



DESCRIPTION

The AM14N10 is available in SOP8 Packages.

VDS	RDSON	ID
100V	6.6mΩ	14A

Application:

- Boost converters & synchronous rectifiers
- Telecom, Industrial Power Supplies
- LED Backlighting

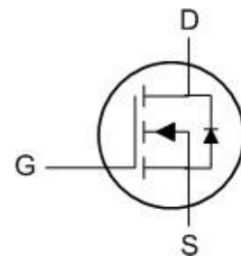
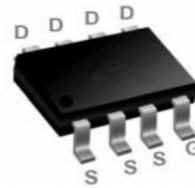
ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 3000pcs/Reel	M8	AM14N10M8R AM14N10M8VR
Note	V: Halogen free Package R: Tape &Reel	
AiT provides all RoHS products		

FEATURE

- $R_{DS(ON)typ.}=6.6m\Omega @ V_{GS}=10V$
- $R_{DS(ON)typ.}=8.7m\Omega @ V_{GS}=4.5V$
- Low Gate Charge

PIN DESCRIPTION



Pin#	Symbol	Function
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

**ABSOLUTE MAXIMUM RATINGS**T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹	I _{D@T_A=25°C}	13.5	A
Continuous Drain Current ¹	I _{D@T_A=70°C}	10.5	A
Pulsed Drain Current ⁽²⁾	I _{DM}	55	A
Single Pulse Avalanche Energy ⁽³⁾	EAS	33	mJ
Avalanche Current	I _{AS}	15	A
Total Power Dissipation ⁽⁴⁾	P _{D@T_A=25°C}	3.1	W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

THERMAL RESISTANCE

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Ambient ⁽¹⁾ (t ≤ 10s)	R _{θJA}	-	40	°C/W
Thermal Resistance Junction-Ambient ⁽¹⁾		-	75	°C/W
Thermal Resistance Junction-Case ⁽¹⁾	R _{θJC}	-	24	°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.



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} =0V, I _D =250uA	100	-	-	V
Static Drain-Source On-Resistance ⁽²⁾	R _{DS(ON)}	V _{GS} =10V, I _D =13.5A	-	6.6	8	mΩ
Static Drain-Source On-Resistance ⁽²⁾		V _{GS} =4.5V, I _D =11.5A	-	8.7	10.5	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	-	2.3	V
Drain-Source Leakage Current	I _{DS}	V _{DS} =80V, V _{GS} =0V T _J =25°C	-	-	1	uA
		V _{DS} =80V, V _{GS} =0V T _J =55°C	-	-	5	
Gate-Source Leakage Current	I _{GS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =13.5A	-	75	-	S
Total Gate Charge (10V)	Q _g	V _{DS} =50V, V _{GS} =10V I _D =13.5A	-	45	-	nC
Total Gate Charge (4.5V)	Q _g		-	19.3	-	
Gate-Source Charge	Q _{gs}		-	9.5	-	
Gate-Drain Charge	Q _{gd}		-	4.8	-	
Turn-On Delay Time	T _{d(on)}	V _{DD} =50V, V _{GS} =10V R _G =3Ω, I _D =13.5A	-	10	-	ns
Rise Time	T _r		-	6.5	-	
Turn-Off Delay Time	T _{d(off)}		-	45	-	
Fall Time	T _f		-	7.5	-	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V f=1MHz	-	3320	-	pF
Output Capacitance	C _{oss}		-	605	-	
Reverse Transfer Capacitance	C _{rss}		-	20	-	
Diode CHARACTERISTICS						
Continuous Source Current ^{(1),(5)}	I _S	V _G =V _D =0V, Force Current	-	-	5	A
Diode Forward Voltage ⁽²⁾	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	-	-	1.1	V
Reverse Recovery Time	t _{rr}	I _F =13.5A, di/dt=100A/μs,	-	33	-	nS
Reverse Recovery Charge	Q _{rr}	T _J =25°C	-	150	-	nC

(1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

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

(3) The test condition is V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=15A

