DESCRIPTION

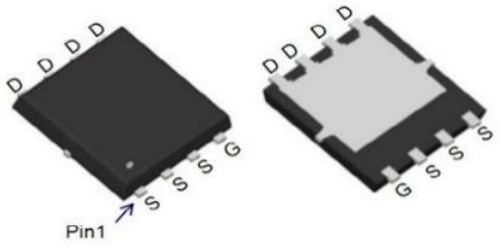
The AM04NS10H is available in PDFN8(5x6) Package.

V_{DS}	$R_{DS(ON)}$	I_D
100 V	4.4 mΩ	142 A

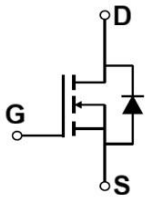
FEATURE

- Fast switching speed
- Reliable and Rugged

PIN DESCRIPTION



PDFN8 (5x6)



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

APPLICATION

- Power Management in DC/DC converters
- USB Power Delivery (USB PD)

ORDERING INFORMATION

Package Type	Part Number	
PDFN8 (5x6) SPQ: 5000pcs/Reel	PJ8	AM04NS10HPJ8VR
Note	V: Halogen Free Package R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise Noted

V_{DSS}, Drain-Source Voltage		100 V
V_{GSS}, Gate-Source Voltage		±20 V
T_J, Maximum Junction Temperature		150 ℃
T_{STG}, Storage Temperature Range		-50 ℃ ~ +150 ℃
I_S, Diode Continuous Forward Current	T_C = 25 ℃	113 A
I_{DM} (1), Pulse Drain Current Tested	T_C = 25 ℃	400 A
I_D, Continuous Drain Current	T_C = 25 ℃	142 A
	T_C = 100 ℃	107 A
P_D, Maximum Power Dissipation	T_C = 25 ℃	125 W
	T_C = 100 ℃	50 W
I_D, Continuous Drain Current	T_A = 25 ℃	24.3 A
	T_A = 70 ℃	19.5 A
P_D, Maximum Power Dissipation	T_A = 25 ℃	2.6 W
	T_A = 70 ℃	1.7 W
I_{AS} (2), Avalanche Current, Single pulse	L = 0.1 mH	57 A
	L = 0.5 mH	30 A
E_{AS} (2), Avalanche Energy, Single pulse	L = 0.1 mH	162 mJ
	L = 0.5 mH	225 mJ

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) Max. current is limited by bonding wire

(2) UIS tested and pulse width are limited by maximum junction temperature 150 ℃

THERMAL CHARACTERISTICS

Parameter	Rating	Unit
$R_{\theta JC}$, Thermal Resistance-Junction to Case (Steady State)	1	℃/W
$R_{\theta JA}$ (3), Thermal Resistance-Junction to Ambient (Steady State)	48	℃/W

(3) Surface Mounted on 1in^2 FR-4 board with 1oz

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise Noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_{DS} = 250 uA	2	3	4	V
Gate Leakage Current	I_{GSS}	V_{GS} = ± 20 V, V_{DS} = 0 V	-	-	±100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$ (4)	V_{GS} = 10 V, I_{DS} = 20A	-	3.6	4.4	mΩ
Forward Transconductance	gfs	V_{DS} = 5 V, I_{DS} = 10A	-	22	-	S
Dynamic Characteristics (5)						
Gate Resistance	R_G	V_{GS} = 0 V, V_{DS} = 0 V Freq. = 1 MHz	-	0.6	-	Ω
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 50 V Freq. = 1 MHz	-	4175	-	pF
Output Capacitance	C_{oss}		-	1190	-	
Reverse Transfer Capacitance	C_{rss}		-	35	-	
Turn-on Delay Time	$t_{d\ (ON)}$	V_{GS} = 10 V, V_{DS} = 25 V, I_D = 1 A R_{GEN} = 3 Ω,	-	12.8	-	ns
Turn-on Rise Time	t_r		-	6.3	-	
Turn-Off Delay Time	$t_{d\ (OFF)}$		-	40	-	
Turn-Off Fall Time	t_f		-	65	-	
Total Gate Charge	Q_g	V_{GS} = 6 V, V_{DS} = 50 V I_D = 20 A	-	48	-	nC
Total Gate Charge	Q_g	V_{GS} = 10 V, V_{DS} = 50 V, I_D = 20 A,		72.8		
Gate-Source Charge	Q_{gs}		-	21.5	-	
Gate-Drain Charge	Q_{gd}		-	20.7	-	
Source-Drain Characteristics						
Diode Forward Voltage	V_{SD} (4)	I_{SD} = 10A, V_{GS} = 0 V	-	0.75	1.1	V
Reverse Recovery Time	T_{rr}	I_F = 10 A, V_R = 50 V dI_F / dt = 100 A/μs	-	40.4	-	ns
Reverse Recovery Charge	Q_{rr}		-	80.2	-	nC

