DESCRIPTION

The AM045NS10HPJ is available in PDFN8(5x6) package.

BVDSS	RDSON	ID
100V	4.5mΩ	120A

Application

- Battery protection
- Load switch
- Uninterruptible power supply

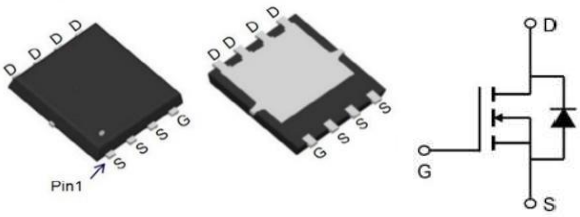
ORDERING INFORMATION

Package Type	Part Number	
PDFN8(5x6) SPQ:5,000pcs/Reel	PJ8	AM045NS10HPJ8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURES

- V_{DS} = 100V, I_D= 120A
- $R_{DS(ON)}$ Typ = 4.5mΩ @ 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

ABSOLUTE MAXIMUM RATINGS

T_J= 25°C, unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	120	A
Pulsed Drain Current (Note1)	I_{DM}	520	A
Single Pulse Avalanche Energy (Note1)	E_{AS}	750	mJ
Total Power Dissipation	P_D	210	W
Storage Temperature Range	T_{STG}	-55 to +175	°C
Operating Junction Temperature Range	T_J	175	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	55	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.71	°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.

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	100	-	-	V
Gate Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-Source Leakage Current	I_{DSS}	V_{DS} = 100 V, V_{GS} = 0 V	-	-	1	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= VGS, I_D=250μA	2.0	-	4.0	V
Drain-Source on-Resistance 4	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	4.5	5.6	mΩ
Forward Transconductance4	g_{fs}	V_{DS}=5V , I_D=65A	-	130	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=50V	-	4350	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	2150	-	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz	-	220	-	pF
Gate Resistance	R_g	f=1MHz	-	1.3	-	Ω
Total Gate Charge	Q_g	V_{GS}=10V	-	110	-	nC
Gate-Source Charge	Q_{gs}	V_{DS}=50V	-	33	-	nC
Gate-Drain Charge	Q_{gd}	I_D=65A	-	30	-	nC
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V	-	23	-	ns
Rise Time	T_r	V_{DD}=50V	-	15	-	ns
Turn-Off Delay Time	$t_{d(OFF)}$	R_G=3Ω	-	48	-	ns
Fall Time	t_f	I_D=65A	-	16	-	ns
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time(Note2)	t_{rr}	T_J = 25℃, I_F= 65A di / dt = 100 A/μs	-	70	-	ns
Body Diode Reverse Recovery Charge(Note2)	Q_{rr}		-	117	-	nC
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=40A , T_J=25℃	-	0.86	1.2	V
Continuous Source Current	I_S		-	-	120	A

