DESCRIPTION

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

VDSS	RDSON	ID
100V	3.9mΩ	105A

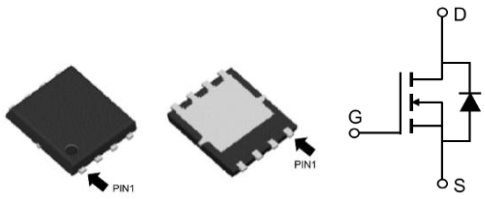
FEATURE

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

APPLICATIONS

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

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

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		

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

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

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting T_J=25°C, L=0.5mH, I_D=36A

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 diF/dt=100A/μs	-	62	-	ns
Reverse recovery charge	Q_{rr}		-	116	-	nC

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

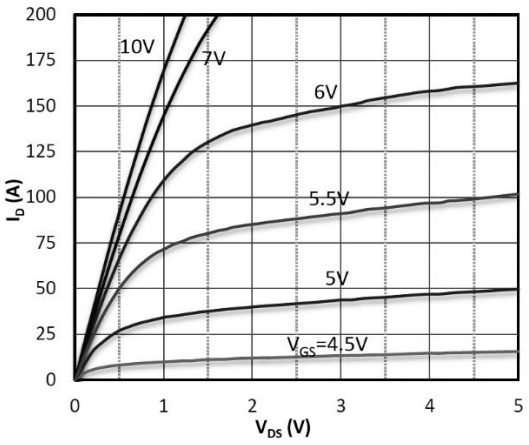


Fig 2. Typical Transfer Characteristics

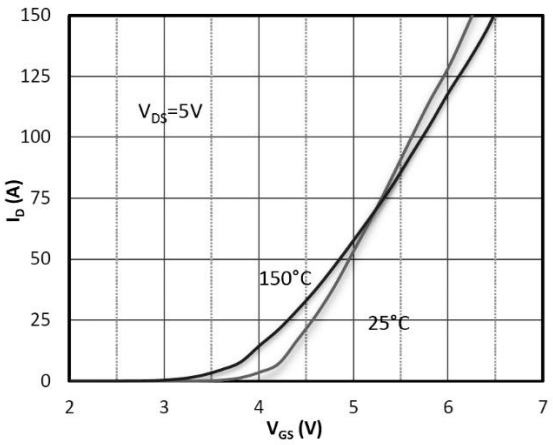


Fig 3. On resistance ($R_{DS(on)}$) vs. Drain Current

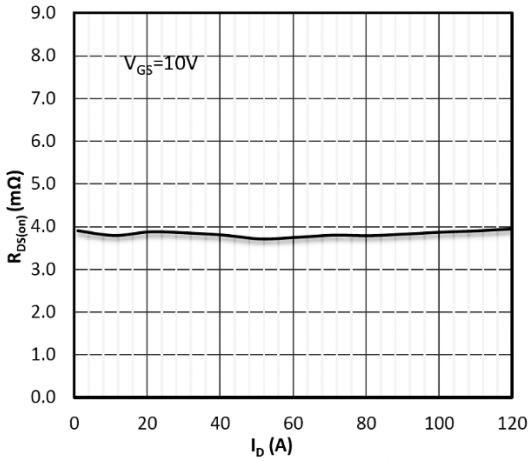


Fig 4. On resistance ($R_{DS(on)}$) vs. Gate Voltage

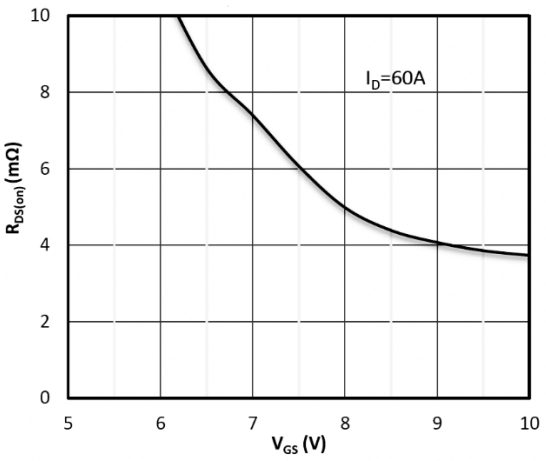


Fig 5. On resistance ($R_{DS(on)}$) vs. Temperature

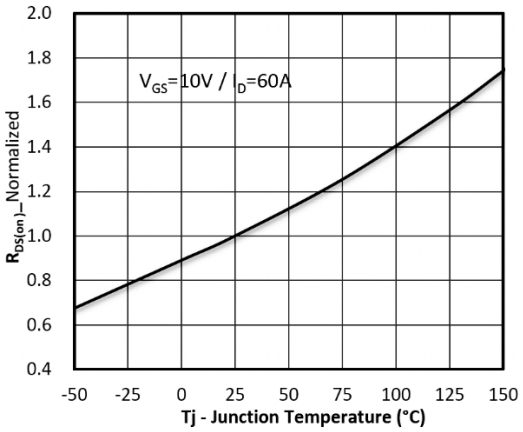