(4) Pulse test (pulse width≤300us, duty cycle≤2%)

(5) Guaranteed by design, not subject to production testing.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

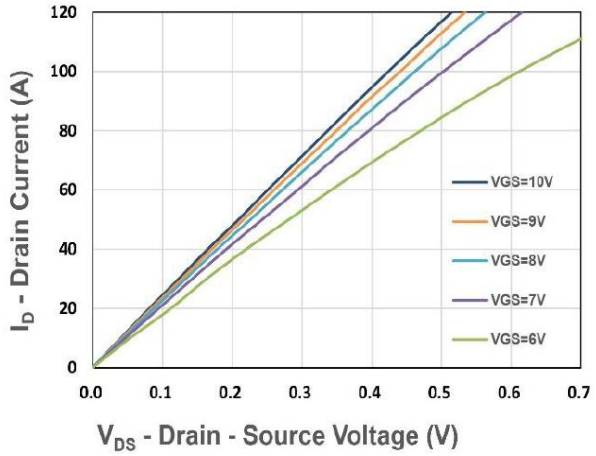


Fig 2. On-Resistance vs. I_D

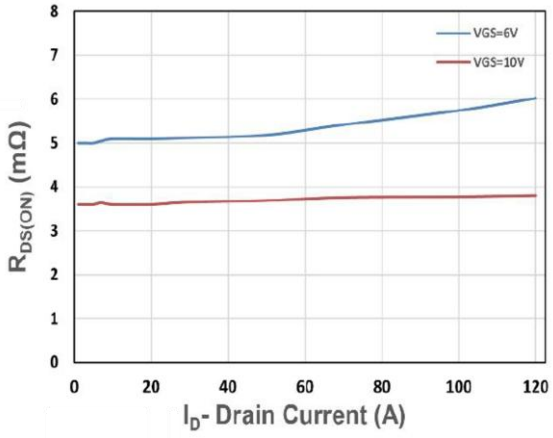


Fig 3. On-Resistance vs. V_{GS}

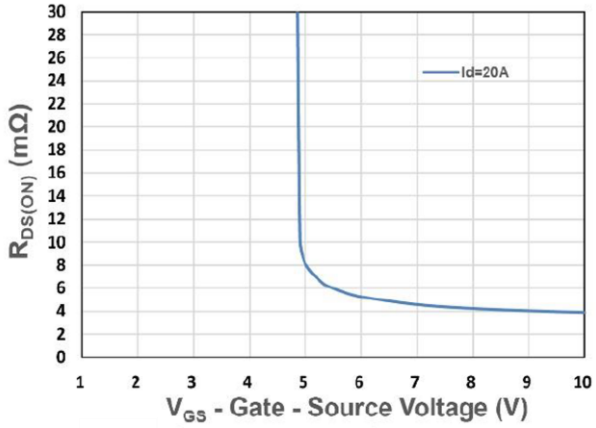


Fig 4. Gate Threshold Voltage

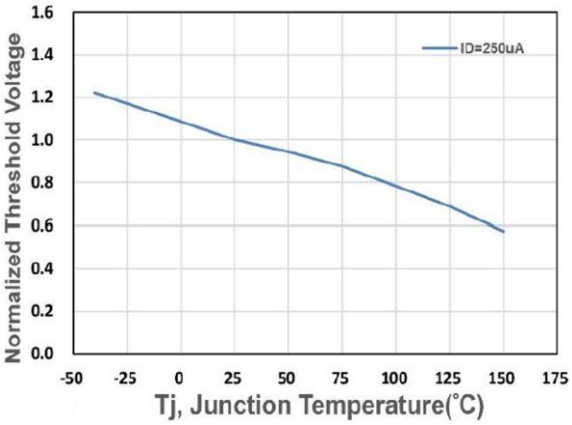


Fig 5. Drain-Source On Resistance