Note:
1. Pulse test: 300 μs pulse width, 2 % duty cycle

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

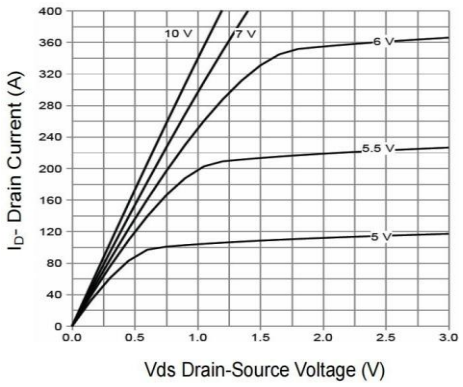


Fig 2. Normalized On-Resistance

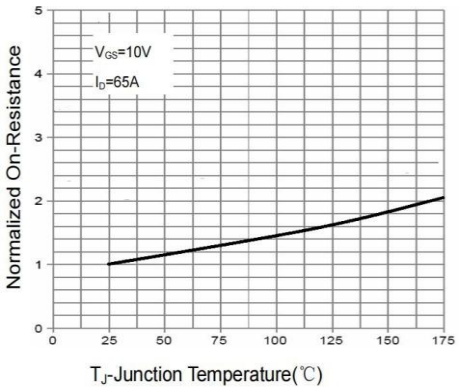


Fig 3. Typical Transfer Characteristics s

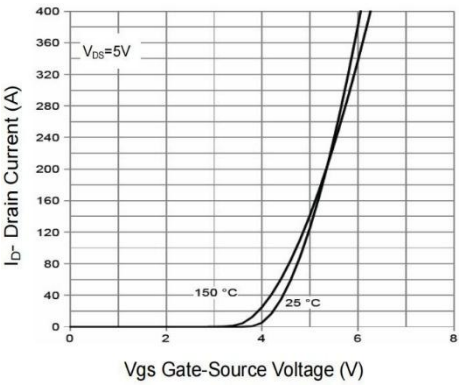


Fig 4. Gate-Source Voltage vs. Gate Charge

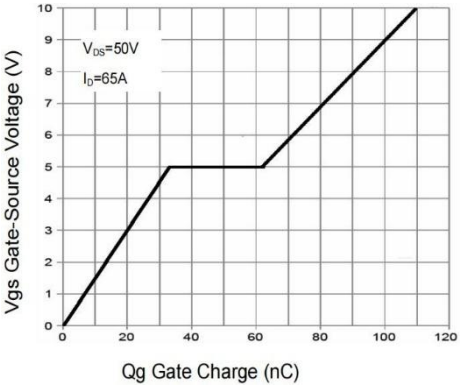


Fig 5. $R_{dS(on)}$ vs. Drain Current

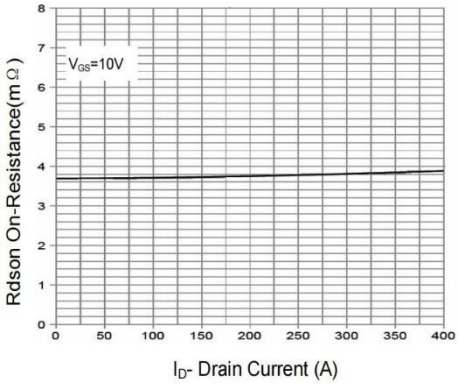


Fig 6. Reverse Drain Current vs. Source-Drain Voltage

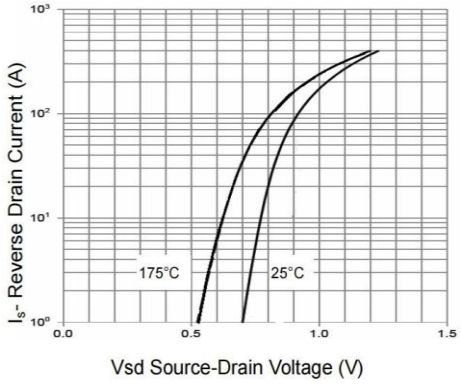


Fig 7. Capacitance Characteristics

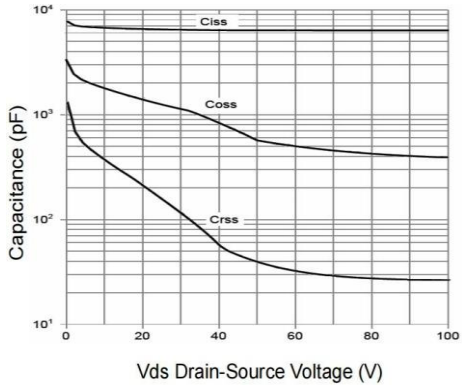


Fig 8. Power Dissipation

