



DESCRIPTION

The AM036NS08HPJ is available in PDFN8(5x6) package.

BVDSS	RDS(ON)	ID
80V	3.6mΩ	70A

Application

- Synchronous rectification in SMPS
- Hard switching and high speed circuit

ORDERING INFORMATION

Package Type	Part Number	
PDFN8(5x6)	PJ	AM036NS08HPJ
Note	SPQ:4,000pcs/Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J= 25°C, unless otherwise specified.

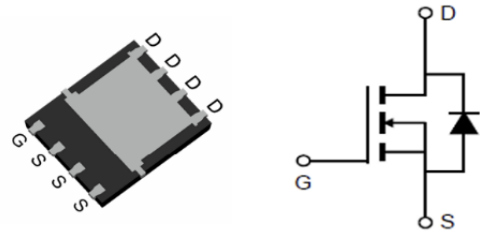
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	80	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current, Silicon Limited	I _D	116	A
Continuous Drain Current, Package Limited		70	
Continuous Drain Current, Silicon Limited T _C = 100°C		73.6	
Pulsed Drain Current	I _{DM}	280	
Single Pulse Avalanche Energy	E _{AS}	361	mJ
Power Dissipation	T _A = 25°C	P _{tot}	104 W
	T _C = 25°C	P _{tot}	0.83 W/°C
Operation Junction and Storage Temperature Range	T _J , T _{STG}	-55 ~ 150	°C
Thermal Resistance, Junction-case	R _{thJC}	1.2	°C/W
Thermal Resistance, Junction-ambient	R _{thJA}	62.5	°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

- VDS = 80V, ID= 70A
- R_{DS(ON)} Typ = 3.6mΩ @ VGS = 10V
- Fast switching
- Low on resistance
- Low gate charge
- High avalanche current
- Low reverse transfer capacitances

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	80	90	-	V
Drain- Source Leakage Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V	-	-	1	μA
		V _{DS} =64V, V _{GS} =0V, T _C =125°C	-	-	100	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	3	4	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A	-	3.6	3.9	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0 V, V _{DS} =40 V, f=1.0MHz	-	3641	-	pF
Output Capacitance	C _{oss}		-	1142	-	pF
Reverse Transfer Capacitance	C _{rss}		-	50	-	pF
Total Gate Charge	Q _g	V _{DS} =40V, I _D =50A, V _{GS} =10V	-	60	-	nC
Gate-Source Charge	Q _{gs}		-	19	-	nC
Gate-Drain Charge	Q _{gd}		-	13	-	nC
Gate Resistance	R _G	V _{DD} =0V, V _{GS} =0V _S	-	2	-	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =40V, R _G =3Ω, I _D =40A	-	17	-	ns
Turn-on Rise Time	t _r		-	16	-	ns
Turn-off Delay Time	t _{d(off)}		-	36	-	ns
Turn-off Fall Time	t _f		-	16	-	ns
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =50A	-	-	1.2	V
Diode Forward Source Current	I _S	-	-	-	70	A
Maximum Pulsed Current	I _{SM}		-	-	280	A
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _S =40A,	-	36	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt=100 A/μs	-	40	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area

