DESCRIPTION

The AM76NS04LPJ is available in PDFN8(5x6) Package.

VDSS	RDSON		ID
	V_{GS} = 10V	V_{GS} = 4.5V	
40V	0.76mΩ	1.10mΩ	250A

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

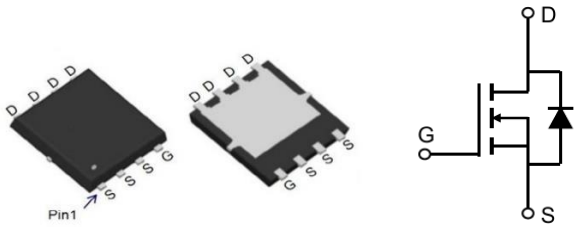
ORDERING INFORMATION

Package Type	Part Number	
PDFN8(5x6) SPQ: 5,000pcs/Reel	PJ8	AM76NS04LPJ8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURE

- 40V, 250A
- $R_{DS(ON)}$ Typ.=0.76mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ Typ.=1.1mΩ @ V_{GS} = 4.5V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!

PIN DESCRIPTION



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

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

V_{DS}, Drain-to-Source Voltage		40V
V_{GS}, Gate-to-Source Voltage		±20V
I_D, Continuous Drain Current	T_C = 25°C	250A
	T_C = 100°C	160A
I_{DM}, Pulsed Drain Current (1)		1000A
E_{AS}, Single Pulsed Avalanche Energy (2)		576mJ
P_D, Power Dissipation	T_C = 25°C	114W
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case		1.1°C/W
T_{STG}, Storage Temperature Range		-55°C ~ +150°C
T_J, Junction Temperature Range		-55°C ~ +150°C

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 Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=48A

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D = 250μA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	μA
Gate-Body 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	1.50	2.00	V
Static Drain-Source ON-Resistance *	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 30A	-	0.76	1.00	mΩ
		V_{GS} = 4.5V, I_D = 20A	-	1.10	1.45	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 20V, V_{GS}=0V, f=1.0MHZ	-	5509	-	pF
Output Capacitance	C_{oss}		-	1913	-	
Reverse Transfer Capacitance	C_{rss}		-	148	-	
Total Gate Charge	Q_g	V_{DS} = 32V , I_D =20A V_{GS}=0V ~ 10V	-	103	-	nC
Gate-Source Charge	Q_{gs}		-	51	-	
Gate-Drain("Miller") Charge	Q_{gd}		-	11	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=20V, I_D = 20A R_{GEN}=3Ω, V_{GS}= 10V	-	18	-	ns
Turn-On Rise Time	t_r		-	100	-	
Turn-Off Delay Time	$t_{d(off)}$		-	204	-	
Turn-Off Fall Time	t_f		-	73	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	250	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}		-	-	1000	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S= 30A	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F= 30A di/dt=100A/us	-	34	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	45	-	nC

