



DESCRIPTION

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

Vds	RDS(ON)	ID
100 V	4.4 mΩ	142 A

FEATURE

- Fast switching speed
- Reliable and Rugged

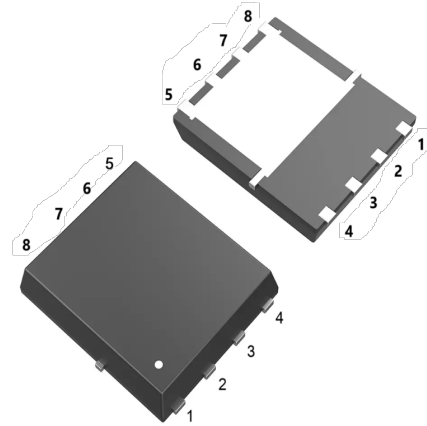
APPLICATION

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

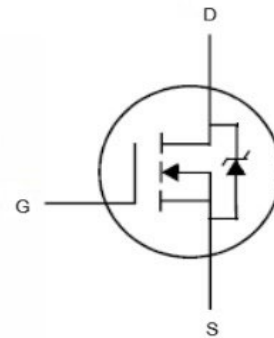
ORDERING INFORMATION

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

PIN DESCRIPTION



PDFN8 (5x6)



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



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 °C
T _{STG} , Storage Temperature Range		-50 °C ~ +150 °C
I _S , Diode Continuous Forward Current	T _C = 25 °C	113 A
I _{DM} ⁽¹⁾ , Pulse Drain Current Tested	T _C = 25 °C	400 A
I _D , Continuous Drain Current	T _C = 25 °C	142 A
	T _C = 100 °C	107 A
P _D , Maximum Power Dissipation	T _C = 25 °C	125 W
	T _C = 100 °C	50 W
I _D , Continuous Drain Current	T _A = 25 °C	24.3 A
	T _A = 70 °C	19.5 A
P _D , Maximum Power Dissipation	T _A = 25 °C	2.6 W
	T _A = 70 °C	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 °C

THERMAL CHARACTERISTICS

Parameter	Rating	Unit
R _{θJC} , Thermal Resistance-Junction to Case (Steady State)	1	°C/W
R _{θJA} ⁽³⁾ , Thermal Resistance-Junction to Ambient (Steady State)	48	°C/W

(3) Surface Mounted on 1in² 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	g _{fs}	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

