



DESCRIPTION

The AM038NS15HPJ is available in PDFN8(5x6) package.

BVDSS	RDSON	ID
150V	13mΩ	50A

Application

- Power switching application
- DC-DC Converter
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
PDFN8(5x6) SPQ:4,000pcs/Reel	PJ8	AM038NS15HPJ8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J= 25°C, unless otherwise specified.

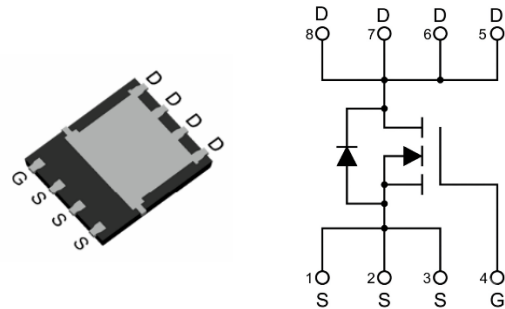
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	150	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	50	A
Continuous Drain Current T _C = 100°C		33	
Pulsed Drain Current		200	
Single Pulse Avalanche Energy	E _{AS}	306	mJ
Power Dissipation	P _D	120	W
Power Dissipation T _C = 100°C		48	W
Operation Junction and Storage Temperature Range	T _J , T _{STG}	-55 ~ 150	°C
Thermal Resistance, Junction-case	R _{thJC}	1.04	°C/W

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.

FEATURES

- V_{DS} = 150V, I_D = 50A
- R_{DS(ON)} Typ = 13mΩ @ V_{GS} = 10V
- Fast switching
- Low on resistance and gate charge
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

PIN DESCRIPTION



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



ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	150	-	-	V
Drain- Source Leakage Current	I _{DSS}	V _{DS} =120V, V _{GS} =0V	-	-	1	μA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{GS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.8	3.2	3.8	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	13	16	mΩ
Gate Resistance	R _G	V _{DS} =75V, V _{GS} =0V, f=1MHz	-	2.25	-	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0 V, V _{DS} =75V, f=1.0MHz	-	2230	-	pF
Output Capacitance	C _{oss}		-	184	-	pF
Reverse Transfer Capacitance	C _{rss}		-	9	-	pF
Total Gate Charge	Q _g	V _{DS} =75V, I _D =20A, V _{GS} =10V	-	30	-	nC
Gate-Source Charge	Q _{gs}		-	5.8	-	nC
Gate-Drain Charge	Q _{gd}		-	7.0	-	nC
Gate Plateau Voltage	V _{plateau}		-	4.8	-	V
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =50V, R _G =6Ω, I _D =20A	-	13	-	ns
Turn-on Rise Time	t _r		-	25	-	ns
Turn-off Delay Time	t _{d(off)}		-	31	-	ns
Turn-off Fall Time	t _f		-	25	-	ns
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A	-	-	1.2	V
Diode Forward Source Current	I _S	-	-	-	50	A
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _S =20A, di/dt=100 A/μs	-	65	-	nS
Reverse Recovery Charge	Q _{rr}		-	180	-	nC

Note:

