

**DESCRIPTION**

The AM039NS10HPJ is available in a PDFN8(5x6) package.

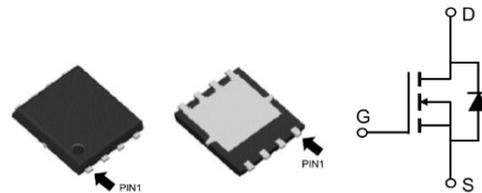
VDSS	RDSON	ID
100V	3.9mΩ	105A

APPLICATIONS

- Load Switch
- Motor Control and Drive
- Charge/Discharge for Battery Management System
- SMPS, Power Management

FEATURE

- 100V, 105A
- $R_{DS(ON)}$ Typ.= 3.9mΩ @ $V_{GS} = 10V$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% Avalanche Screened
- 100% ΔV_{ds} Tested!

PIN DESCRIPTION**ORDERING INFORMATION**

Package Type	Part Number	
PDFN8(5x6) SPQ: 5000pcs/Reels	PJ8	AM039NS10HPJ8VR
Note	V: Halogen Free R: Tape & Reel	
AiT provides all RoHS products		

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

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

V_{DS} , Drain-to-Source Voltage	100V	
V_{GS} , Gate Source Voltage	$\pm 20V$	
I_D , Continuous Drain Current	$T_C = 25^\circ\text{C}$	105A
	$T_C = 100^\circ\text{C}$	66A
I_{DM} , Pulsed Drain Current ⁽¹⁾	420A	
E_{AS} , Avalanche Energy, Single Pulse ⁽²⁾	550mJ	
P_D , Power Dissipation	$T_C = 25^\circ\text{C}$	86W
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case	1.45°C/W	
T_{STG} , Storage Temperature Range	$-55^\circ\text{C} \sim +150^\circ\text{C}$	
T_J , Junction Temperature Range	$-55^\circ\text{C} \sim +150^\circ\text{C}$	

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. EAS condition: Starting $T_J=25^\circ\text{C}$, $L=0.5\text{mH}$, $I_D=36\text{A}$



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	2.6	-	3.6	V
Static Drain-Source ON-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 60A	-	3.9	4.5	mΩ
Transconductance	g _{fs}	V _{DS} = 5V, I _D = 60A		72		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, f=1.0MHZ	-	4064	-	pF
Output Capacitance	C _{oss}		-	829	-	
Reverse Transfer Capacitance	C _{rss}		-	47	-	
Total Gate Charge	Q _g	V _{DS} = 50V , I _D =60A V _{GS} =0V to 10V	-	72	-	nC
Gate-Source Charge	Q _{gs}		-	21	-	
Gate Drain("Miller") Charge	Q _{gd}		-	20	-	
Gate Plateau Voltage	V _{plateau}			5.0		V
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, I _D = 60A R _{GEN} =3Ω, V _{GS} = 10V	-	17	-	ns
Turn-On Rise Time	t _r		-	32	-	
Turn-Off Delay Time	t _{d(off)}		-	38	-	
Turn-Off Fall Time	t _f		-	18	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	105	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}		-	-	420	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S = 60A	-	-	1.2	V
Reverse recovery time	t _{rr}	I _F = 50A	-	62	-	ns
Reverse recovery charge	Q _{rr}	diF/dt=100A/μs	-	116	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

