

**DESCRIPTION**

The AM025NS10HPJ is available in PDFN8(5x6) Package.

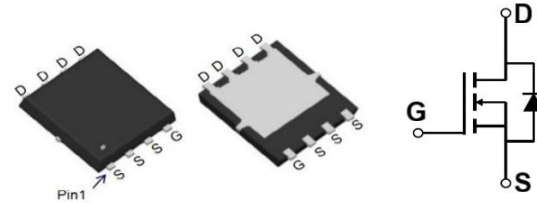
VDSS	RDS(ON)	ID
100V	2.5mΩ	165A

APPLICATIONS

- AI Server
- Load Switch
- PWM Application
- Power Management

FEATURE

- 100V, 165A
- $R_{DS(ON)}$ Typ.= 2.5mΩ @ $V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!

PIN DESCRIPTION**ORDERING INFORMATION**

Package Type	Part Number	
PDFN8(5x6) SPQ: 5,000pcs/Reel	PJ8	AM025NS10HPJ8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

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

ABSOLUTE MAXIMUM RATINGS

$T_J = 25^\circ\text{C}$, unless otherwise specified.

V_{DS} , Drain-to-Source Voltage		100V
V_{GS} , Gate-to-Source Voltage		$\pm 20V$
I_D , Continuous Drain Current	$T_C = 25^\circ\text{C}$	165A
	$T_C = 100^\circ\text{C}$	99A
I_{DM} , Pulsed Drain Current ⁽¹⁾		660A
E_{AS} , Single Pulsed Avalanche Energy ⁽²⁾		473mJ
P_D , Power Dissipation	$T_C = 25^\circ\text{C}$	171W
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case		0.73°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 $T_J=25^\circ\text{C}$, $V_{DD}= 50V$, $V_G=10V$, $R_G=25\text{ohm}$, $L=0.5\text{mH}$, $I_{AS}=43.5A$

**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	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100V, V _{GS} =0V	-	-	1.0	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	2.2	2.7	3.4	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 30A	-	2.5	3.2	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, f=1.0MHZ	-	3832	-	pF
Output Capacitance	C _{oss}		-	1546	-	
Reverse Transfer Capacitance	C _{rss}		-	20	-	
Total Gate Charge	Q _g	V _{DS} = 50V , I _D = 20A V _{GS} =0V ~ 10V	-	68	-	nC
Gate-Source Charge	Q _{gs}		-	16.5	-	
Gate-Drain(“Miller”) Charge	Q _{gd}		-	15	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50V, I _D = 40A R _{GEN} =3Ω, V _{GS} = 10V	-	18.5	-	ns
Turn-On Rise Time	t _r		-	16	-	
Turn-Off Delay Time	t _{d(off)}		-	18	-	
Turn-Off Fall Time	t _f		-	15.5	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	165	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	-	-	-	660	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 = 40A,	-	78	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	170	-	nC

