DESCRIPTION

The AM045NS10LD is available in TO-252 Packages.

BVDSS	RDSON	ID
100V	45mΩ@10V	15A

APPLICATION

- Power switching application
- Battery management
- Uninterruptible power supply

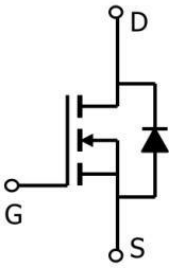
ORDERING INFORMATION

Package Type	Part Number	
TO-252	D	AM045NS10LD
Note	SPQ:2,500pcs/Reel	
AiT provides all RoHS products		

FEATURE

- Fast Switching
- Low Gate Charge and Rdson
- $R_{DS(ON)typ.}$= 45mΩ @ V_{GS}=10V
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

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_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	15	A
Continuous Drain Current (Tc=100℃)	I_D	10	A
Pulsed Drain Current	I_{DM}	60	A
Single Pulse Avalanche Energy[1]	E_{AS}	20	mJ
Power Dissipation (Tc=25℃)	P_D	35	W
Power Dissipation (Tc=100℃)	P_D	14	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	3.57	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 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) Pulse width limited by maximum junction temperature

(2) L=20mH, VDs=50V, Start T_A=25℃

(3) I_{SD} =4.8A,di/dt ≤100A/us,V_{DD}≤BV_{DSS}, Start T_A=25℃

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	100	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS=80V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID=250uA	1.5	1.9	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS=10V , ID=10A	-	45	56	mΩ
		VGS=4.5V , ID=8A	-	60	-	
Gate Resistance	R_G	VDS=50V , VGS=0V , f=1MHz	-	6.2	-	Ω
Dynamic Characteristics						
Input Capacitance	R_g	VDS=50V , GS=0V , f=1MHz	-	392	-	pF
Output Capacitance	Ciss		-	94	-	
Reverse Transfer Capacitance	Coss		-	7	-	
Total Gate Charge	Crss	VDS=50V , GS=10V , ID=10A	-	6	-	nC
Gate-Source Charge	Qg		-	1.5	-	
Gate-Drain Charge	Qgs		-	2	-	
Gate Plateau Voltage	Qgd		-	4	-	V
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=50V, VGS=10V , RG=3Ω , ID=10A	-	4.5	-	nS
Rise Time	t_r		-	5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	13	-	
Fall Time	t_f		-	5	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	IS=1A , VGS=0V , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	15	A
Reverse Recovery Time	Trr	IS=10A , i/dt=100A/us , TJ=25℃	-	2	-	nS
Reverse Recovery Charge	Qrr		-	35	-	nC