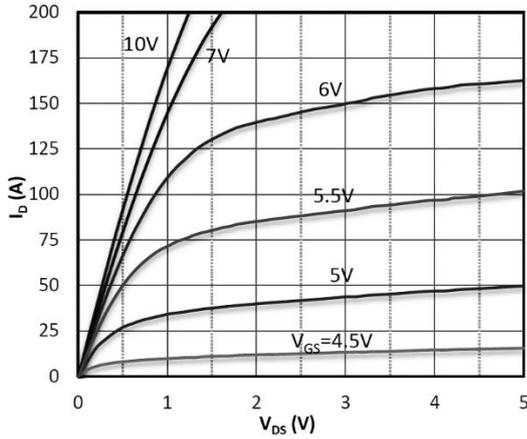


Fig 2. Typical Transfer Characteristics

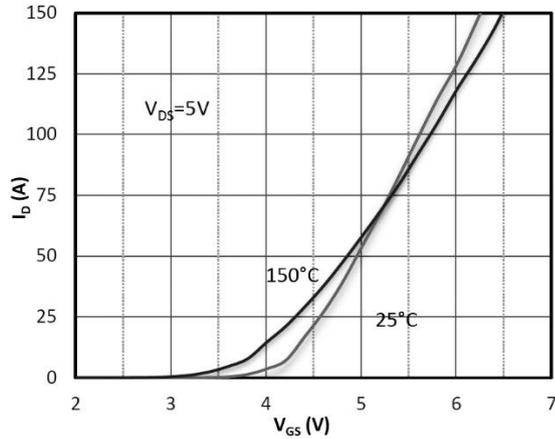


Fig 3. On resistance ($R_{DS(on)}$) vs. Drain Current

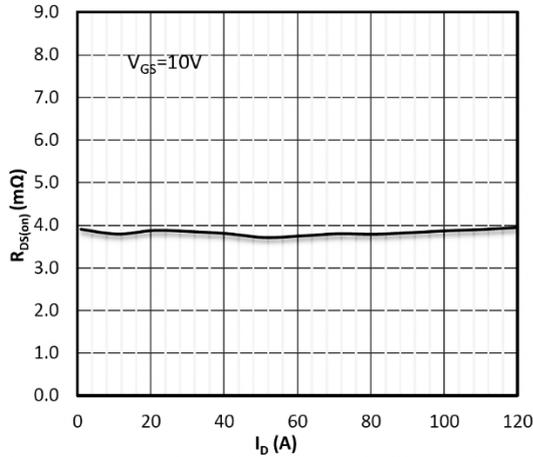


Fig 4. On resistance ($R_{DS(on)}$) vs. Gate Voltage

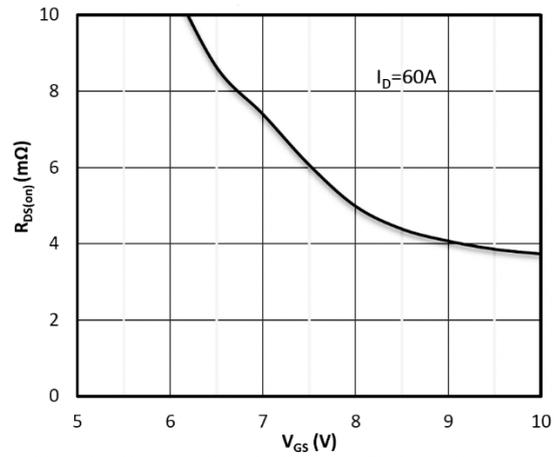


Fig 5. On resistance ($R_{DS(on)}$) vs. Temperature

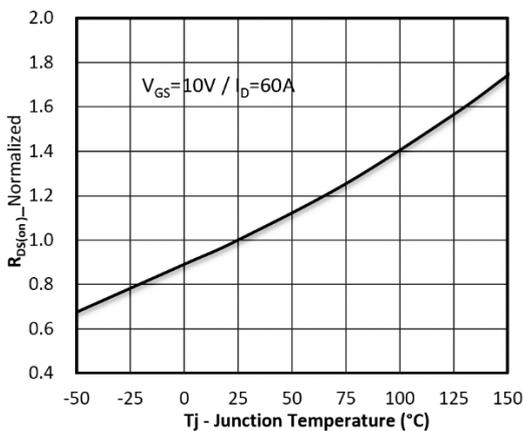


Fig 6. Capacitance Characteristics

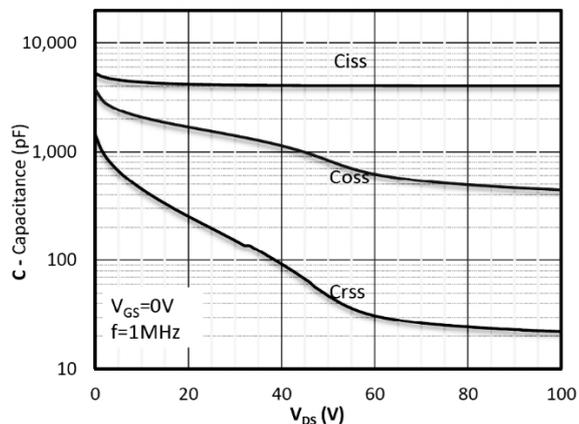




Fig 7. Gate Charge Characteristics

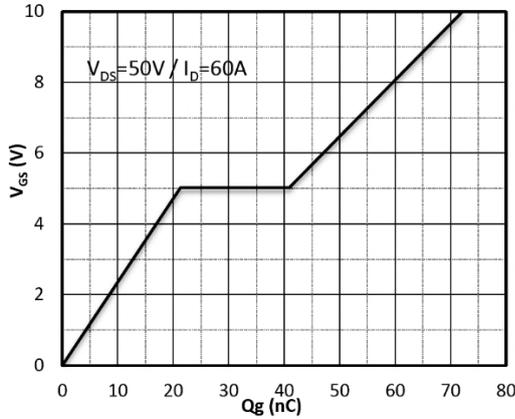