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



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

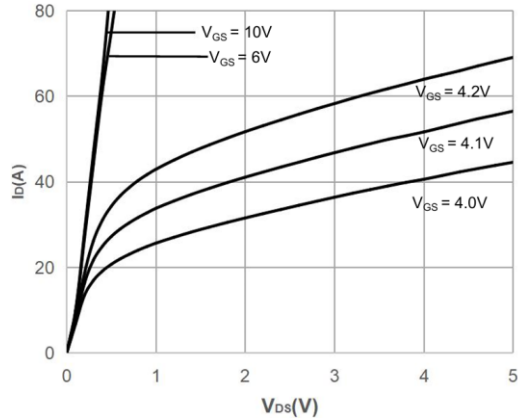


Fig 2. Typical Transfer Characteristics

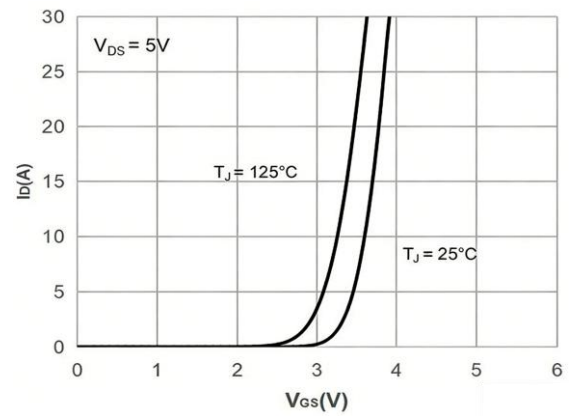


Fig 3. On-Resistance vs. Drain Current

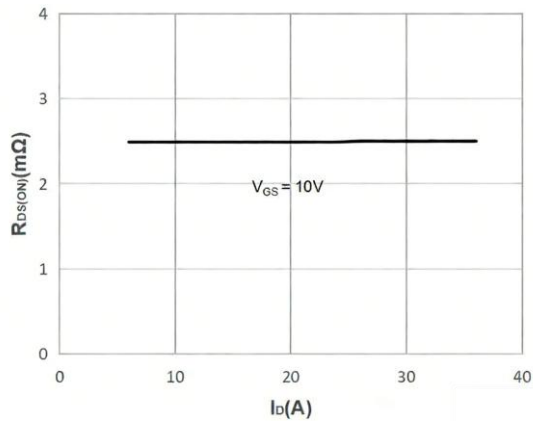


Fig 4. Body Diode Characteristics

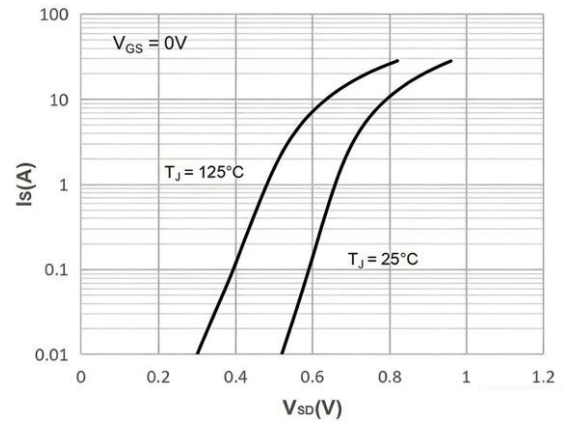


Fig 5. Gate Charge Characteristics