(4) ：Pulse width tp≤300μs, δ≤2%

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

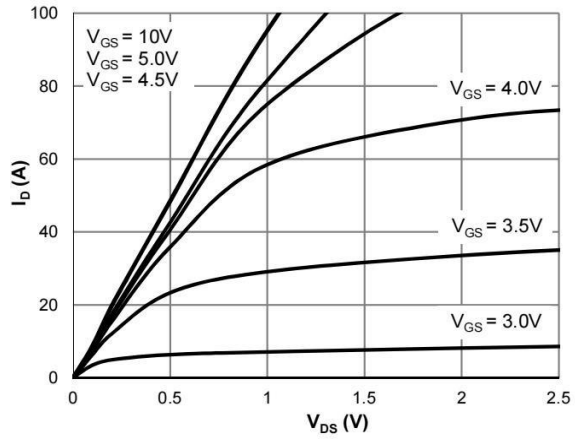


Fig 2. Transfer Characteristics

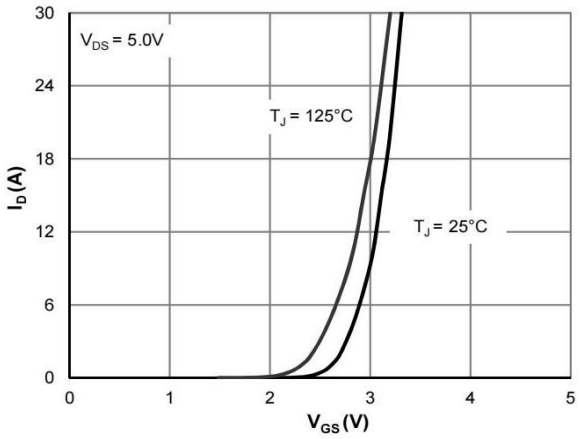


Fig 3. On-Resistance vs. Drain Current

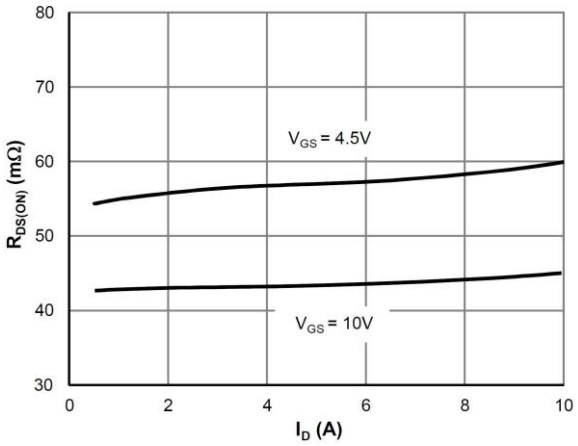


Fig 4. On-Resistance vs. Junction Temperature

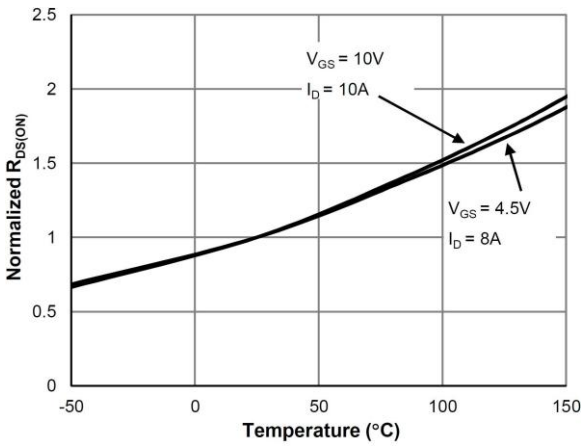


Fig 5. Body-Diode Characteristics

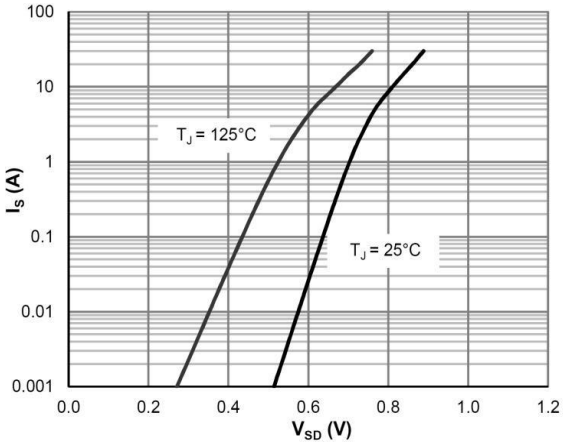