1. The test condition is VDD=50V, VGS=10V, L=0.5mH, RG=25Ω;



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

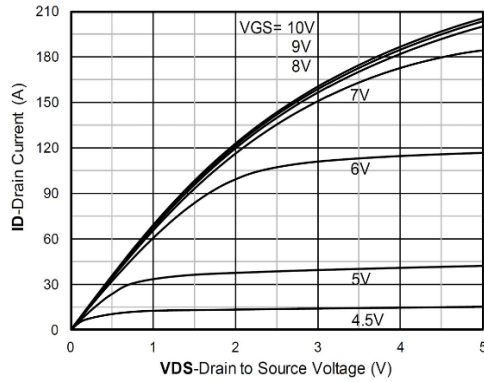


Fig 2. Typical Transfer Characteristics

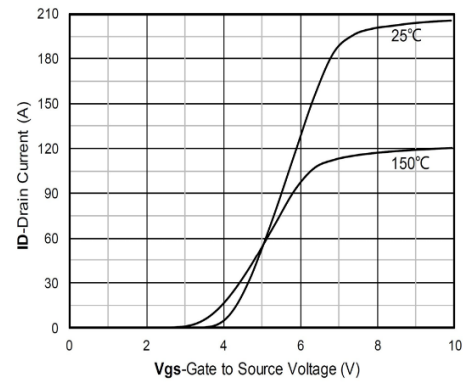


Fig 3. Capacitance Characteristics

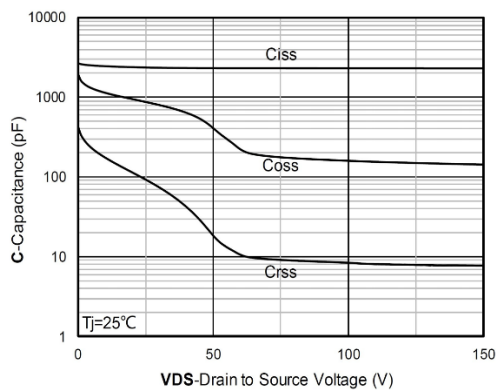


Fig 4. VGS-Gate to Source Voltage vs. Gate Charge

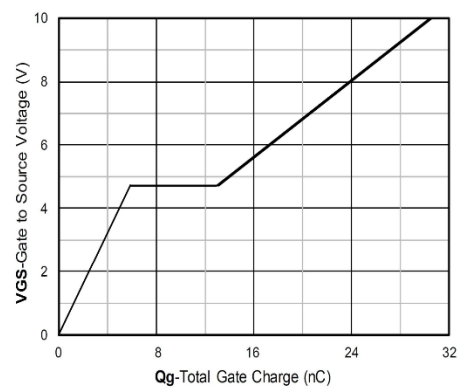


Fig 5. Current dissipation

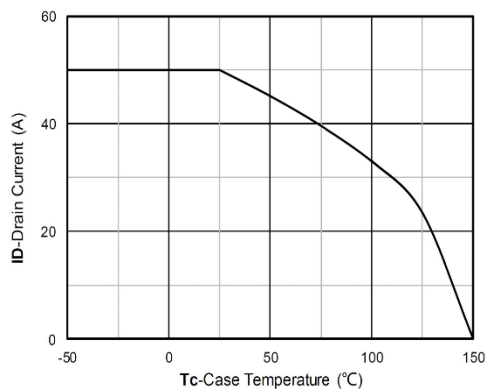


Fig 6. Power dissipation