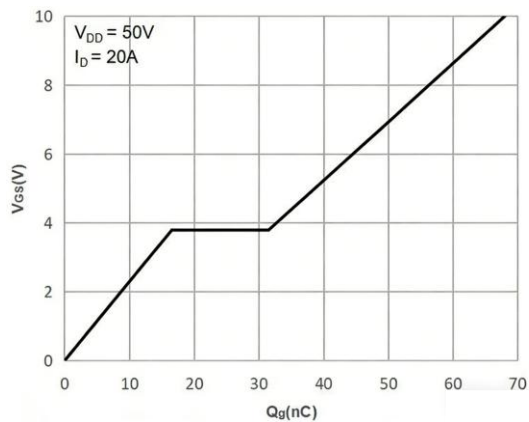


Fig 6. Capacitance Characteristics

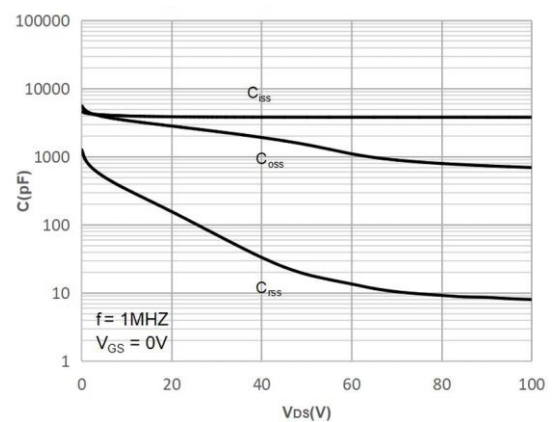




Fig 7. Normalized Breakdown Voltage
vs. Junction Temperature

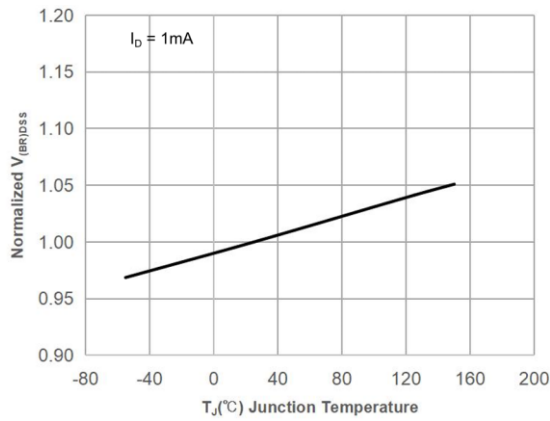


Fig 8. Normalized on Resistance
vs. Junction Temperature

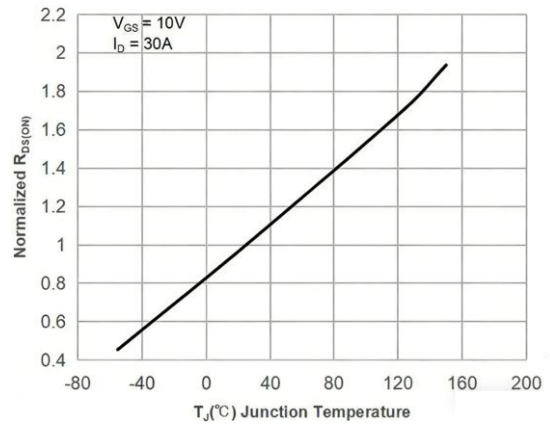


Fig 9. Maximum Safe Operating Area

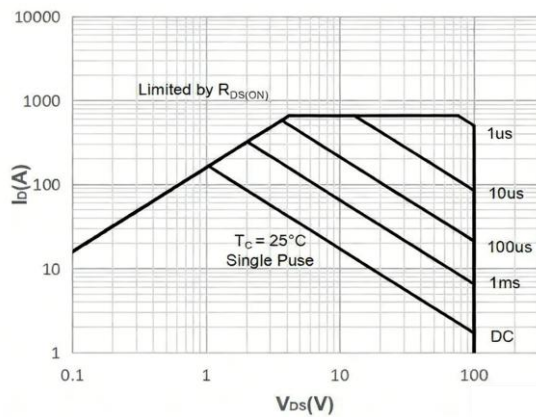