Fig 6. Capacitance Characteristics

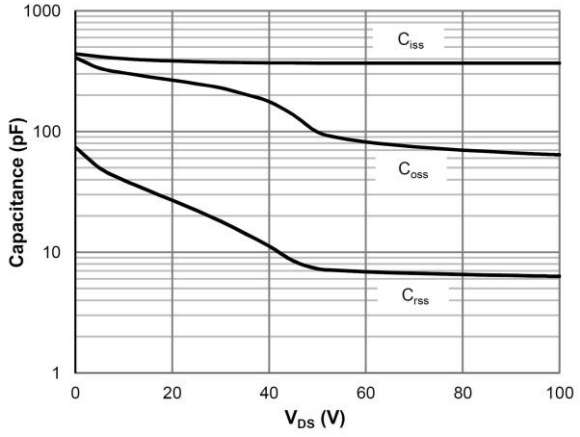


Fig 8. Current De-rating

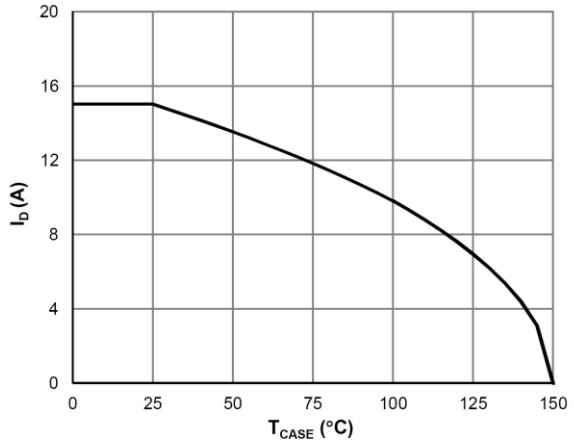


Fig 9. Power De-rating

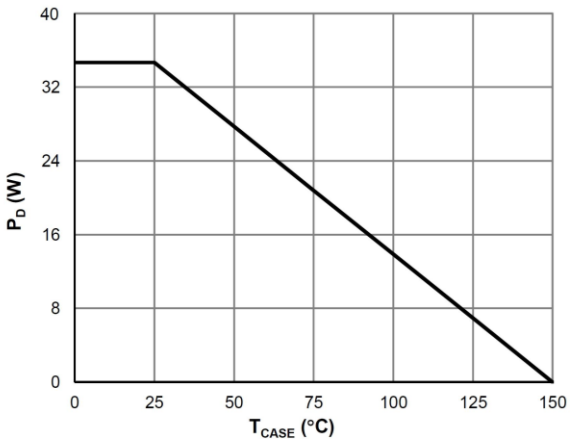


Fig 10. Maximum Safe Operating Area

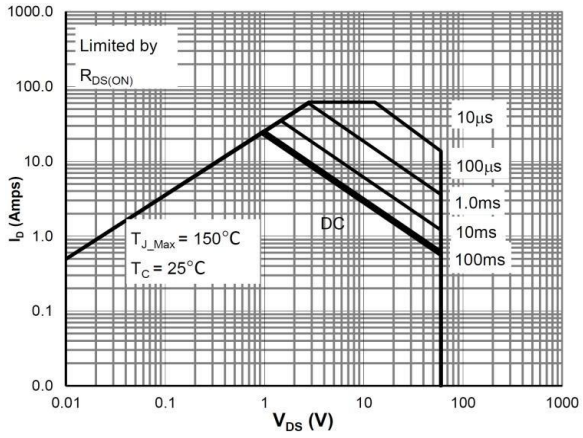


Fig 11. Single Pulse Power Rating, Junction-to-Case

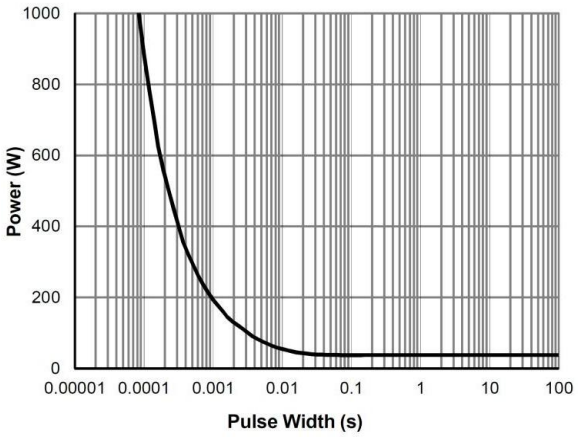
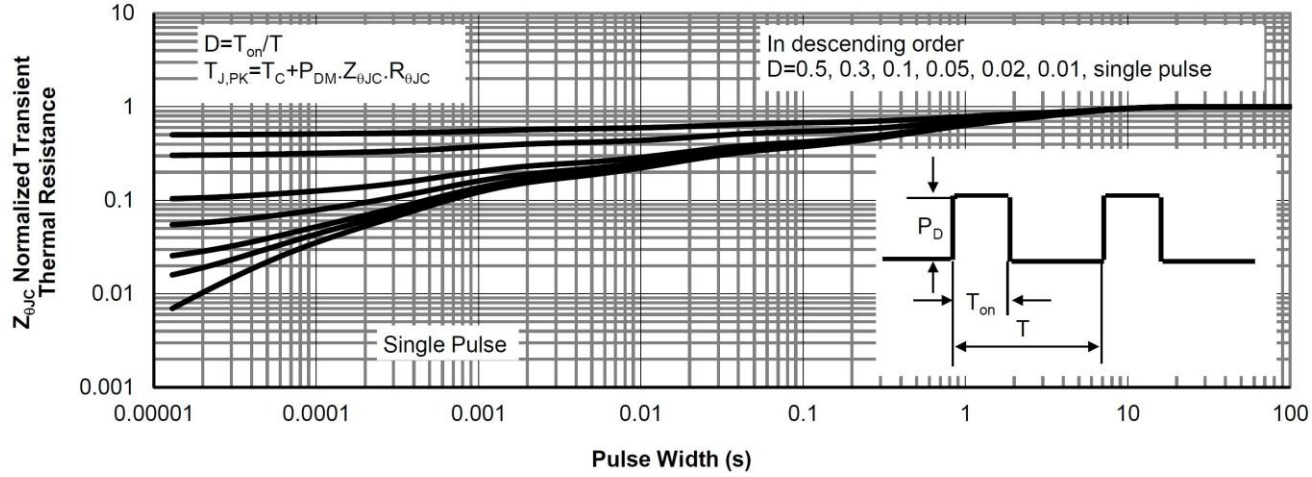


