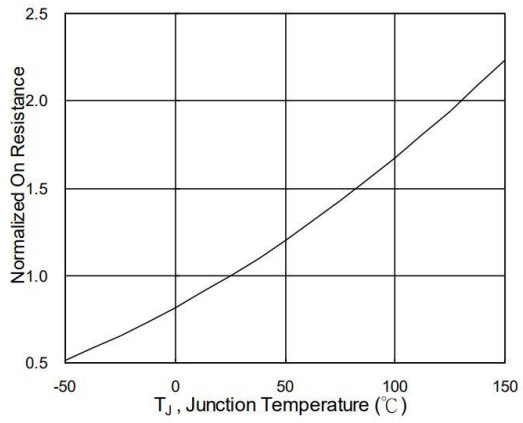


Fig 7. Capacitance

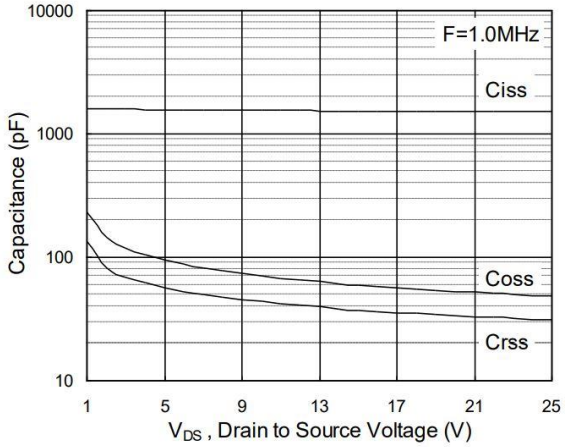


Fig 8. Safe Operating Area

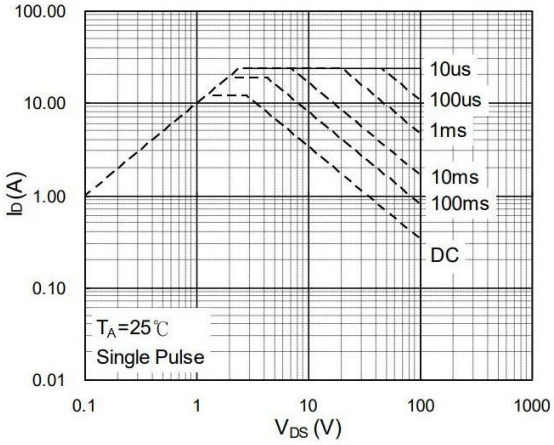


Fig 9. Normalized Maximum Transient Thermal Impedance

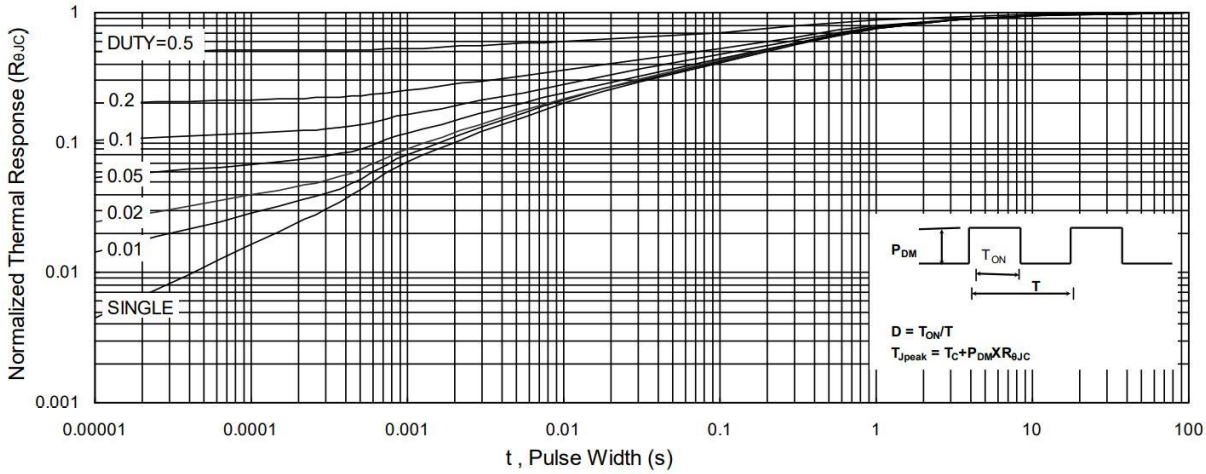


Fig 10. Switching Time Waveform

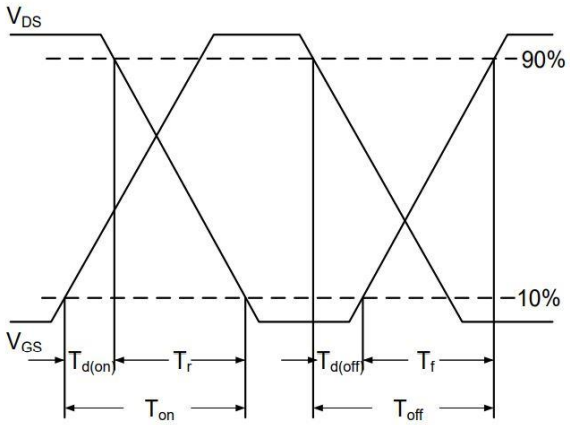
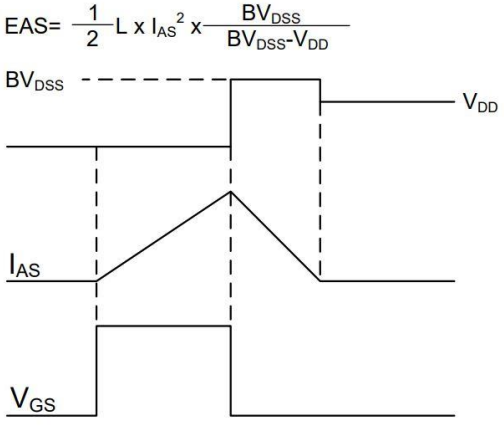