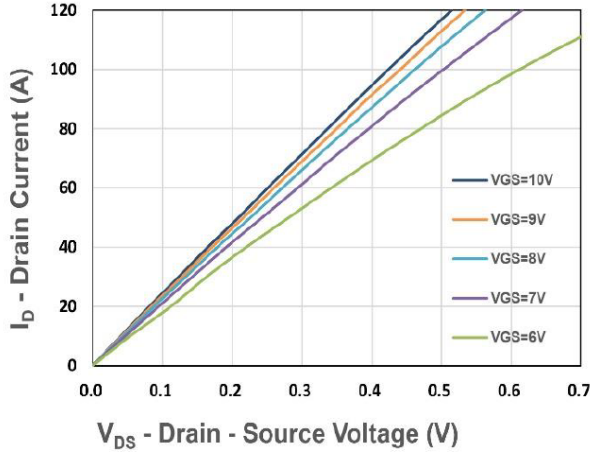


Fig 2. On-Resistance vs. I_D

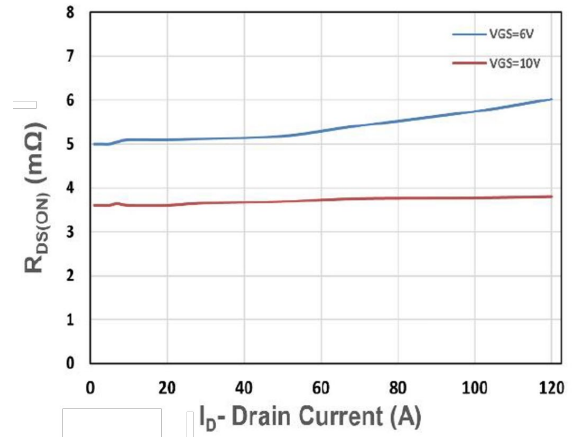


Fig 3. On-Resistance vs. V_{GS}

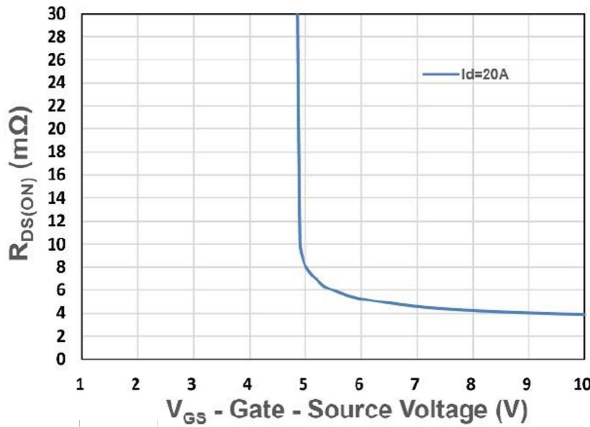


Fig 4. Gate Threshold Voltage

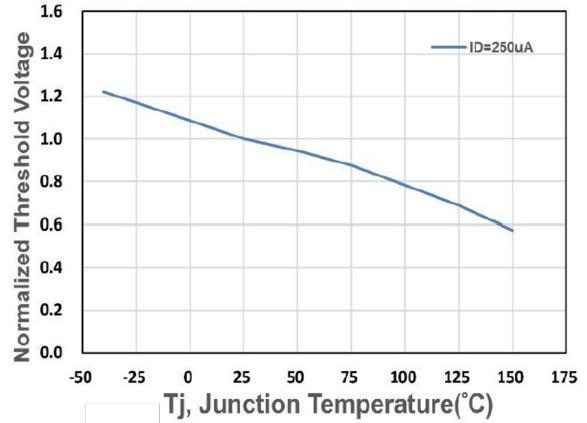


Fig 5. Drain-Source On Resistance

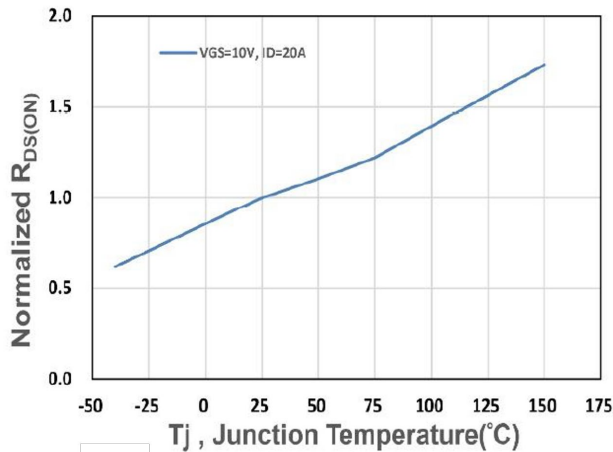