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

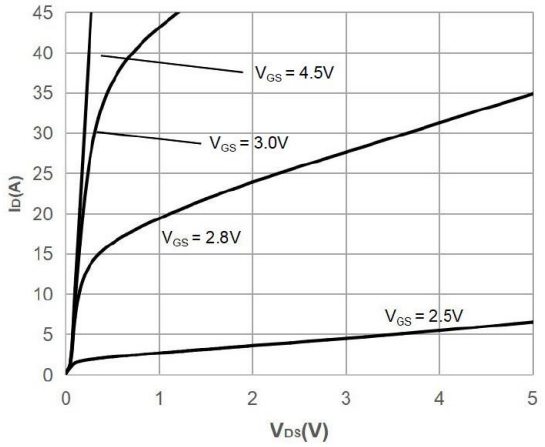


Fig 2. Typical Transfer Characteristics

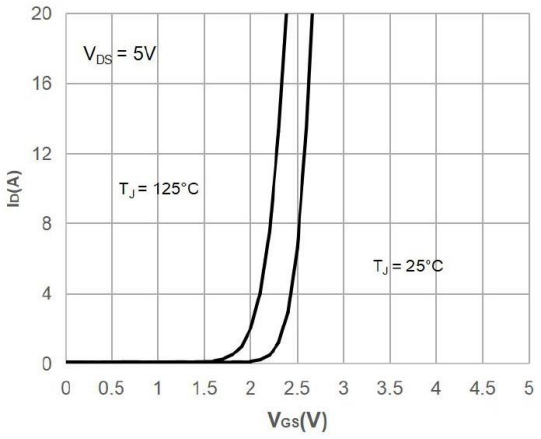


Fig 3. On-Resistance vs. Drain Current

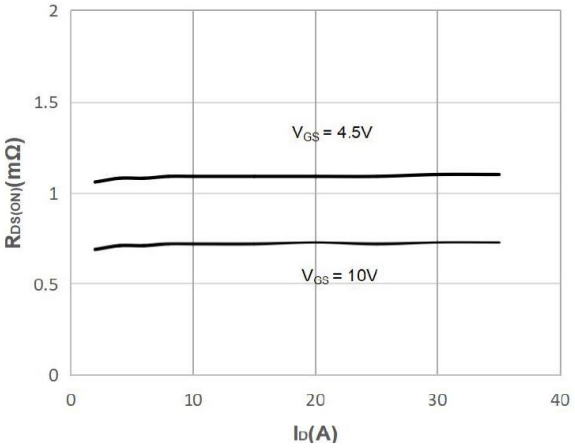


Fig 4. Body Diode Characteristics

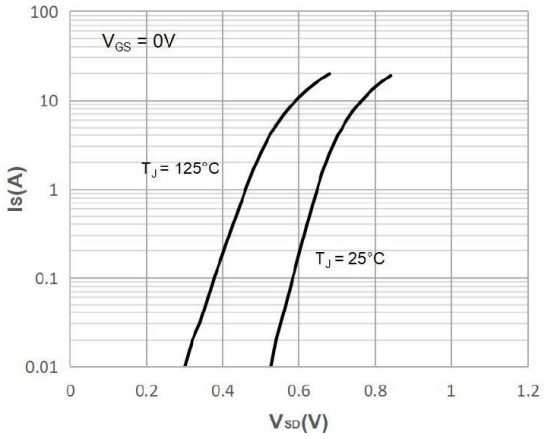


Fig 5. Gate Charge Characteristics

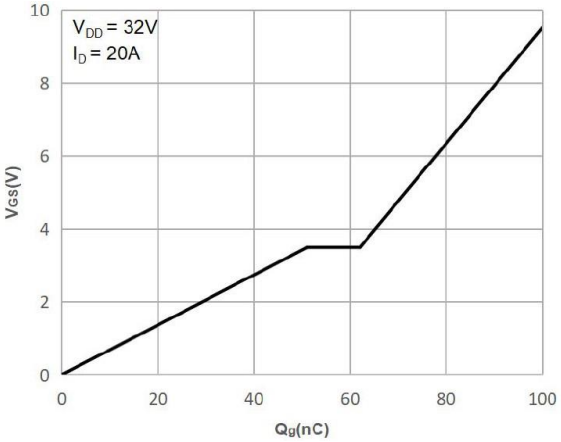


Fig 6. Capacitance Characteristics