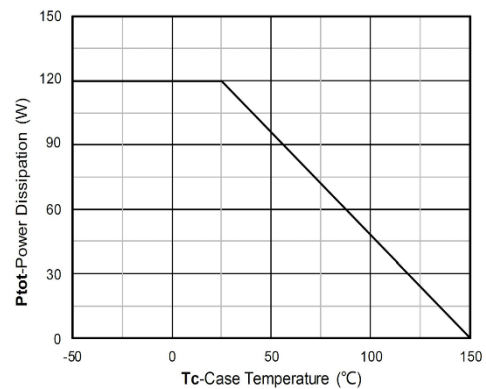




Fig 7. $R_{DS(on)}$ vs. Drain Current

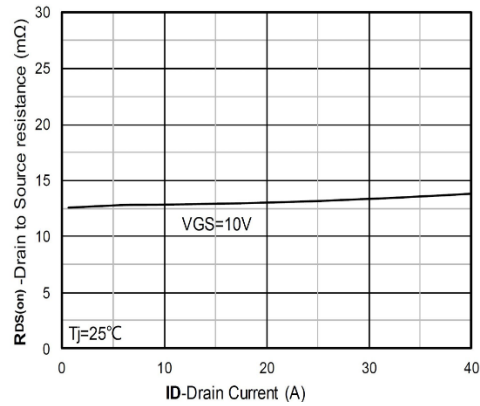


Fig 8. Forward characteristics of reverse diode

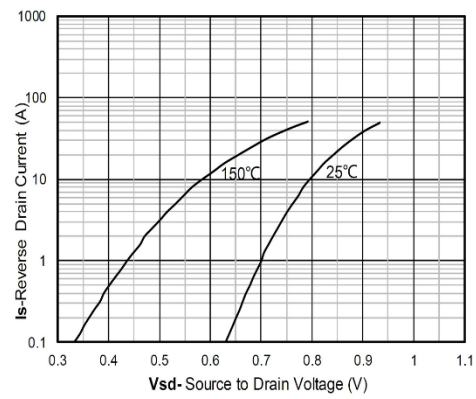


Fig 9. Normalized breakdown voltage

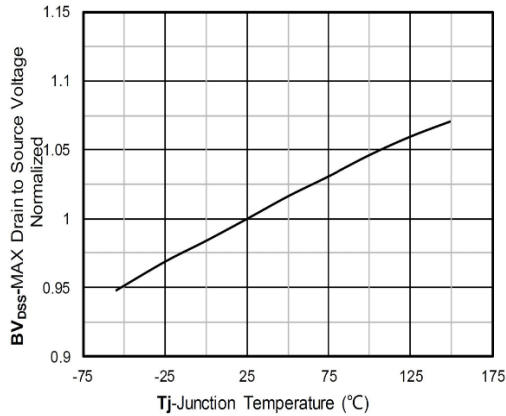


Fig 10. Normalized Threshold voltage

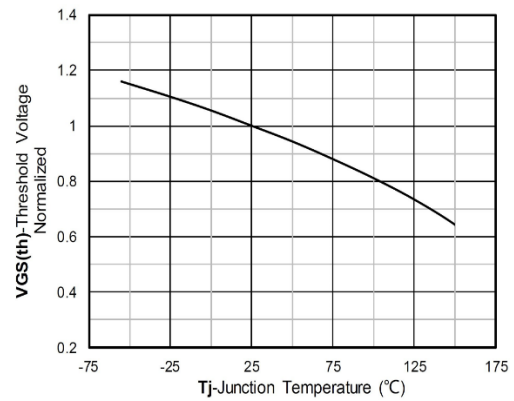


Fig 11. Safe Operation Area

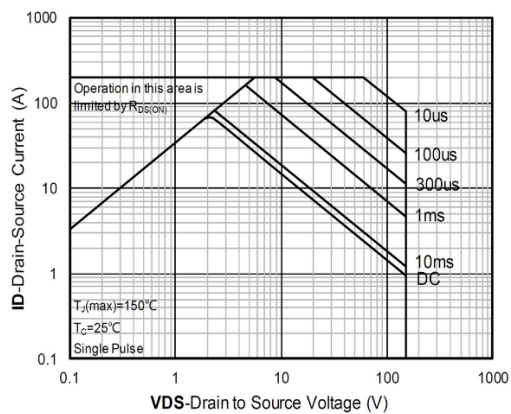
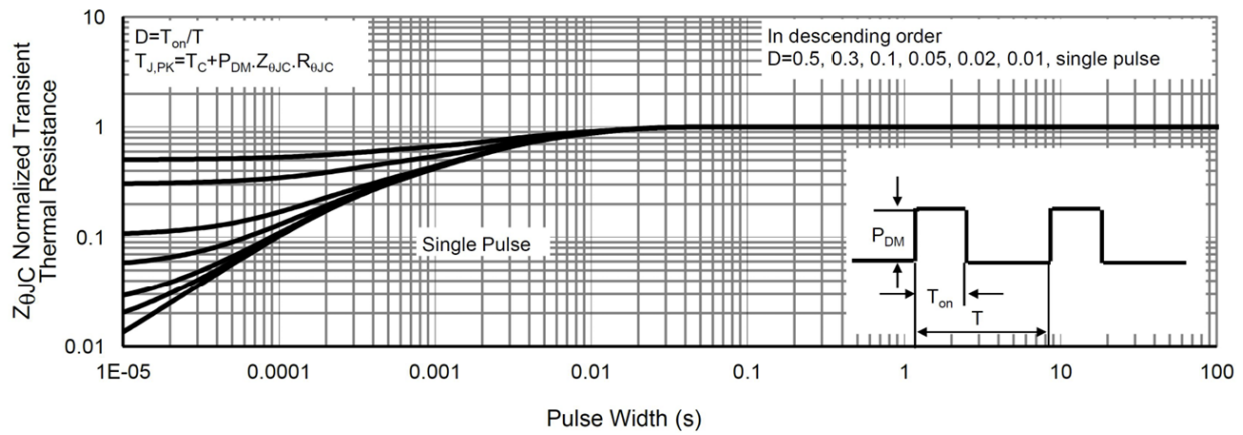