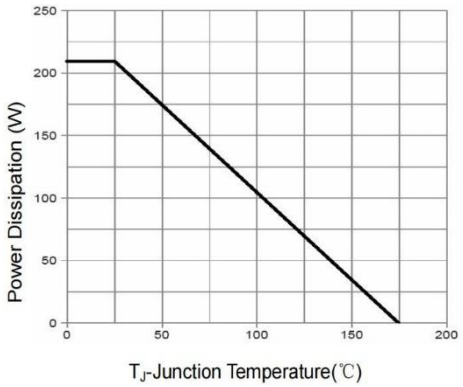


Fig 9. I_D-Drain Current vs. V_{sd} Drain-Source Voltage

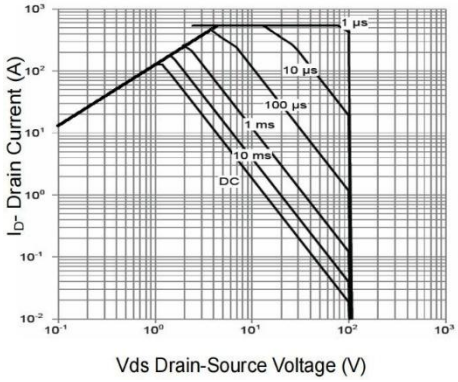


Fig 10. I_D-Drain Current vs. T_J-Junction Temperature

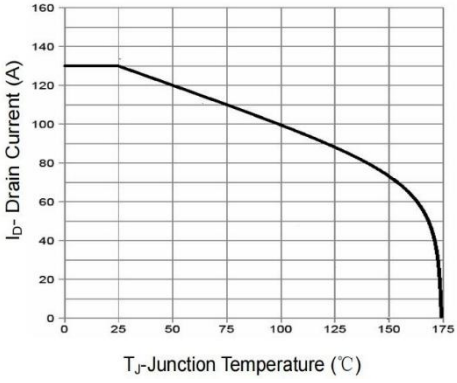
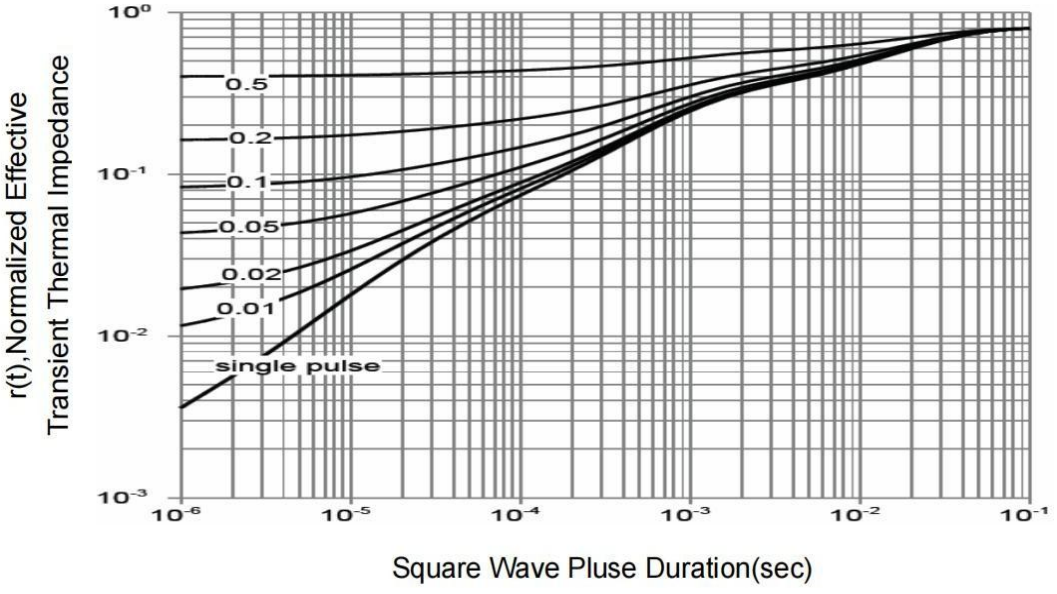
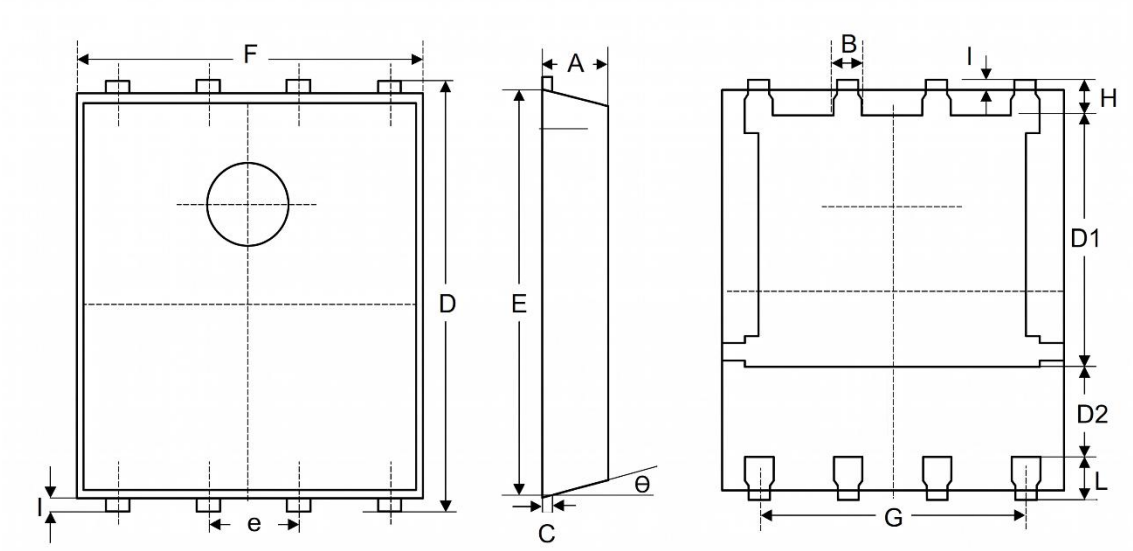


Fig 11. Normalized Maximum Transient Thermal Impedance



PACKAGE INFORMATION

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



Symbol	Millimeters	
	Min	Max
A	0.9	1.2
A2	0.204	0.304
b	0.4ref.	
b1	0.2	0.4
D	5.0	5.3
D1	4.84	5.24
E	5.95	6.35
E1	3.275	3.675
E2	5.69	6.09
e	1.27typ.	
K	1.29typ.	
L	0.585	0.785
L1	0.7typ.	

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