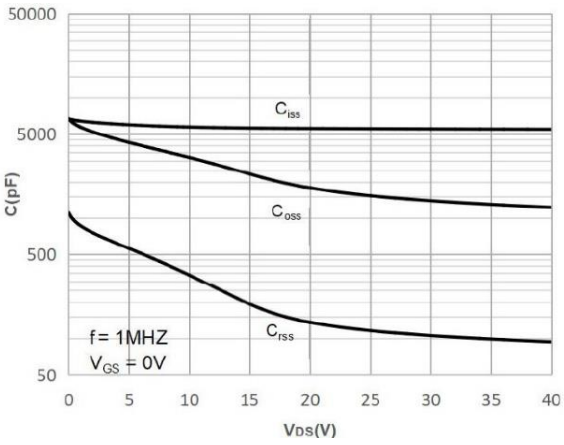


Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

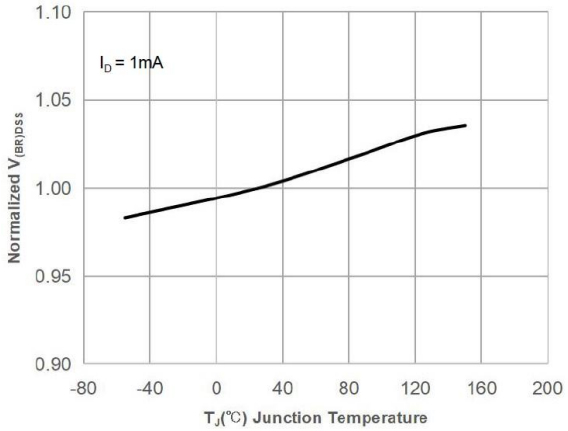


Fig 8. Normalized On-Resistance vs. Junction Temperature

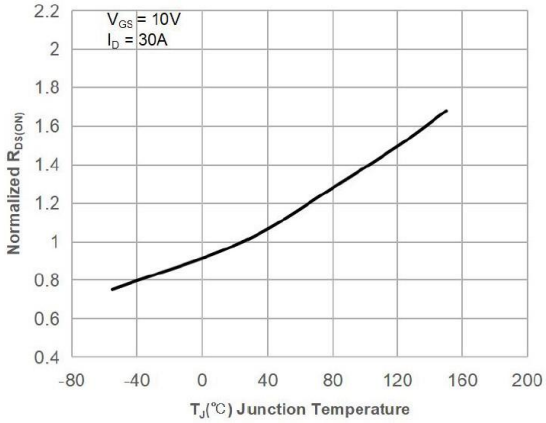


Fig 9. Maximum Safe Operating Area

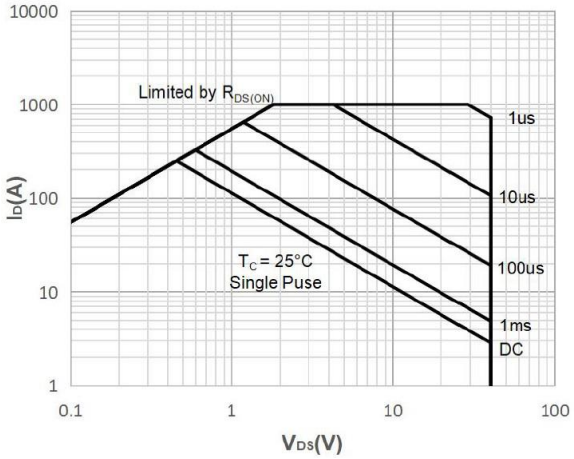


Fig 10. Maximum Continuous Drain Current vs. Case Temperature

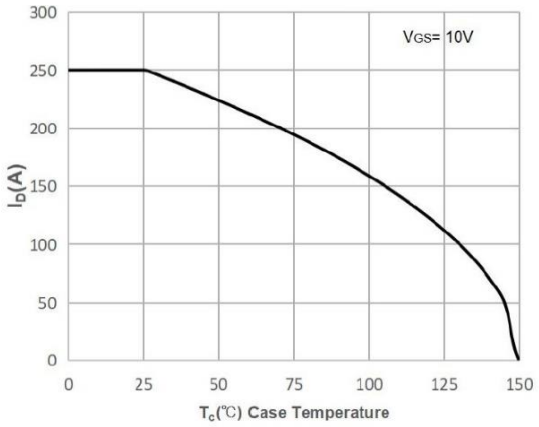