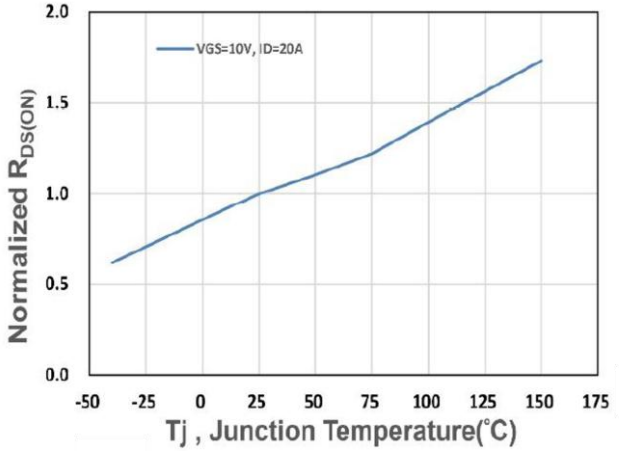


Fig 6. Source-Drain Diode Forward

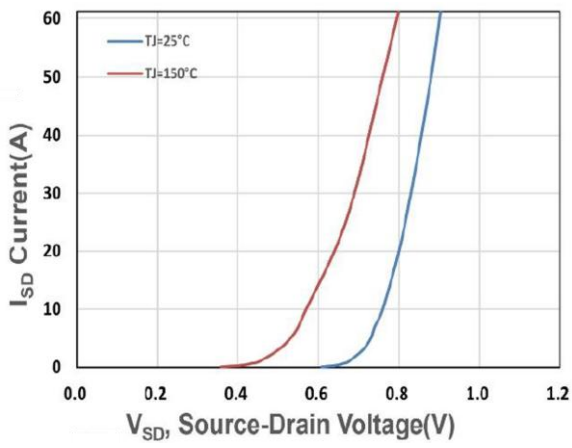


Fig 7. Capacitance

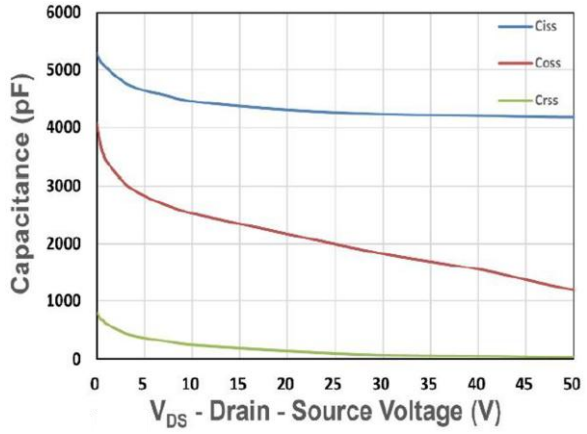


Fig 8. Gate Charge Characteristics

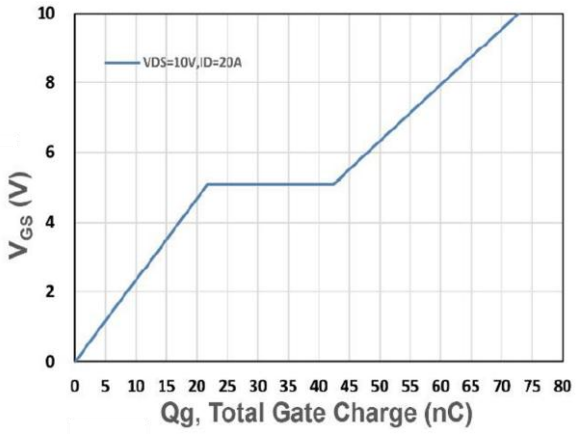


Fig 9. Power Dissipation

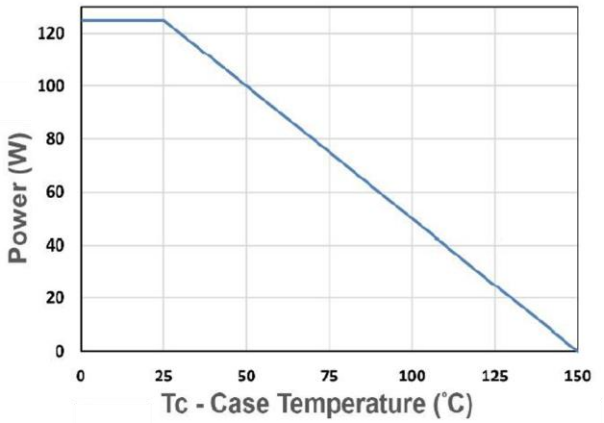


Fig 10. Drain Current

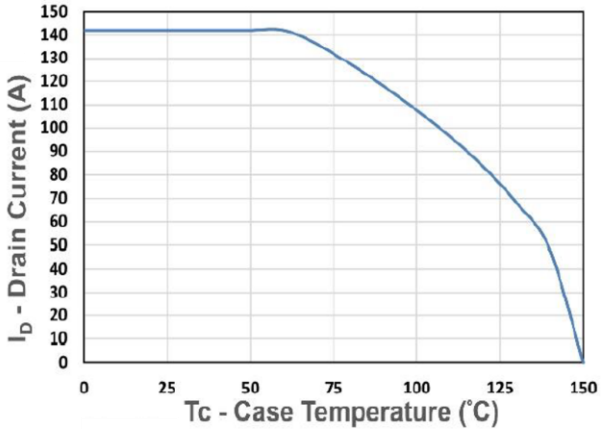


Fig 11. Safe Operating Area

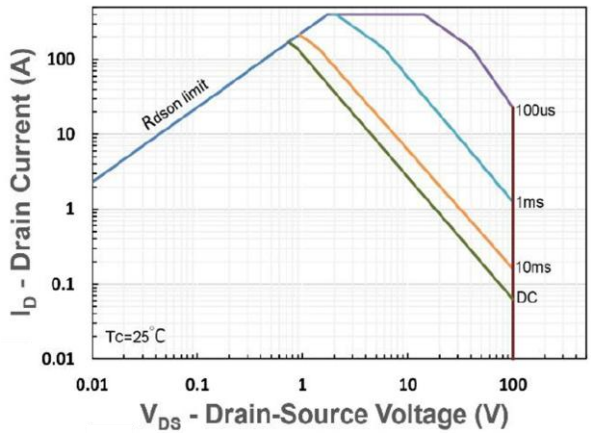
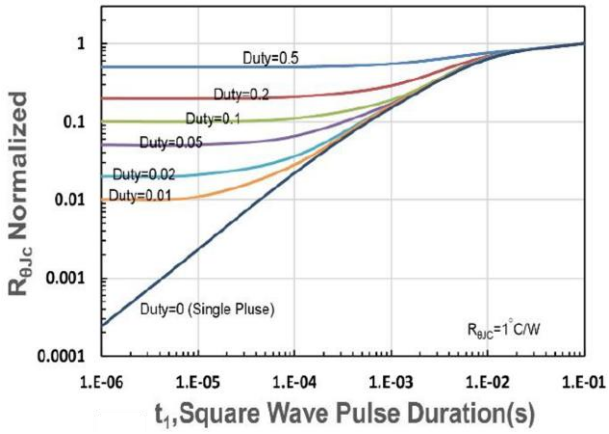