Fig 8. Body-diode Forward Characteristics

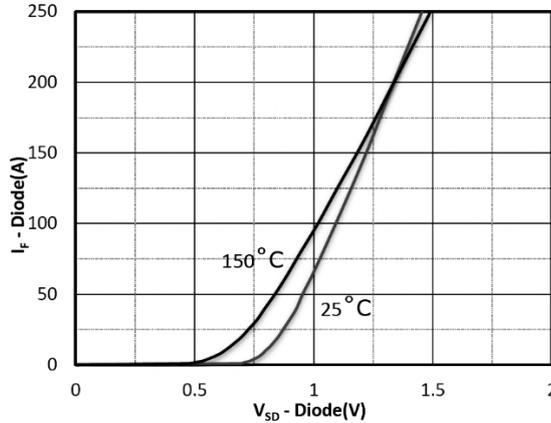


Fig 9. Power De-rating

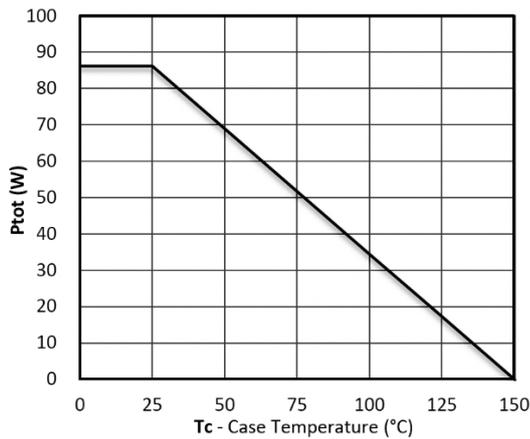


Fig 10. Current De-rating

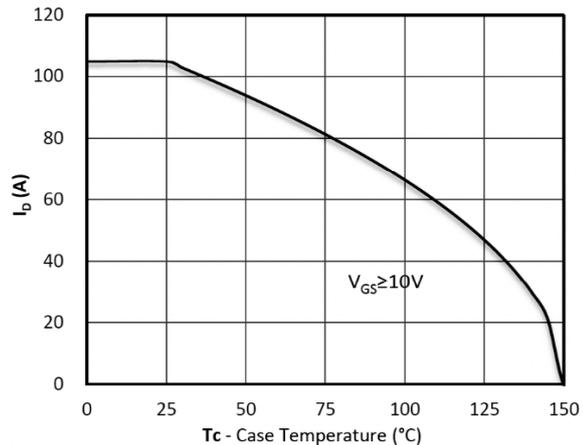


Fig11. Maximum Safe Operating Area

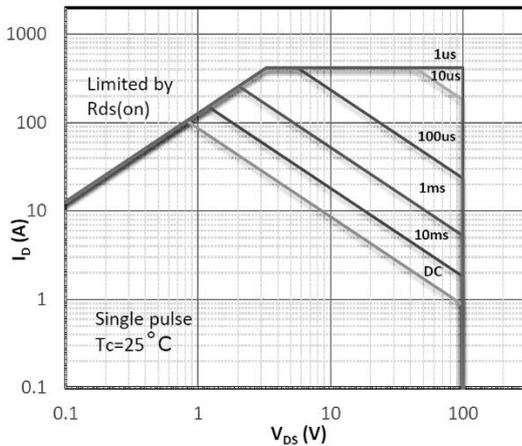


Fig 12. Max. Transient Thermal Impedance

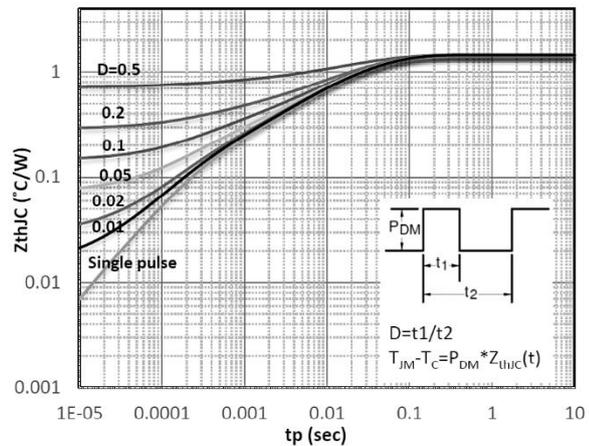




Fig 13. Gate Charge Test Circuit

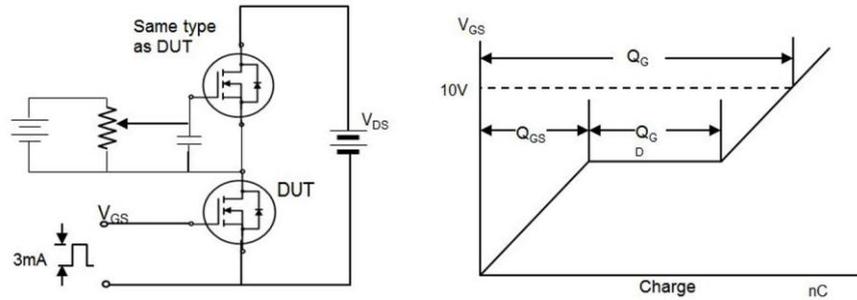


Fig 14. Resistive Switching Test Circuit & Waveform