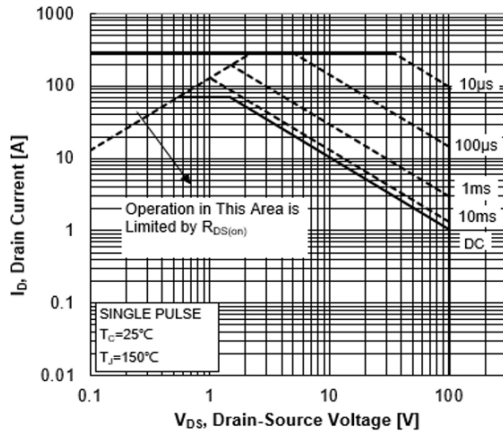


Fig 2. Maximum Power Dissipation vs. Case Temperature

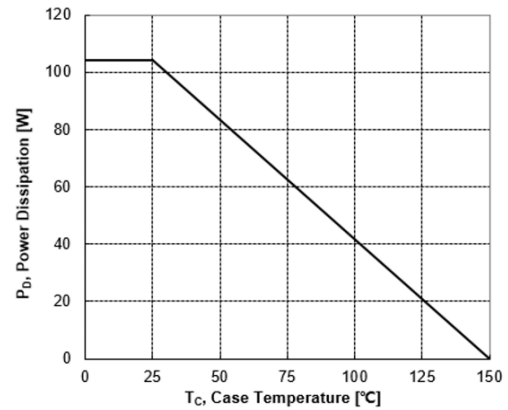


Fig 3. Maximum Continuous Drain Current vs. Case Temperature

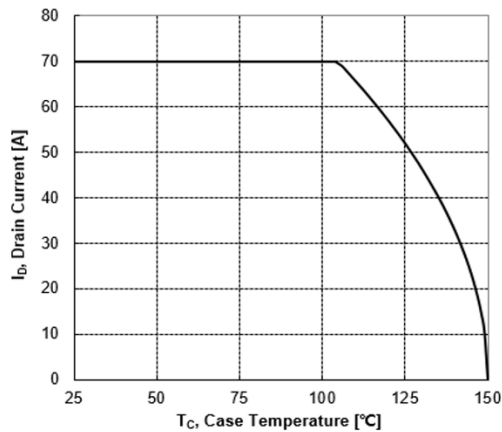


Fig 4. Typical Output Characteristics

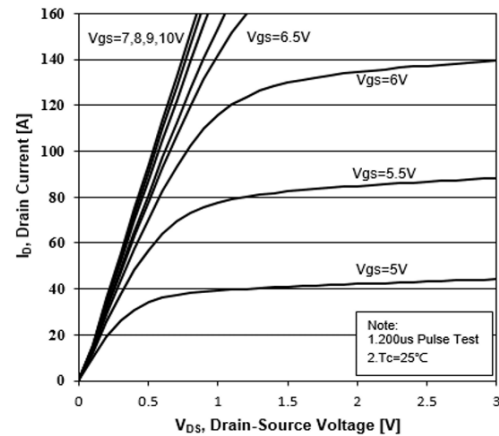


Fig 5. Transient Thermal Impedance