Fig 11. Normalized Maximum Transient Thermal Impedance

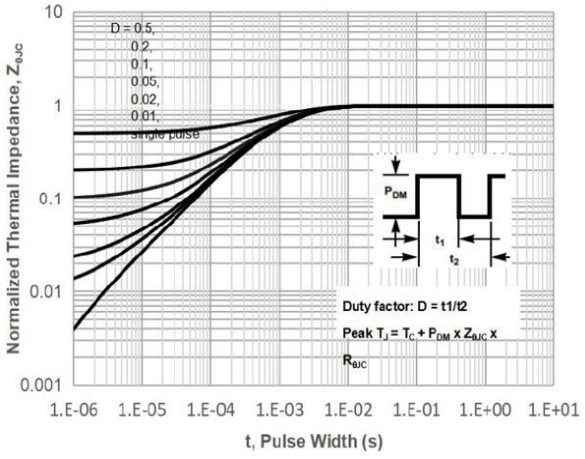


Fig 12. Peak Current Capacity

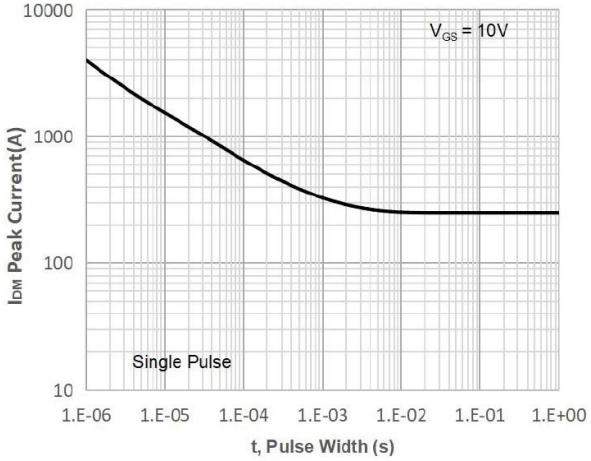


Fig 13. Gate Charge Test Circuit & Waveform

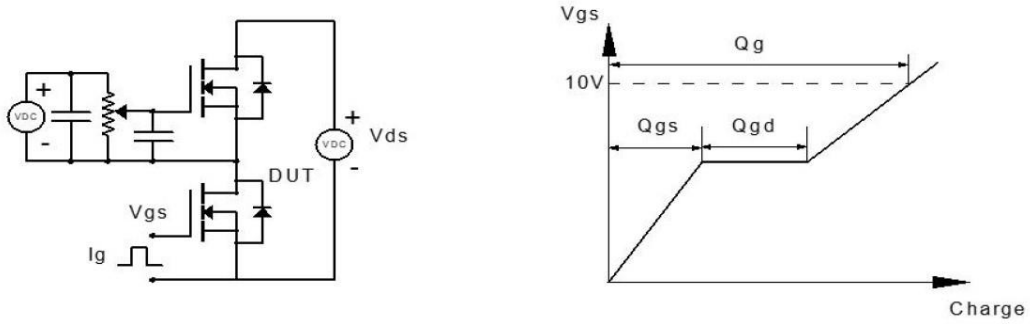


Fig 14. Resistive Switching Test Circuit & Waveform

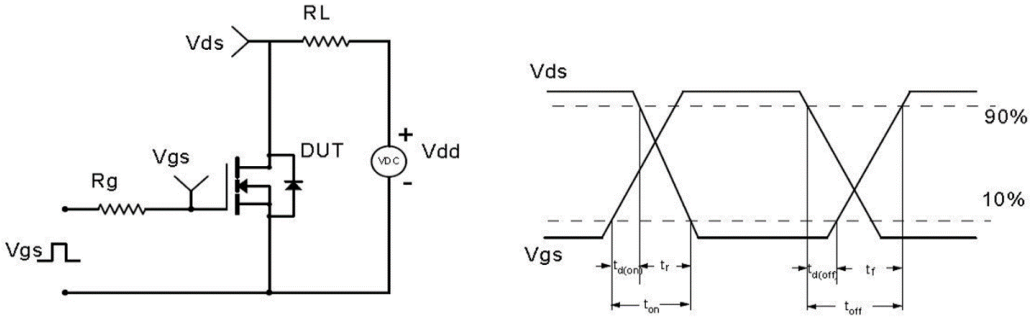


Fig 15. Unclamped Inductive Switching Test Circuit& Waveform

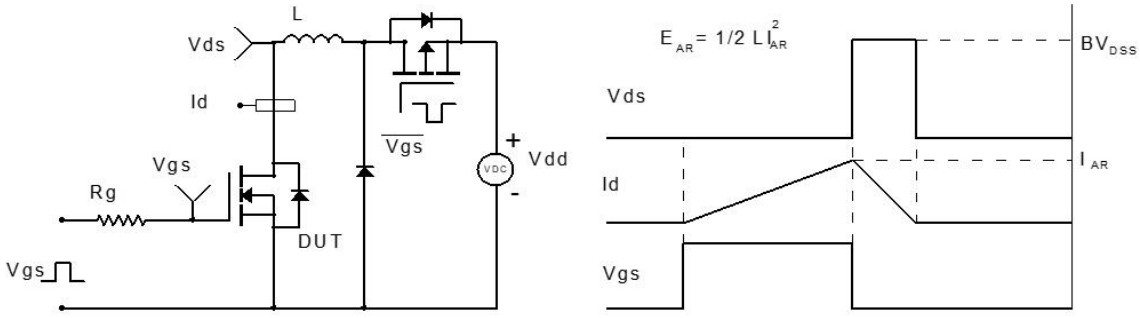