Fig 11. Normalized Maximum Transient Thermal Impedance



Test Circuit & Waveform

Fig 12. Gate Charge Test Circuit & Waveform

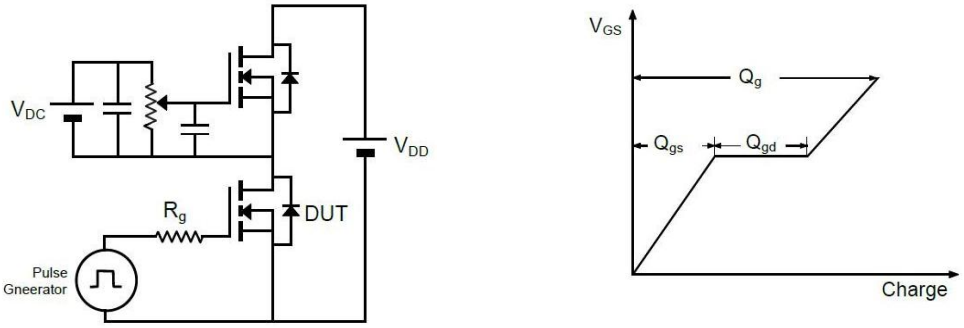


Fig 13. Resistive Switching Test Circuit & Waveform

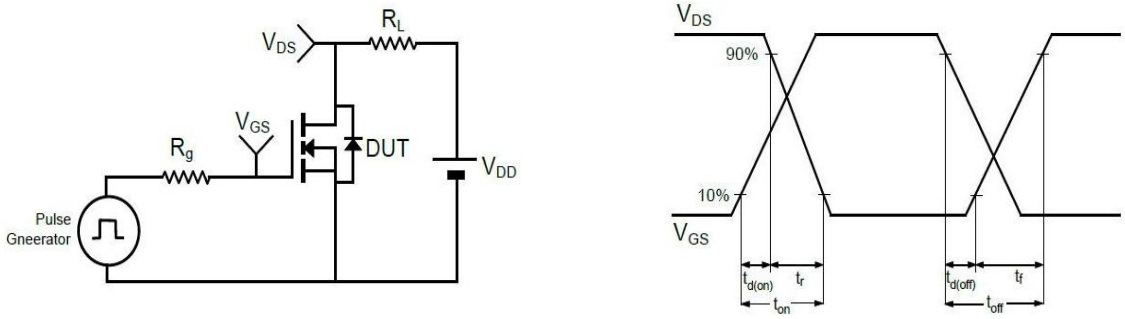


Fig 14. Un-clamped Inductive Load Switching Test Circuit & Waveform

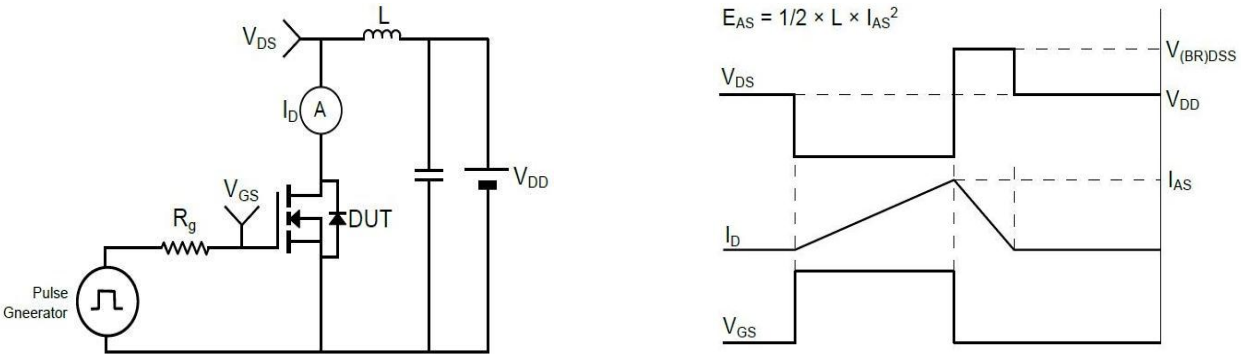
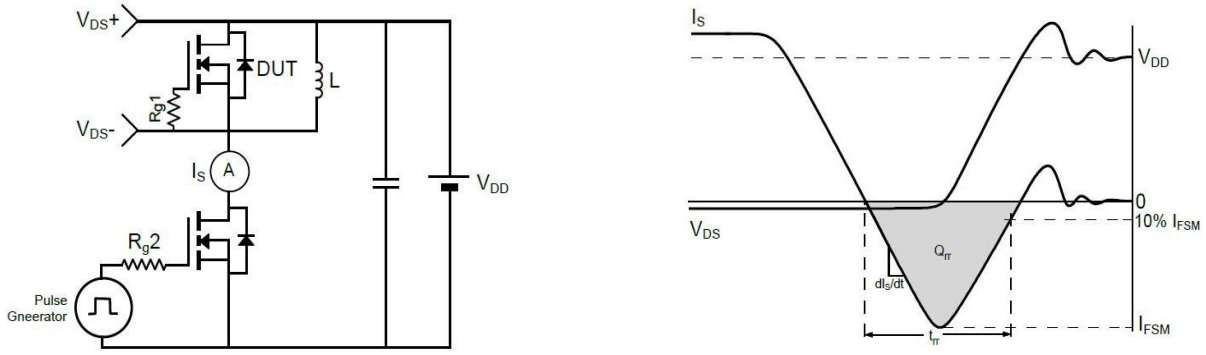