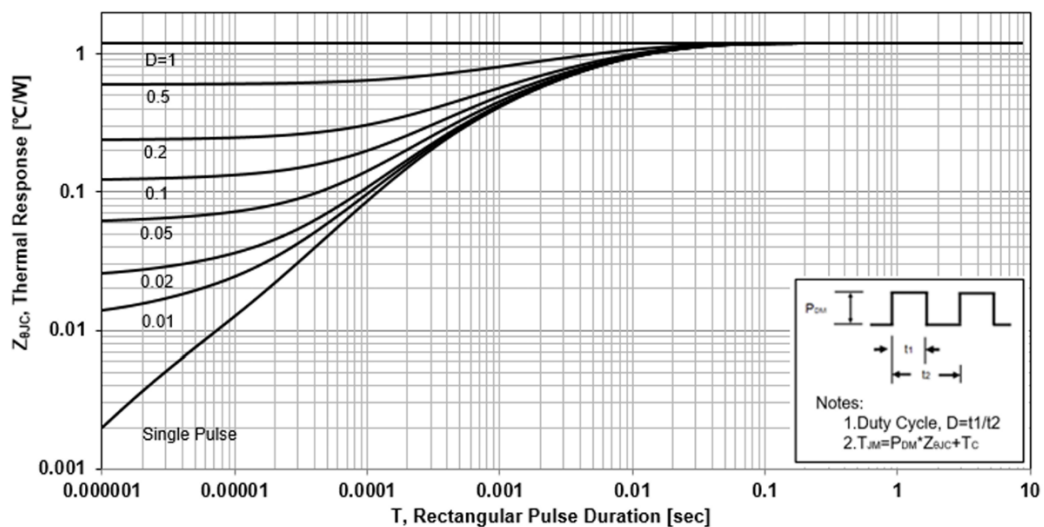




Fig 6. Typical Transfer Characteristics

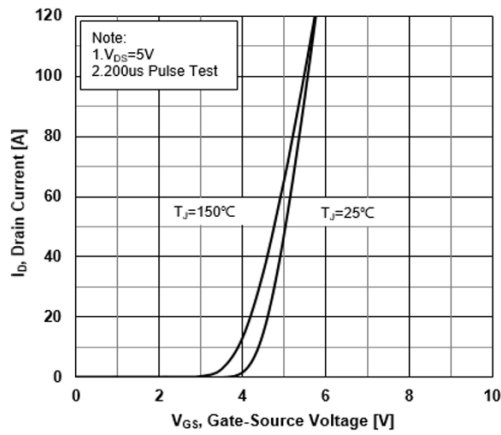


Fig 7. Source-Drain Diode Forward Characteristics

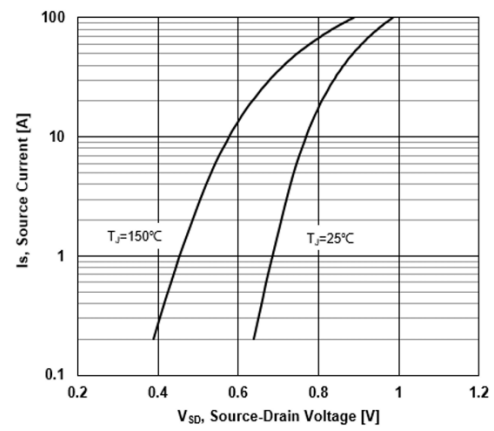


Fig 8. Drain-Source On-Resistance
vs Drain Current

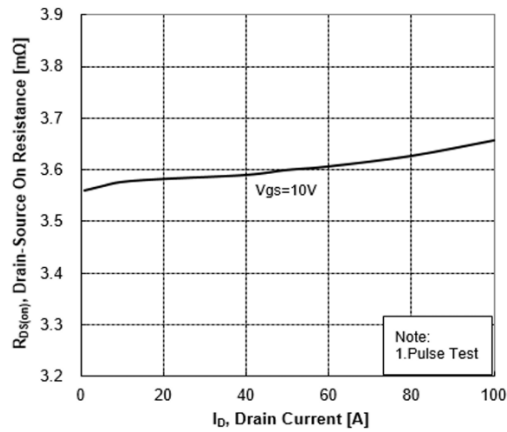


Fig 9. Normalized On-Resistance
vs Junction Temperature