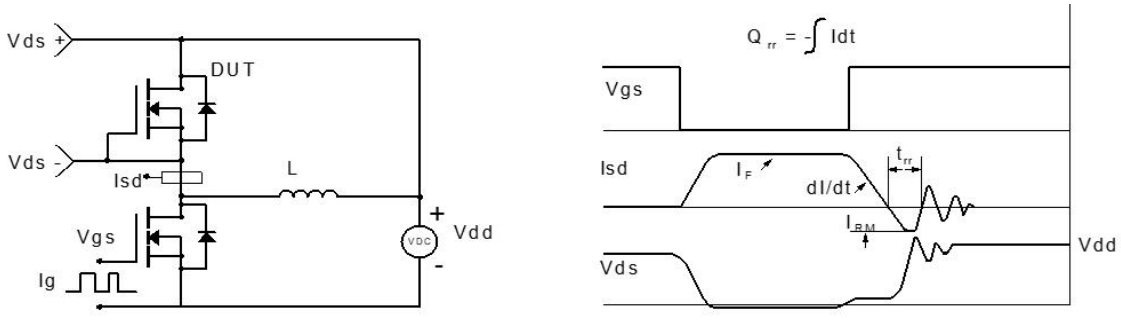
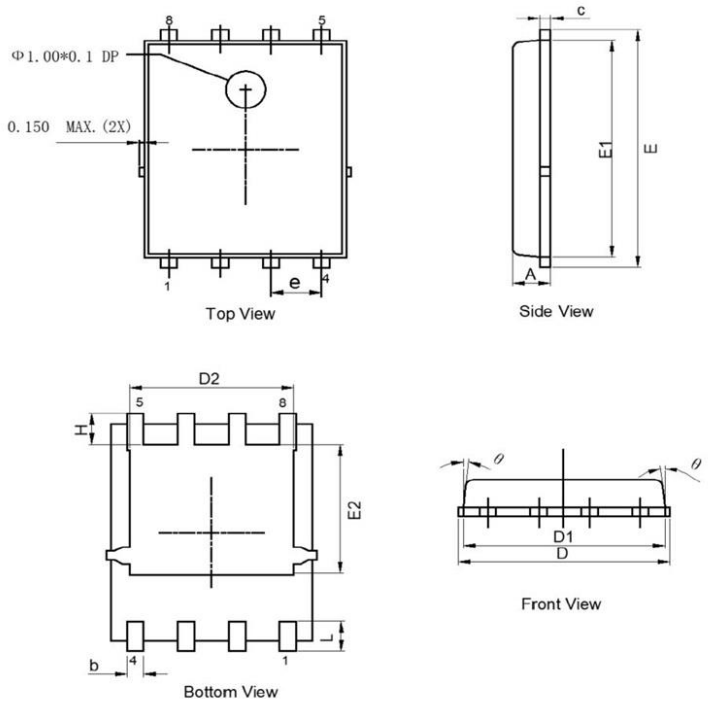


Fig 16. Diode Recovery Test Circuit & Waveform



PACKAGE INFORMATION

Dimension in PDFN8 (5x6) (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	0.900	1.100
b	0.310	0.510
c	0.210	0.340
D	5.050	5.400
D1	4.950	5.150
D2	4.000	4.200
E	6.300	6.500
E1	5.750	5.950
E2	3.430	3.630
e	1.270 BSC.	
H	0.730	0.930
L	0.610	0.810
θ	0°	12°

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