DESCRIPTION

The AM50N10 is available in TO-252 package.

BVDSS	RDSON	ID
100V	17mΩ	50A
	21.5 mΩ	

FEATURE

- $R_{DS(ON)typ.}$ =17 mΩ@V_{GS}=10V
- $R_{DS(ON)typ.}$ =21.5 mΩ@V_{GS}=4.5V
- Low $R_{DS\ (on)}$ & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Switching and Soft Recovery

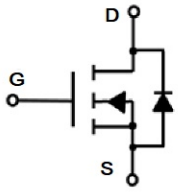
APPLICATION

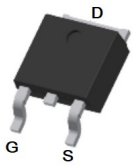
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ:2,500pcs/Reel	D	AM50N10DR
		AM50N10DVR
Note	V: Halogen free Package R: Tape & Reel	
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

T_A = 25°C, unless otherwise specified.

V_{DS}, Drain-Source Voltage		100V
V_{GS}, Gate-Source Voltage		±20V
I_D, Drain Current	T_C=25℃	50A
	T_C=100℃	28.5A
I_{DM}, Pulsed Drain Current (1)		180A
E_{AS}, Avalanche Energy (2)		81mJ
P_D, Total Power Dissipation (3)	T_C=25℃	72W
	T_C=100℃	28.8W
T_J, Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃

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) Repetitive rating; pulse width limited by max. junction temperature.

(2) V_{DD}=50V, V_{GS}=10V, L=5mH, I_{AS}=5.7A.

(3) Pd is based on max. junction temperature, using junction-case thermal resistance.

THERMAL RESISTANCE

Parameter		Min.	Typ.	Max.	Unit
$R_{\theta JA}$, Thermal Resistance Junction-to-Ambient*	t≤10S	-	15	20	℃/W
$R_{\theta JA}$, Thermal Resistance Junction-to-Ambient*	Steady-State	-	40	50	
$R_{\theta JC}$, Thermal Resistance Junction-to-Case	Steady-State	-	1.35	1.7	

*The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation PDSM is based on $R_{\theta JA}$ t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	1	1.8	3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A	-	14	17	mΩ
		V_{GS}= 4.5V, I_D=20A	-	17	21.5	mΩ
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V	-	-	1.3	V
Maximum Body-Diode Continuous Current	I_S		-	-	45	A
Gate Resistance	R_G	f= 1 MHz, Open drain	-	1	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V,	-	1135	-	pF
Output Capacitance	C_{oss}	V_{DS}=50V,	-	399	-	
Reverse Transfer Capacitance	C_{rss}	f=1MHz	-	18	-	
Switching Characteristics						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=25A	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	5.6	-	
Gate-Drain Charge	Q_{gd}		-	2.4	-	
Reverse Recovery Charge	Q_{rr}	I_F=20A, di/dt=100A/us	-	42	-	
Reverse Recovery Time	t_{rr}		-	39.8	-	ns
Turn-on Delay Time	$t_{d\ (ON)}$	V_{GS}=10V, V_{DD}=50V, I_D=25A R_{GEN}=2.2Ω	-	39.2	-	
Turn-on Rise Time	t_r		-	11	-	
Turn-off Delay Time	$t_{d\ (OFF)}$		-	53.2	-	
Turn-off fall Time	t_f		-	15.8	-	

TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Output Characteristics

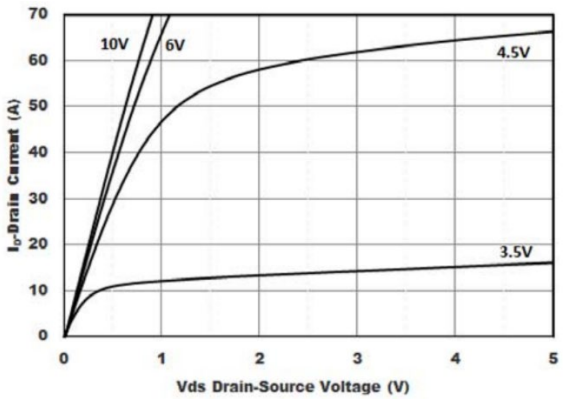


Fig 2. Transfer Characteristics

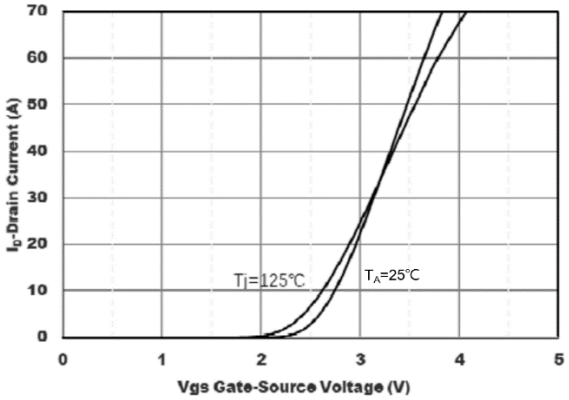


Fig 3. Capacitance Characteristics

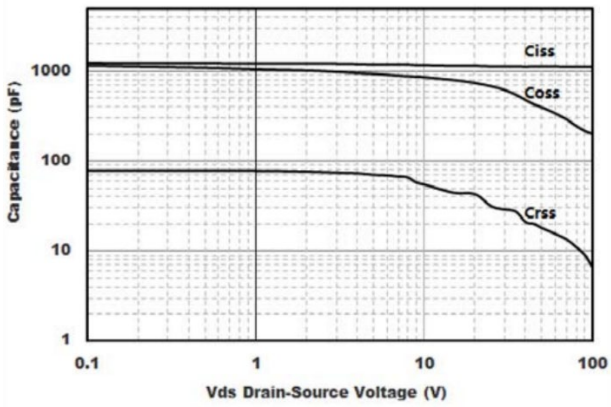


Fig 4. Gate Charge

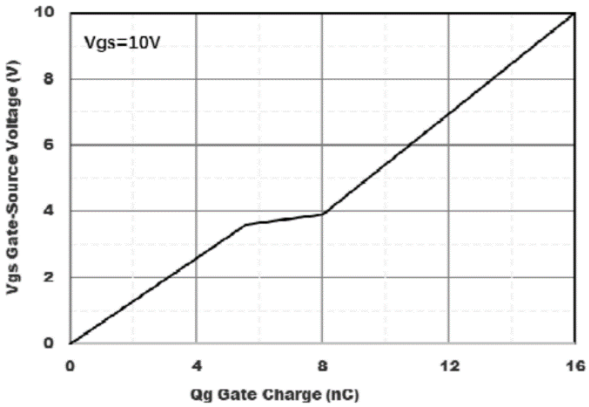


Fig 5. On-Resistance
vs. Drain Current and Gate Voltage

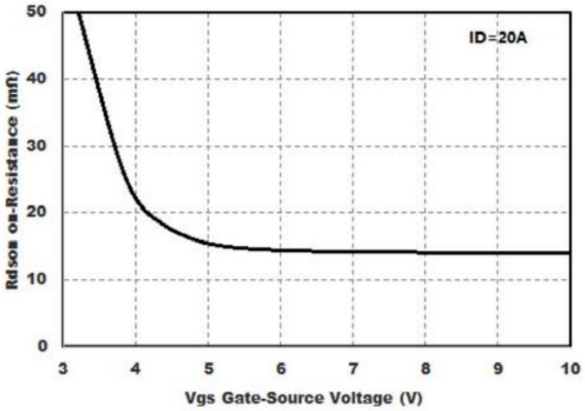


Fig 6. Normalized On-Resistance

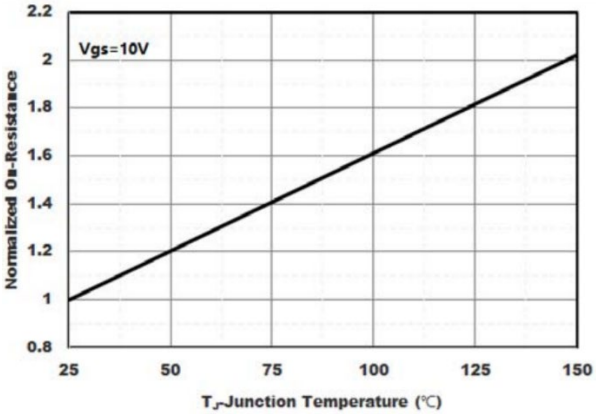


Fig7. Drain Current

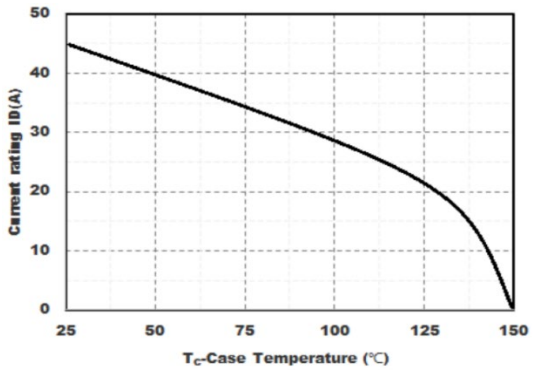


Fig 8. Safe Operation Area

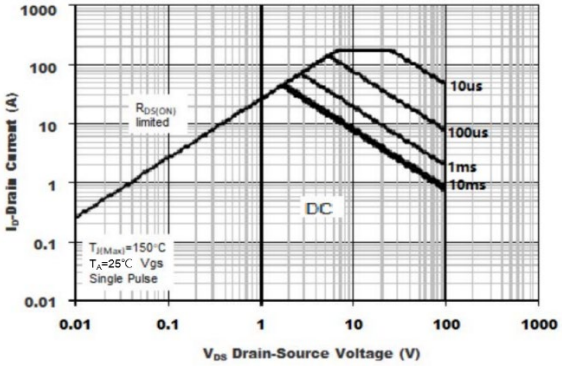
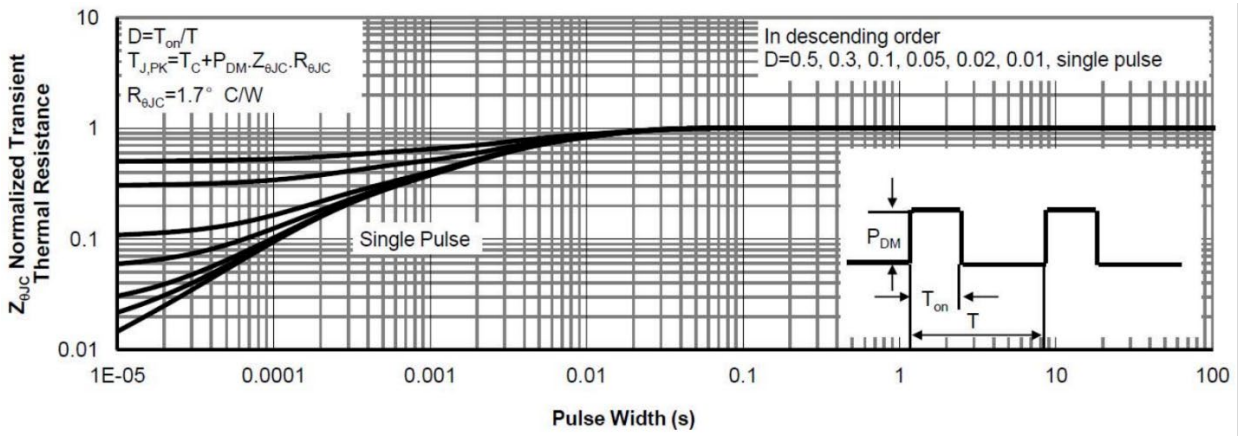