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

(5) 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

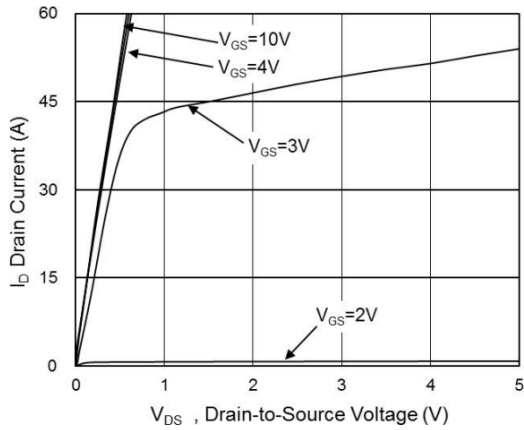


Fig 2. On-Resistance vs. G-S Voltage

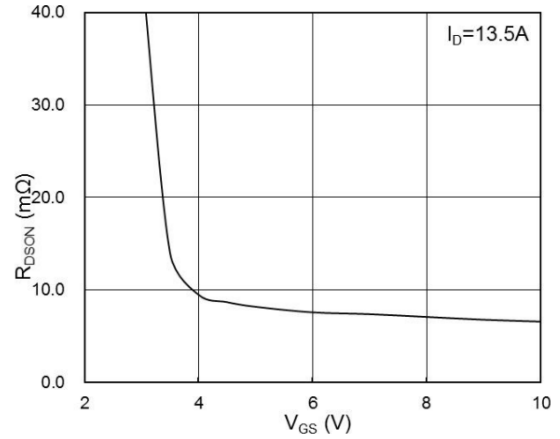


Fig 3. Source-Drain Forward Characteristics

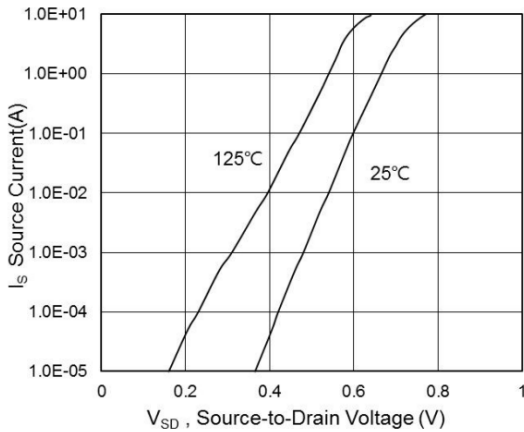


Fig 4. Gate-Charge Characteristics

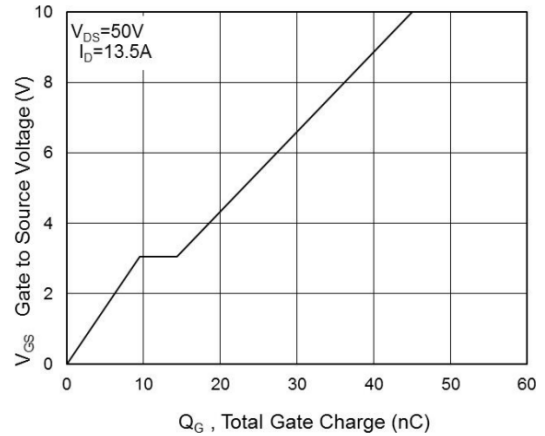