Fig 10. Maximum Continuous Drain Current
vs. Case Temperature

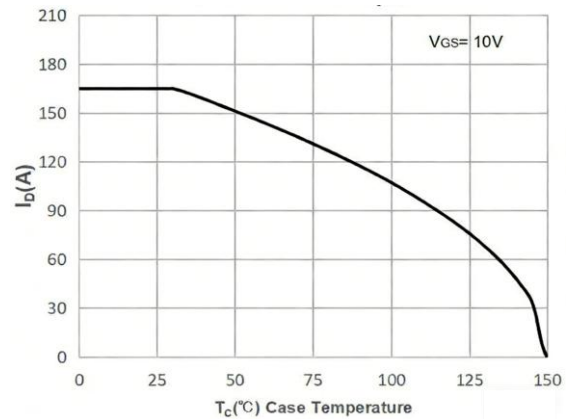


Fig 11. Normalized Maximum Transient Thermal
Impedance

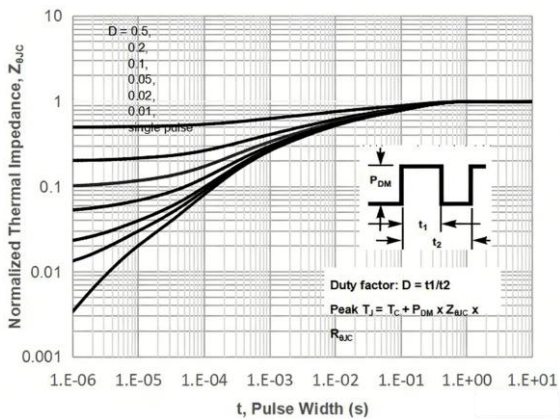


Fig 12. Peak Current Capacity

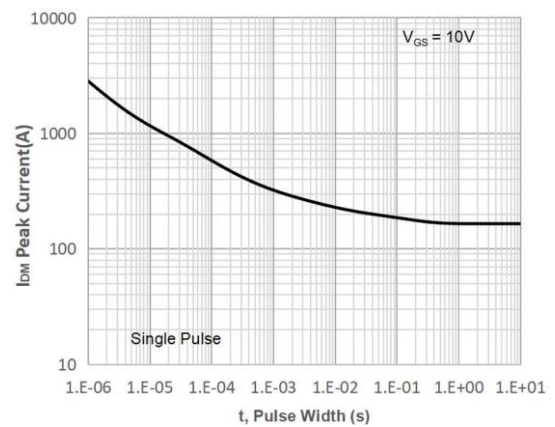




Fig 13. Gate Charge Test Circuit & Waveform

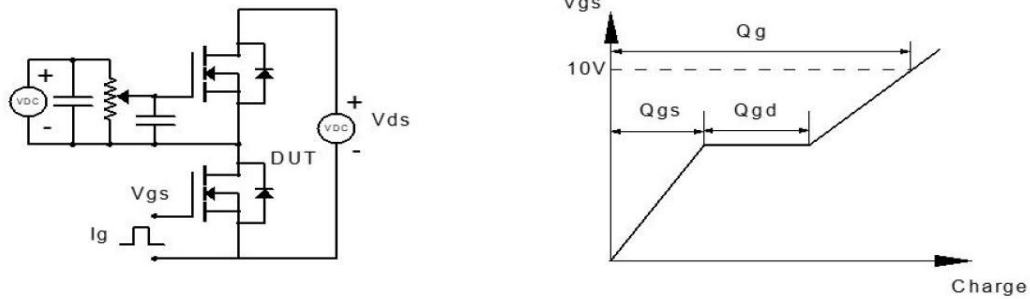


Fig 14. Resistive Switching Test Circuit & Waveform