Fig 6. Capacitance Characteristics

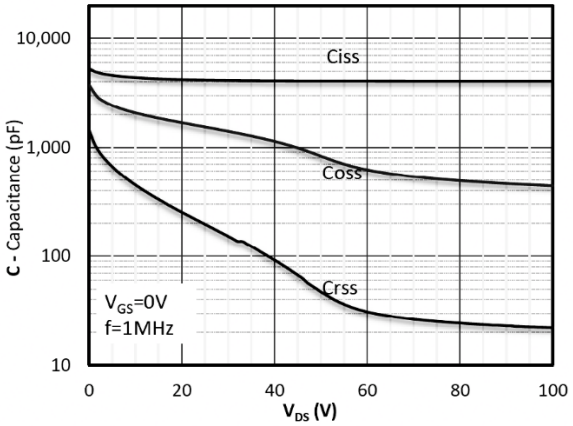


Fig 7. Gate Charge Characteristics

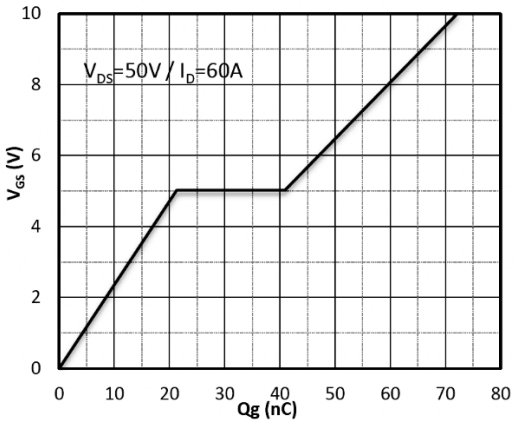


Fig 8. Body-diode Forward Characteristics

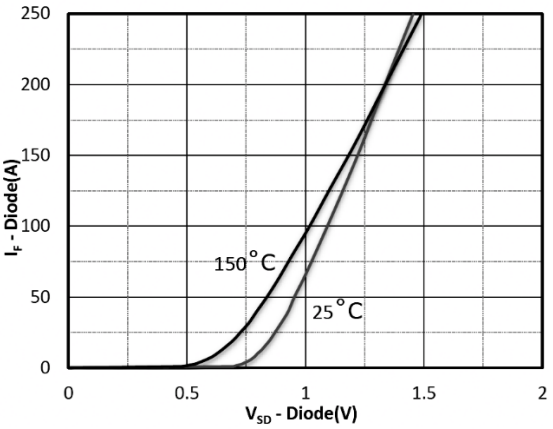


Fig 9. Power De-rating

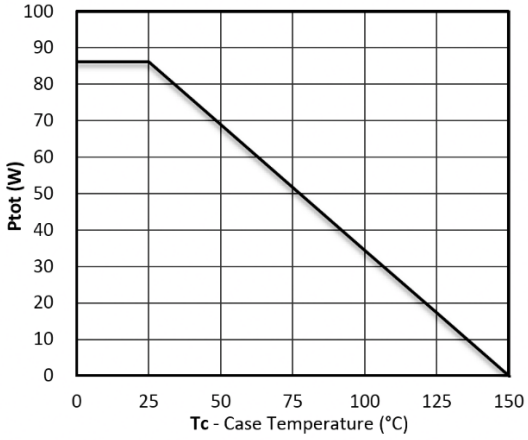


Fig 10. Current De-rating

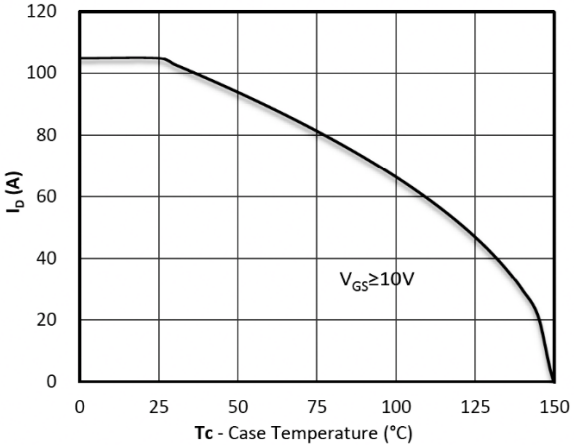


Fig11. Maximum Safe Operating Area

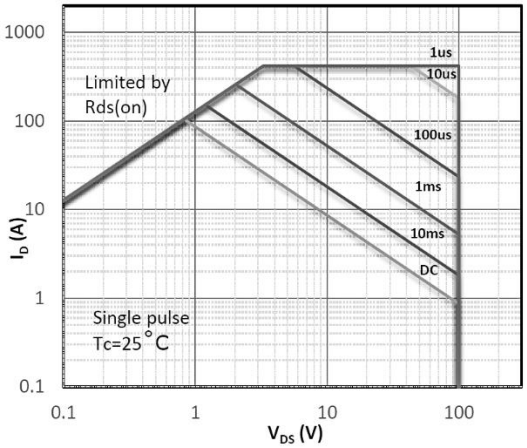


Fig 12. Max. Transient Thermal Impedance

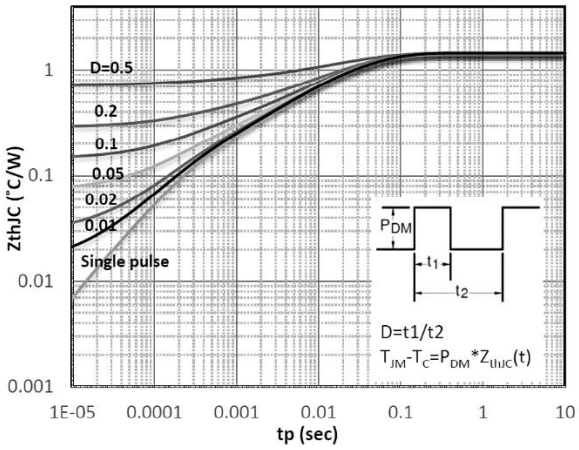


Fig 13. Gate Charge Test Circuit