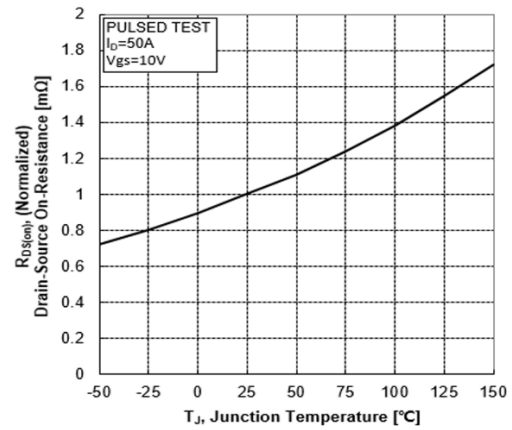


Fig 10. Normalized Threshold Voltage
vs. Junction Temperature

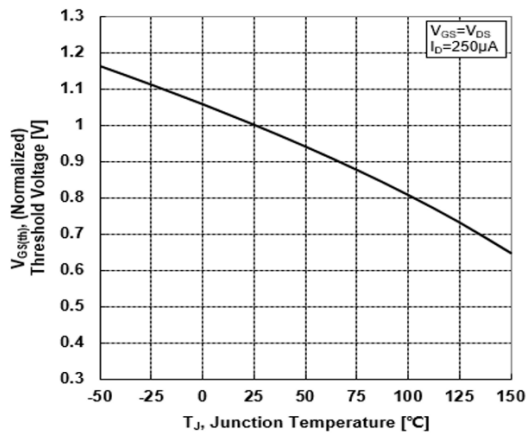


Fig 11. Normalized Breakdown Voltage
vs. Junction Temperature

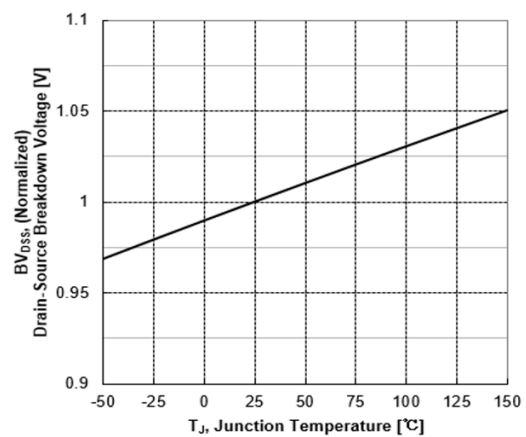




Fig 12. Capacitance Characteristics

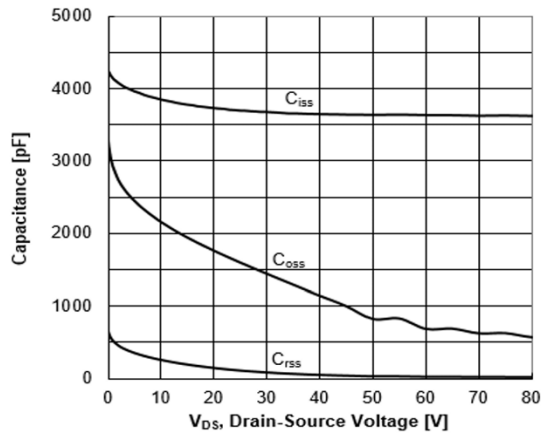
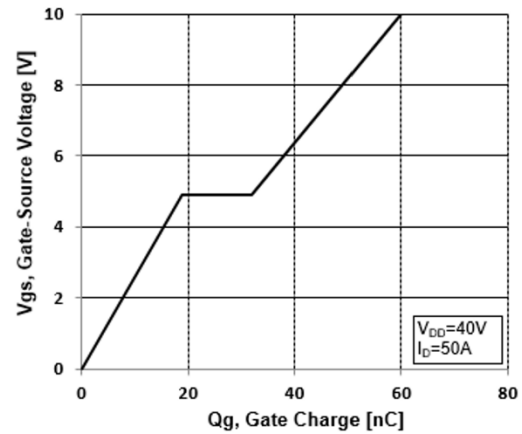