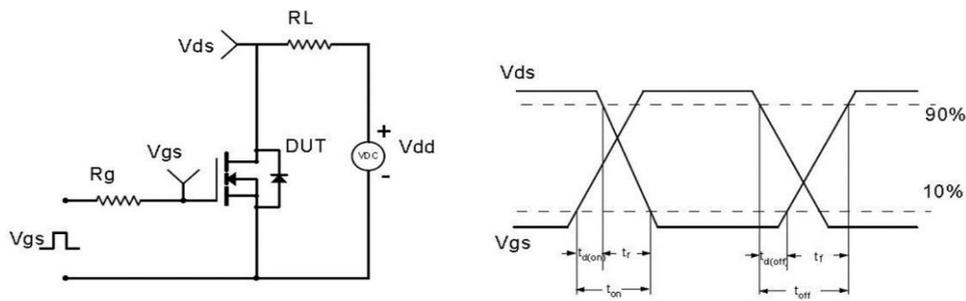


Fig 15. Unclamped Inductive Switching Test Circuit & Waveform

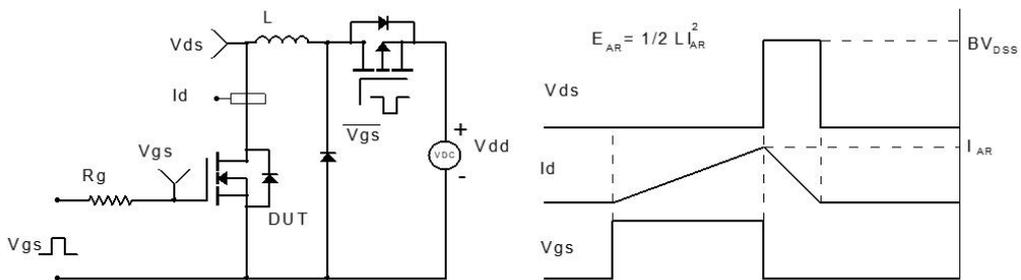
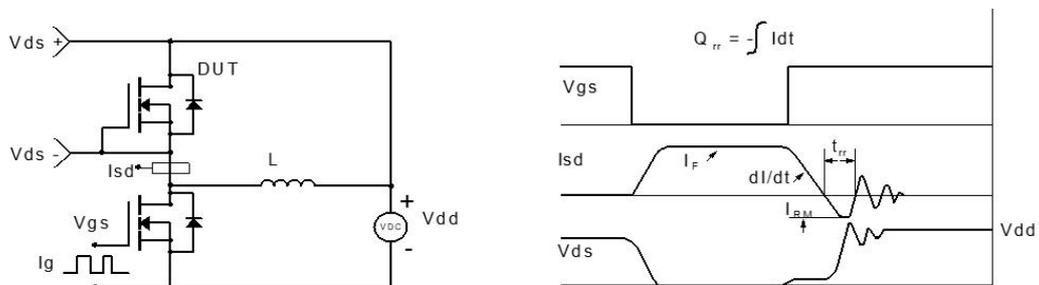


Fig 16. Diode Recovery Test Circuit & Waveform





PACKAGE INFORMATION

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

Symbol	Millimeters	
	Min.	Max.
A	6.000	6.200
B	4.875	4.925
b1	0.975	1.025
b2	0.246	0.262
C	5.775	5.825
D	1.245	1.295
d1	0.275	0.325
d2	0.375	0.425
E	1.725	1.825
E1	0.395	0.495
E2	3.425	3.525
E3	3.960	4.060



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