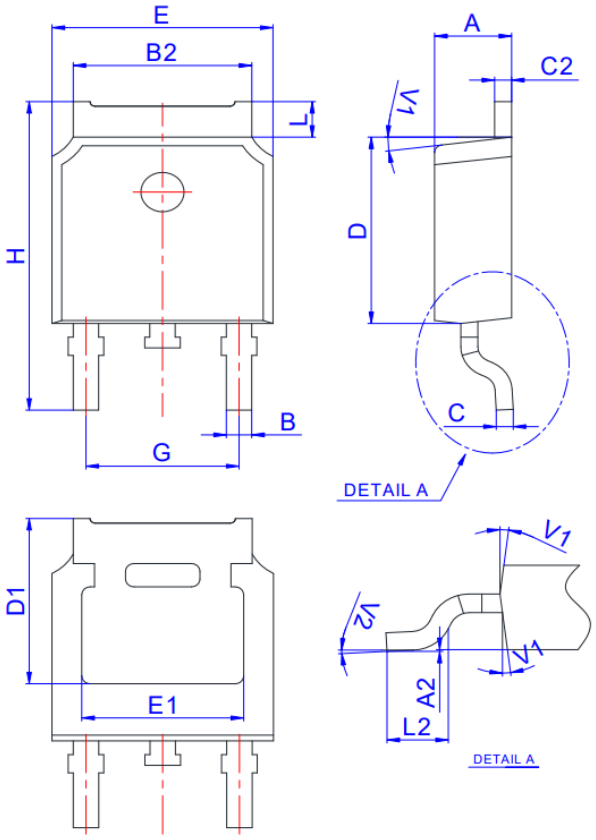


Fig 11. Unclamped Inductive Switching Waveform



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	2.10	2.50
A2	0	0.10
B	0.66	0.86
B2	5.18	5.48
C	0.40	0.60
C2	0.44	0.58
D	5.90	6.30
D1	5.30REF	
E	6.40	6.80
E1	4.63	
G	4.47	4.67
H	9.50	10.70
L	1.09	1.21
L2	1.35	1.65
V1	7”	
V2	0°	6°

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