Fig 13. Typical Gate Charge vs Gate-Source Voltage



Test Circuit & Waveform

Fig 14. Gate Charge Test Circuit & Waveform

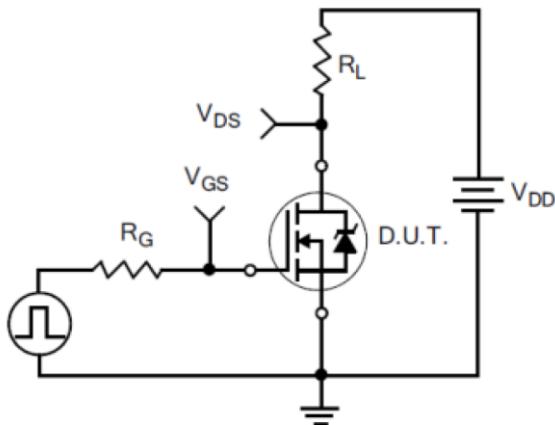


Fig 15. Resistive Switching Test Circuit & Waveform

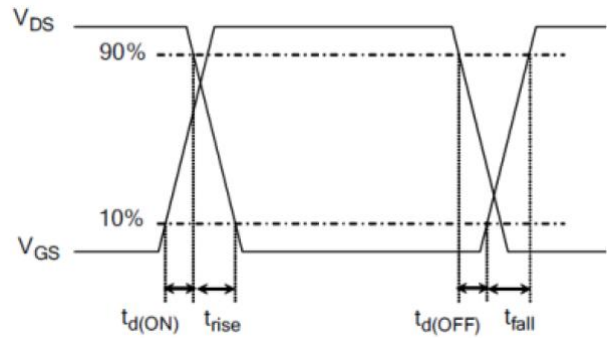


Fig 16. Gate Charge Test Circuit

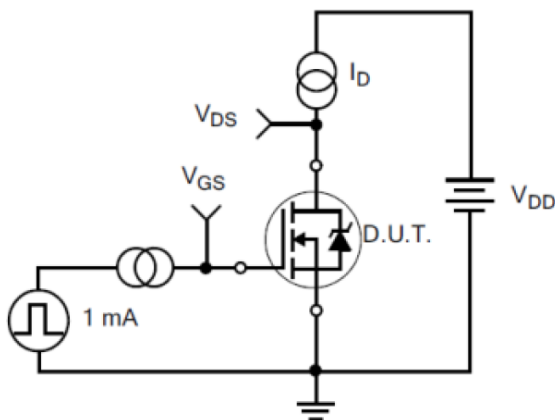


Fig 17. Gate Charge Waveform

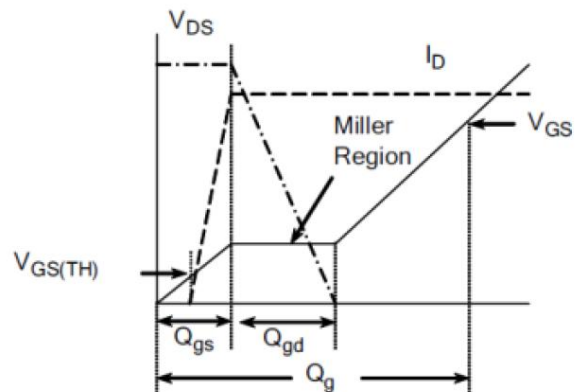




Fig 18. Diode Reverse Recovery Test Circuit

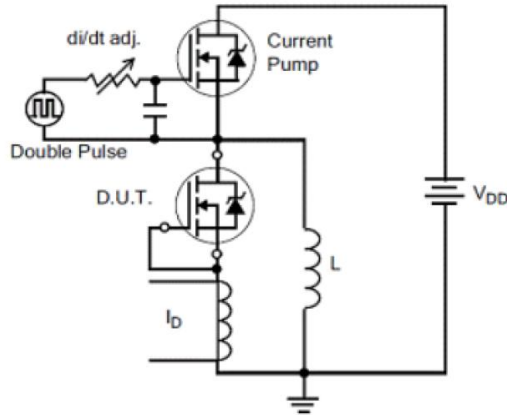