Fig 6. Source-Drain Diode Forward

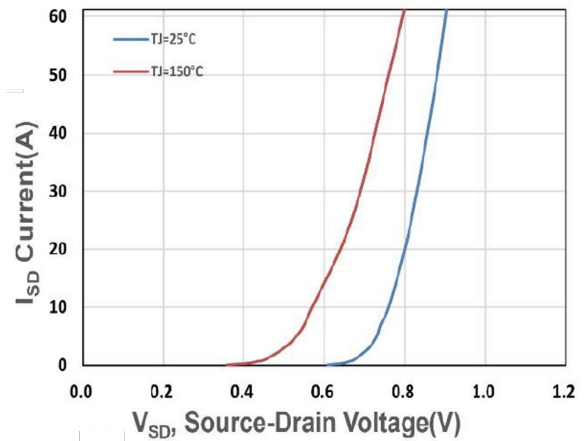




Fig 7. Capacitance

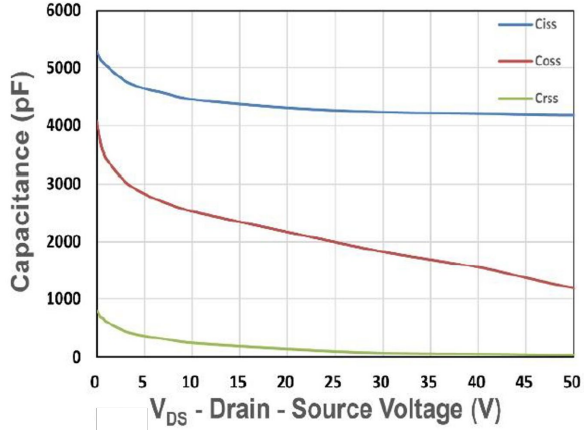


Fig 8. Gate Charge Characteristics

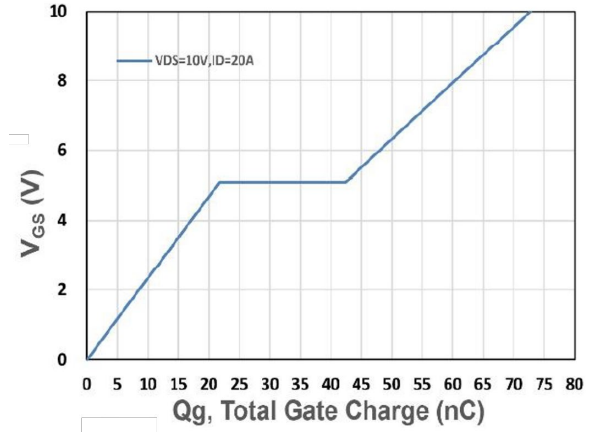


Fig 9. Power Dissipation

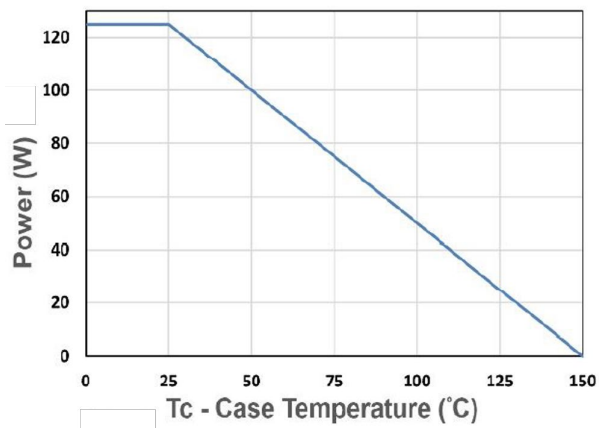


Fig 10. Drain Current