Fig 5. Normalized $V_{GS(th)}$ vs. T_J

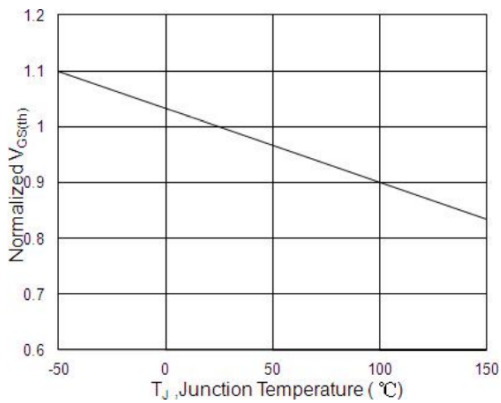


Fig 6. Normalized $R_{DS(on)}$ vs. T_J

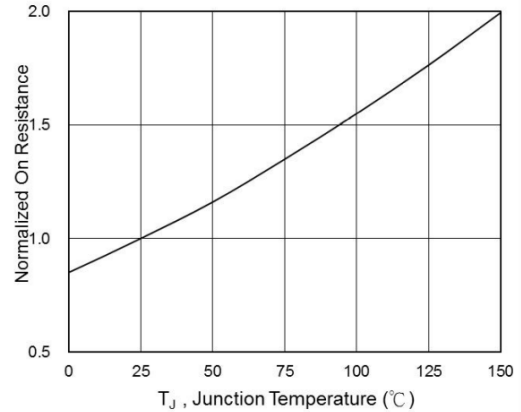




Fig 7. Capacitance

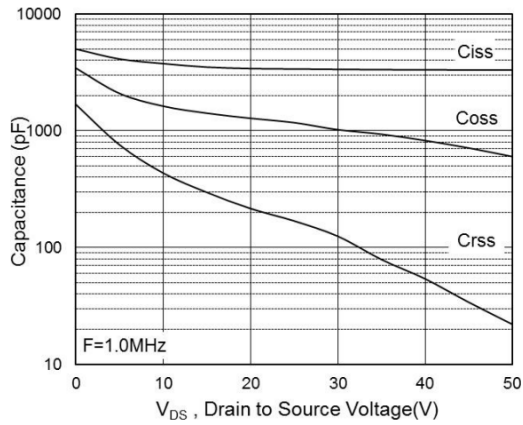


Fig 8. Safe Operating Area

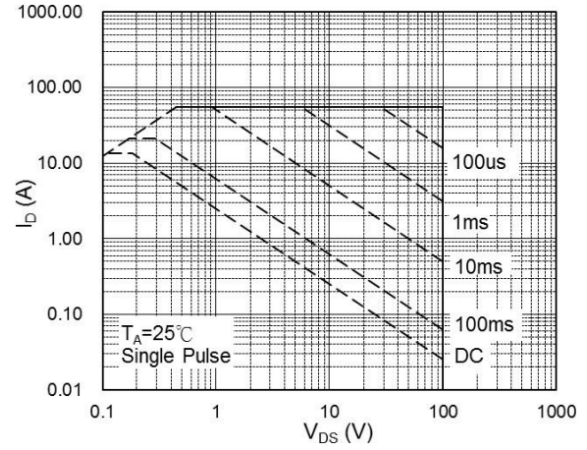


Fig 9. Normalized Maximum Transient Thermal Impedance

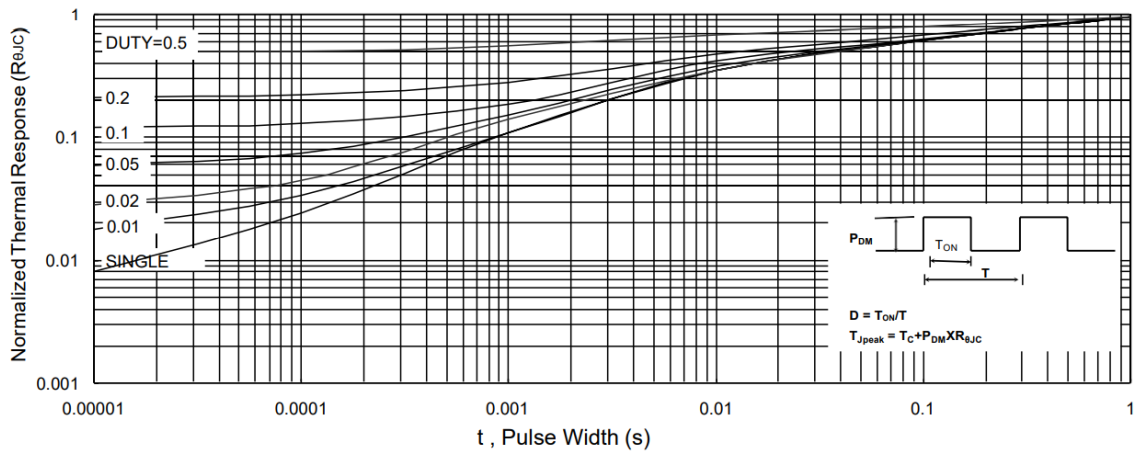