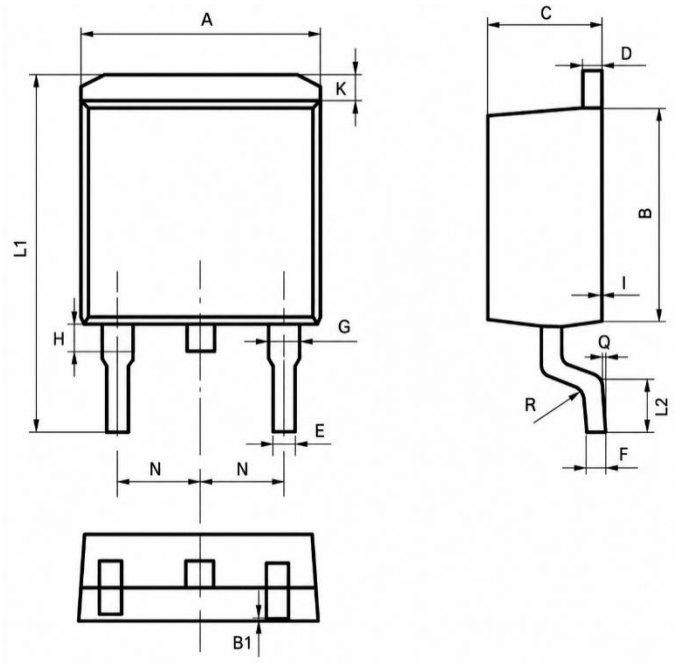


Fig 15. Drain-Sourse Body Diode Reverse Recovery Test Circuit & Waveforms



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	9.800	10.40
B	8.900	9.500
B1	0	0.100
C	4.400	4.800
D	1.160	1.370
E	0.700	0.950
F	0.300	0.600
G	1.070	1.470
H	1.300	1.800
K	0.950	1.370
L1	14.50	16.50
L2	1.600	2.300
I	0	0.2
Q	0°	8°
R	0.4	
N	2.390	2.690

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