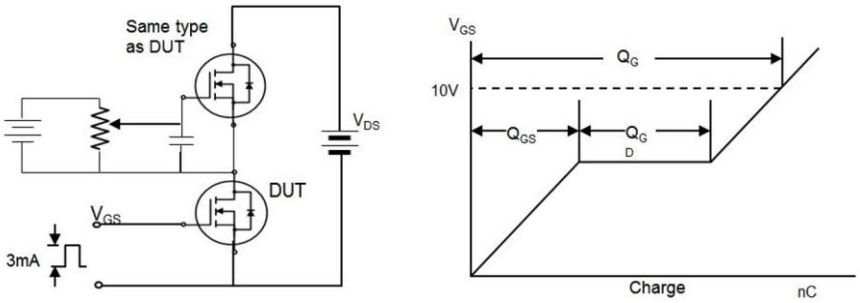


Fig 14. Resistive Switching Test Circuit & Waveform

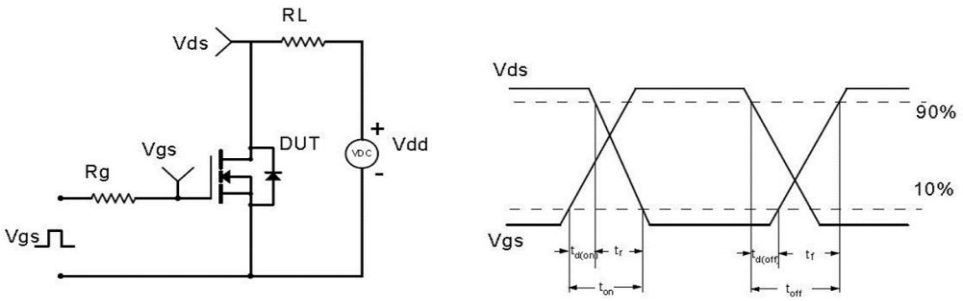


Fig 15. Unclamped Inductive Switching Test Circuit& Waveform

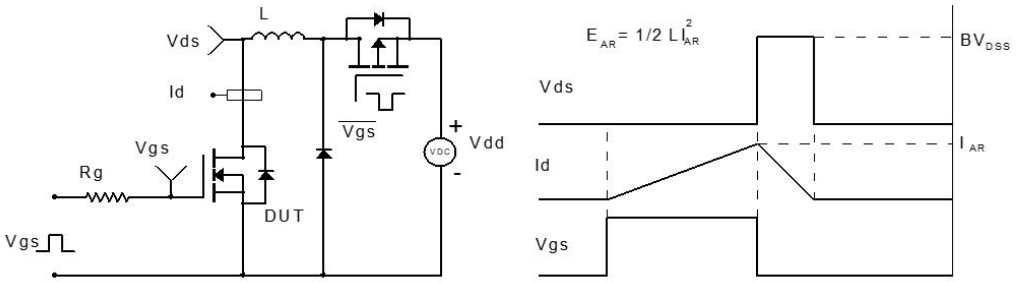
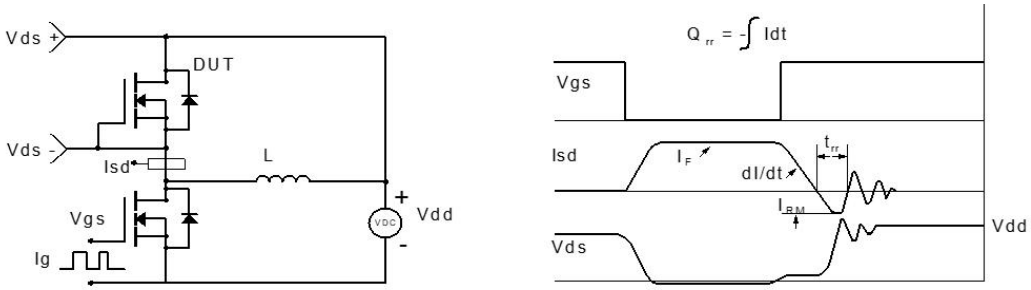
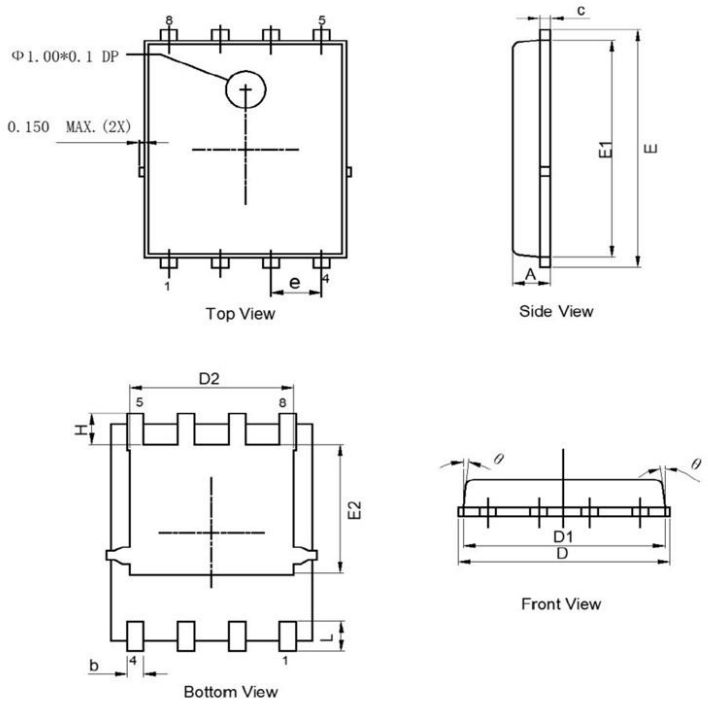


Fig 16. Diode Recovery Test Circuit & Waveform



PACKAGE INFORMATION

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



Symbol	Millimeters	
	Min.	Max.
A	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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