Fig 10. Switching Time Waveform

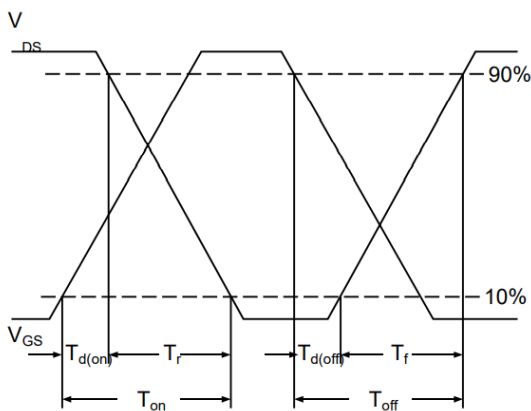
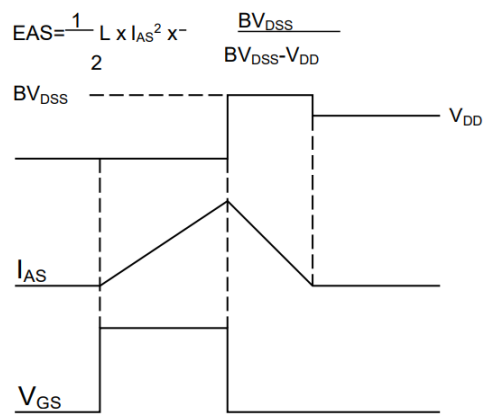


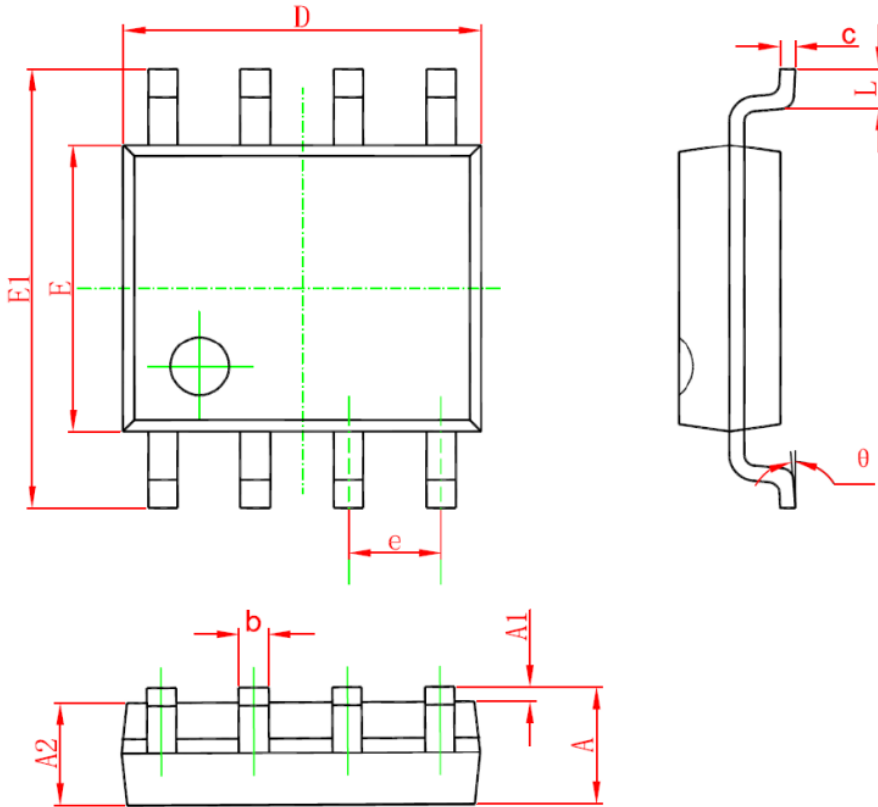
Fig 11. Unclamped Inductive





PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.700	5.100
E	3.800	4.000
E1	5.800	6.200
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°



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