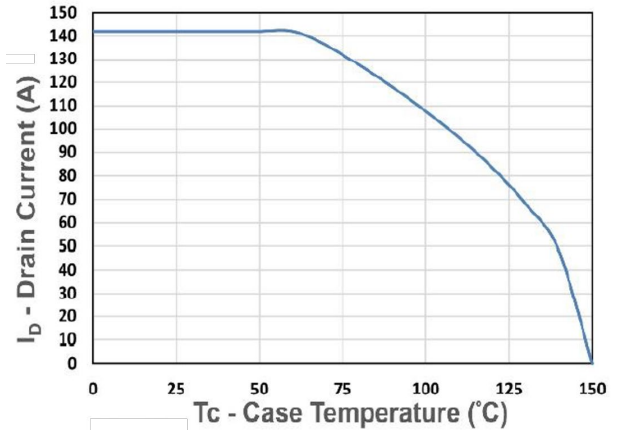


Fig 11. Safe Operating Area

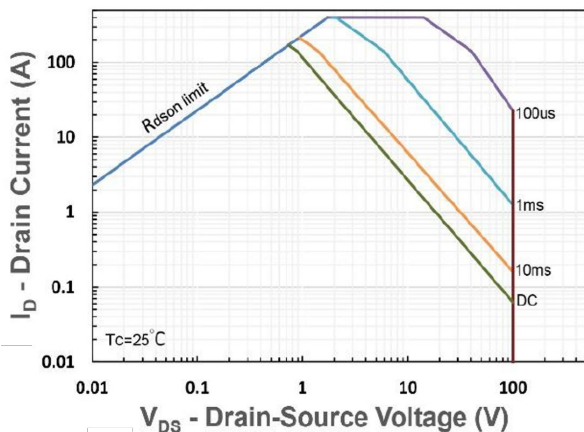
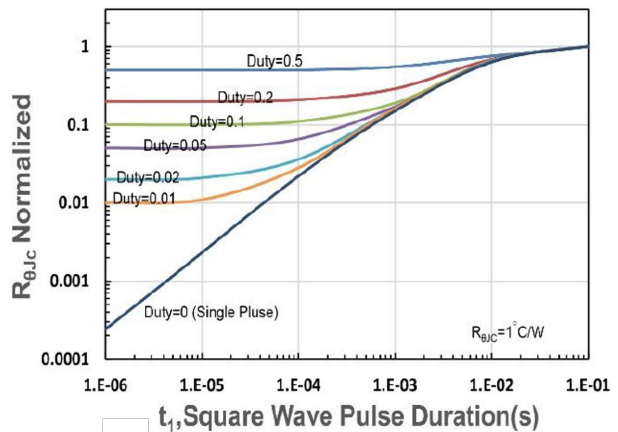


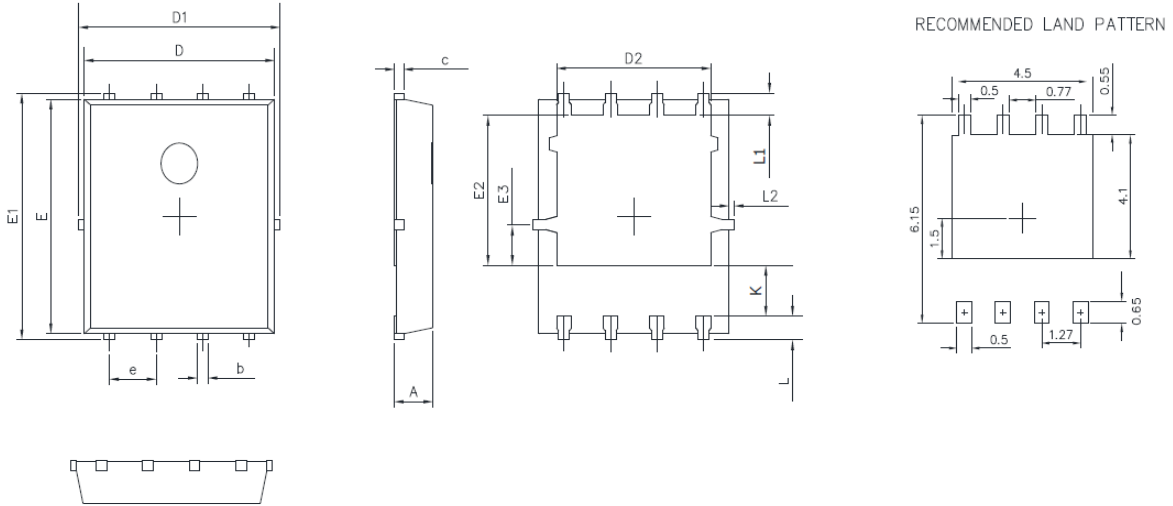
Fig 12. R_{θJc} Transient Thermal Impedance





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



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