Fig 12. Normalized Maximum Transient Thermal Impedance





TEST CIRCUIT AND WAVEFORM

Fig 13. Gate Charge Test Circuit & Waveform

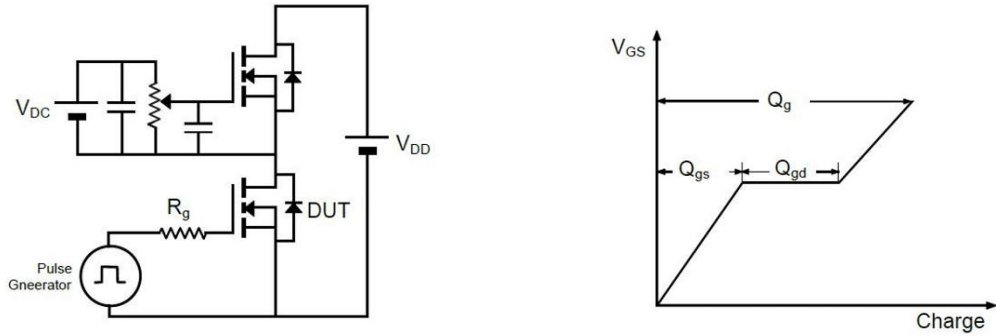


Fig 14. Resistive Switching Test Circuit & Waveform

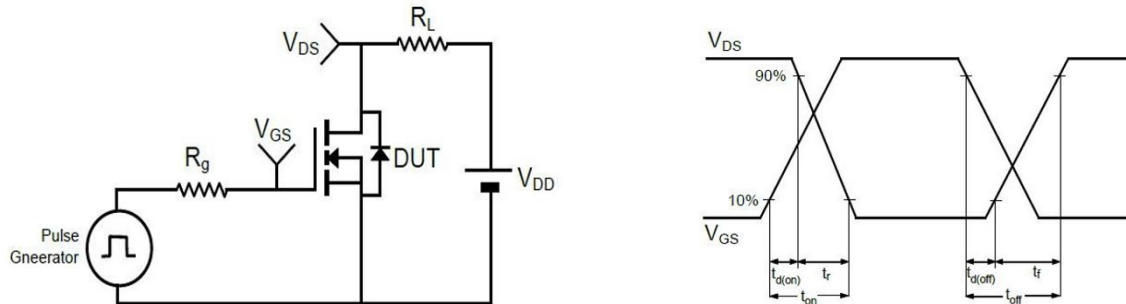


Fig 15. Un-clamped Inductive Load Switching Test Circuit & Waveform

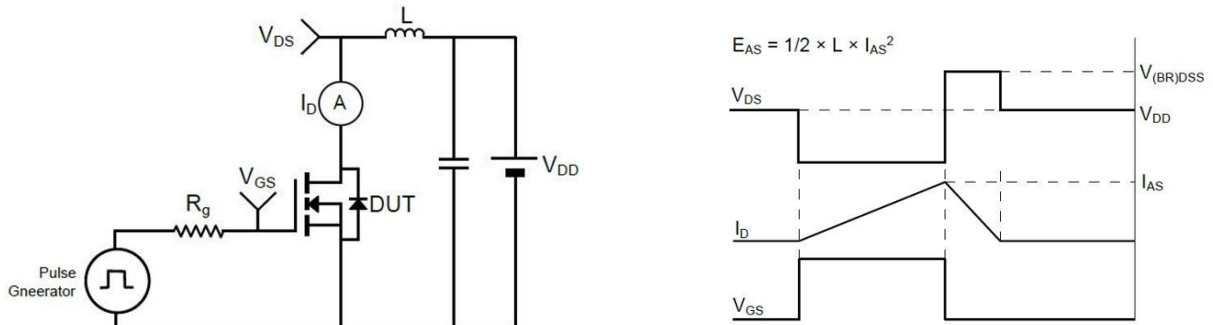
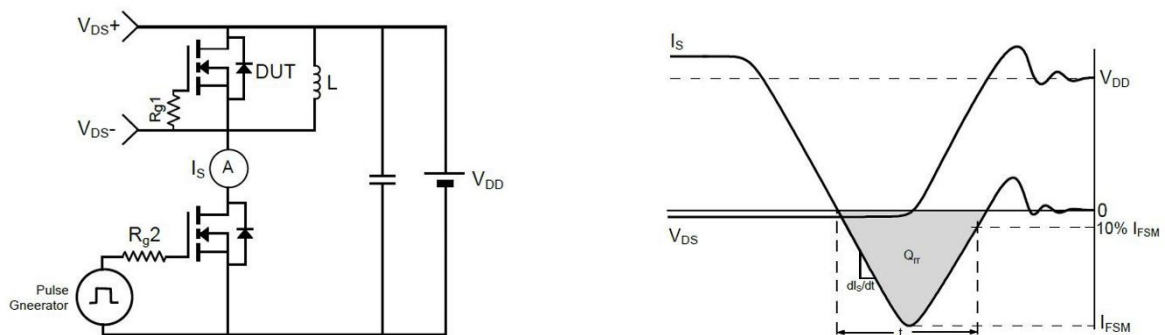