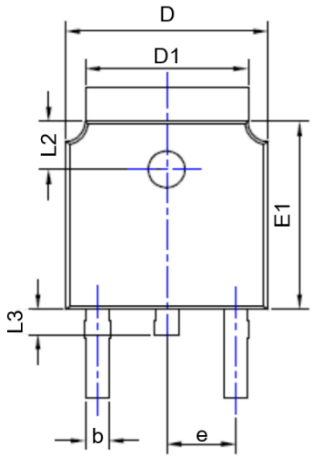


Fig 9. Normalized Maximum Transient Thermal Impedance

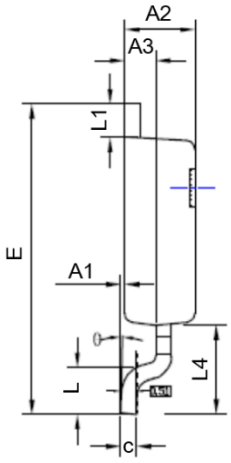


PACKAGE INFORMATION

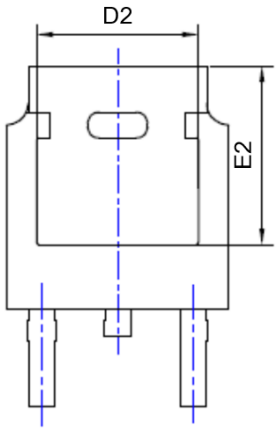
Dimension in TO-252 (Unit: mm)



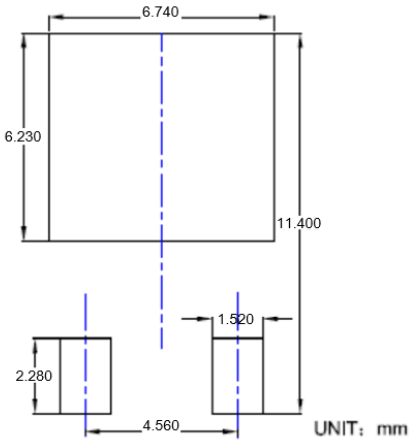
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SUGGESTED SOLDER PAD LAYOUT

Symbol	MILLIMETERS	
	Min.	Max.
A1	0.000	0.200
A2	2.200	2.400
A3	0.900	1.100
b	0.660	0.860
c	0.460	0.580
D	6.500	6.700
D1	5.150	5.450
D2	4.600	4.950
E	9.900	10.300
E1	6.000	6.200
E2	5.150	5.450
e	2.286 BSC	
L	1.250	1.750
L1	0.900	1.270
L2	1.400	1.900
L3	0.600	1.000
L4	2.900 REF	
θ	0°	10°

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