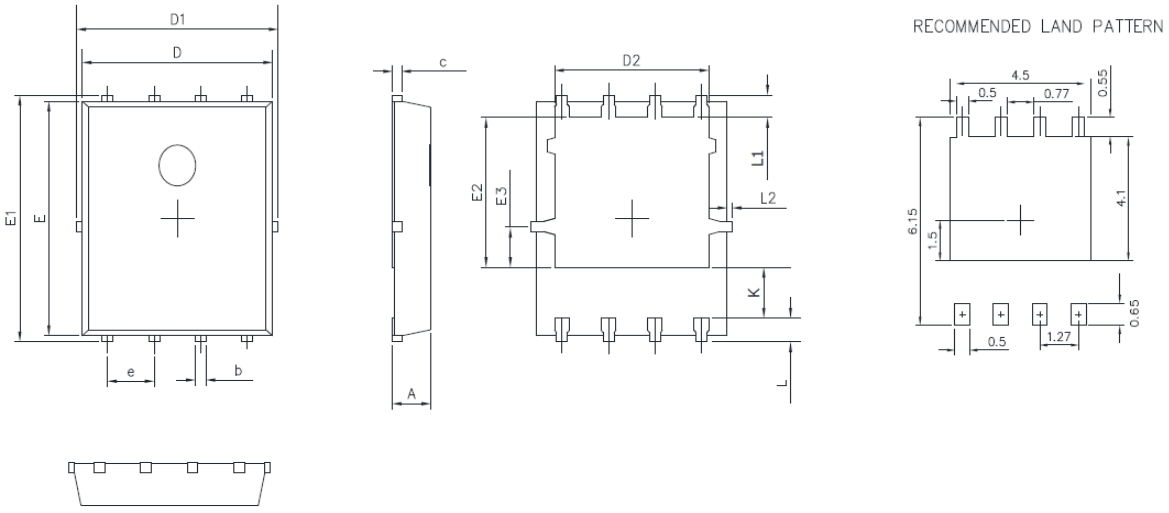


Fig 12. $R_{\theta JC}$ Transient Thermal Impedance



PACKAGE INFORMATION

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



Symbol	Millimeters	
	Min.	Max.
A	0.900	1.100
b	0.250	0.500
c	0.100	0.300
D	4.800	5.300
D1	4.900	5.500
D2	3.920	4.200
E	5.650	5.850
E1	5.900	6.200
E2	3.330	3.780
E3	0.800	1.000
e	1.270	
L	0.400	0.700
L1	0.650	
L2	0.000	0.150
K	1.000	1.500

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.