Fig 19. Diode Reverse Recovery Waveform

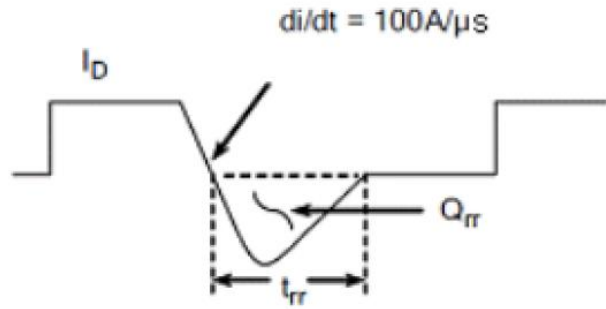


Fig 20. Unclamped Inductive Switching Test Circuit

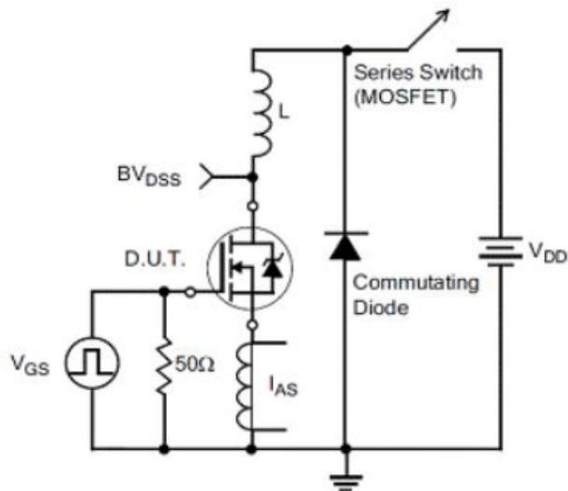
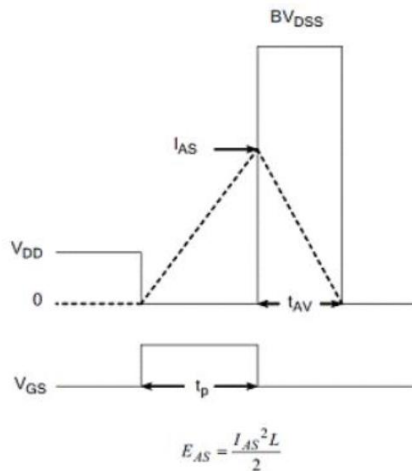


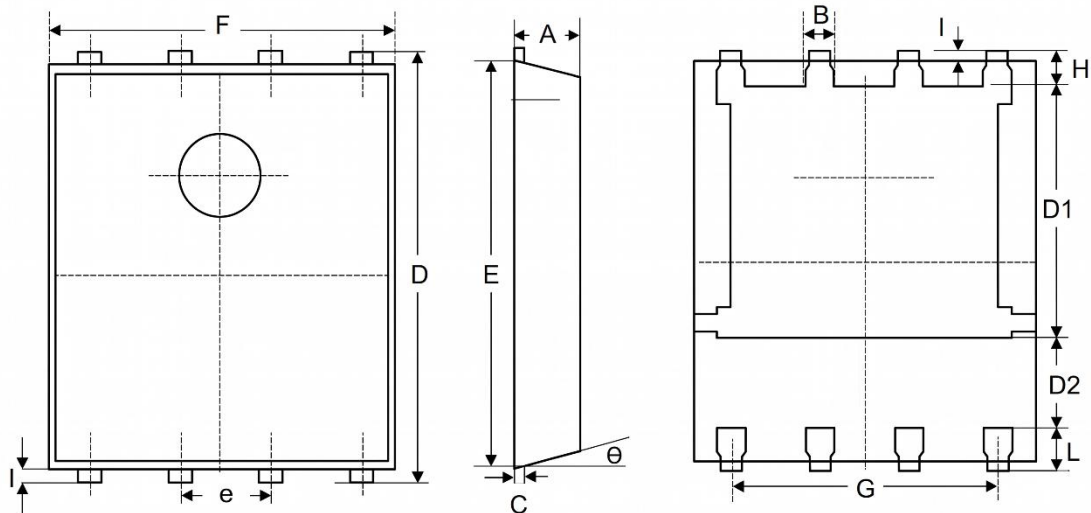
Fig 21. Unclamped Inductive Switching waveform





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°

**IMPORTANT NOTICE**

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc. integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.