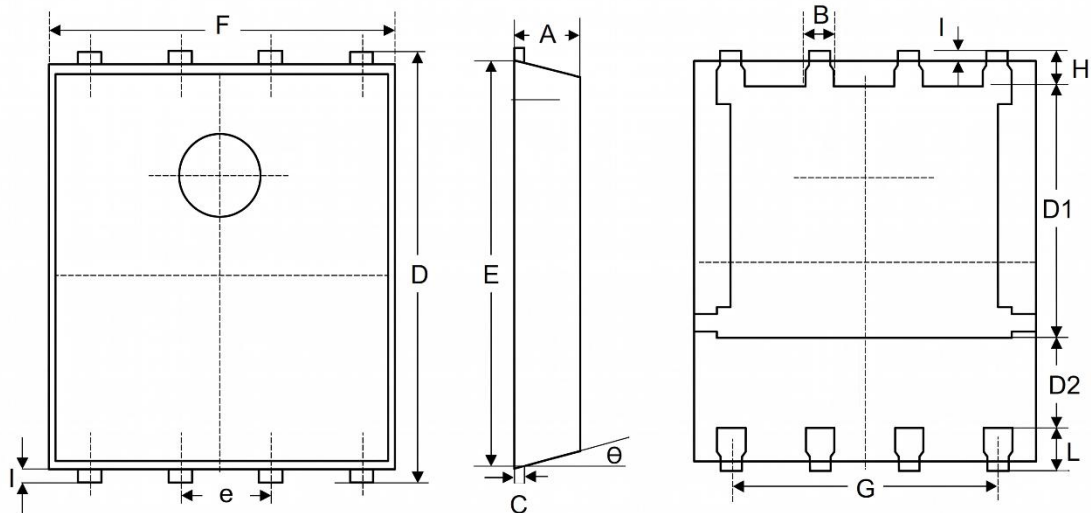
Fig 16. Diode Reverse Recovery Test Circuit & Waveforms





PACKAGE INFORMATION

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



Symbol	Millimeters	
	Min	Max
A	0.900	1.100
B	0.330	0.510
C	0.200	0.300
D	5.900	6.100
D1	3.380	3.780
D2	1.100	-
E	5.700	5.800
e	1.270 BSC	
F	4.800	5.000
G	0.361	0.396
H	0.410	0.610
I	0.060	0.200
L	0.510	0.710
θ	0°	12°

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