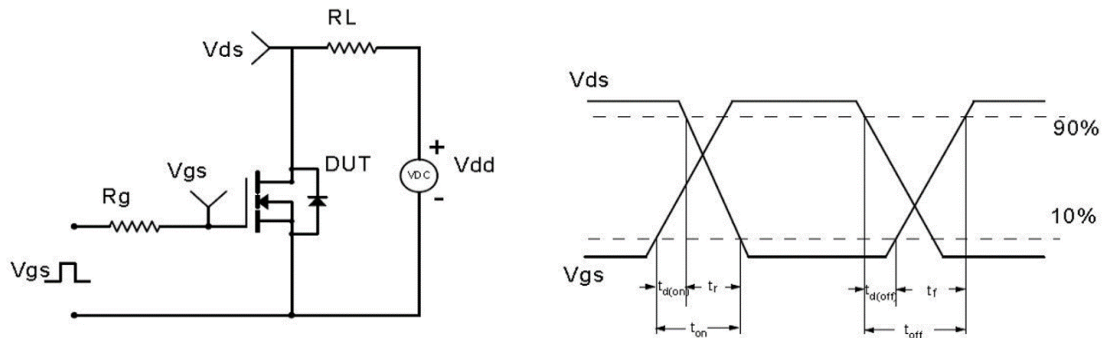


Fig 15. Unclamped Inductive Switching Test Circuit & Waveform

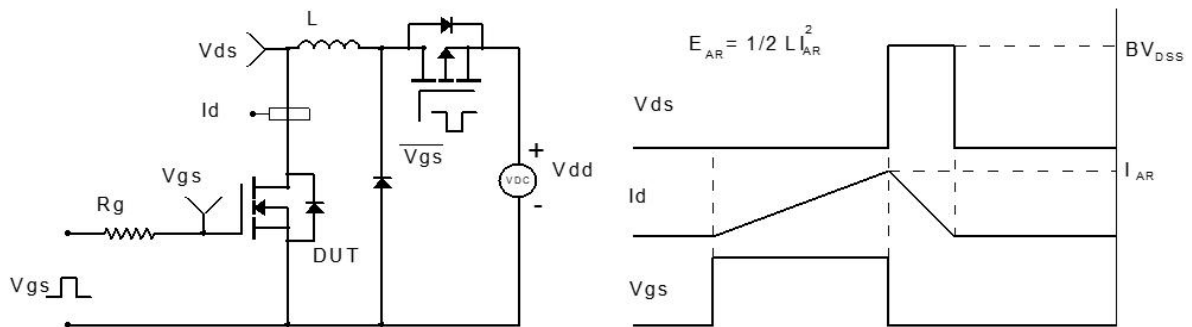
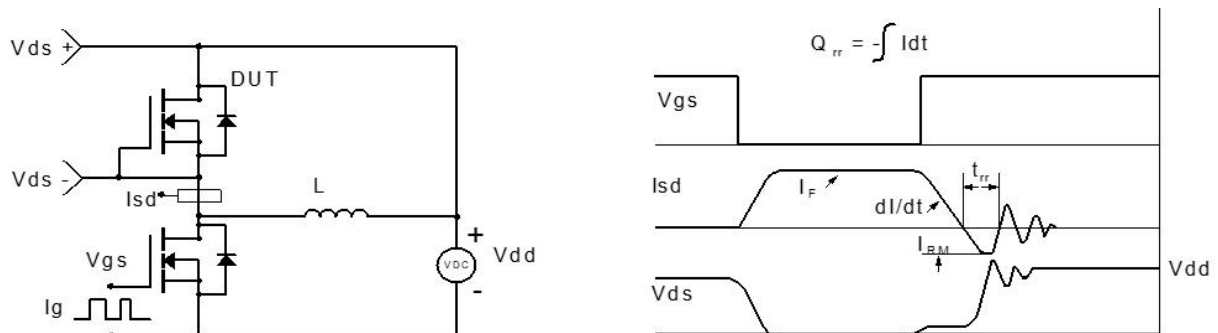


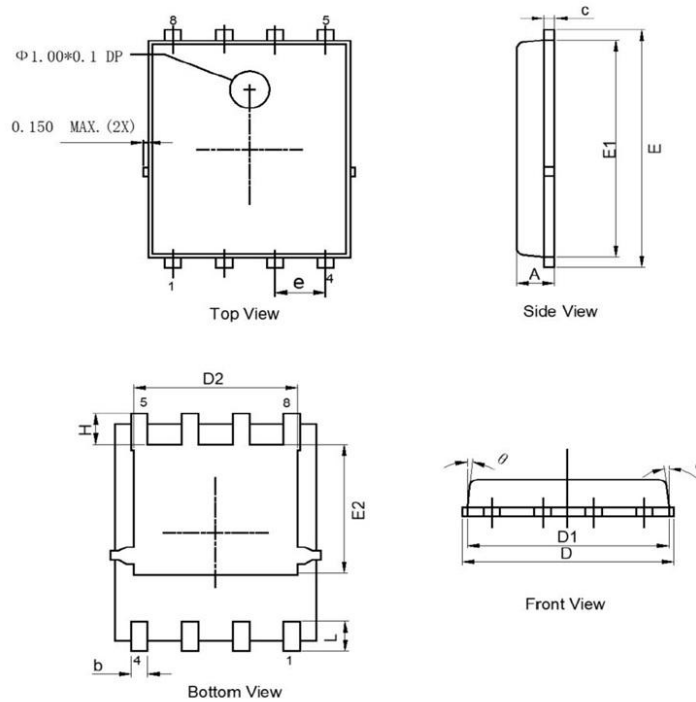
Fig 16. Diode Recovery Test Circuit & Waveform





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°

**IMPORTANT NOTICE**

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