



## DESCRIPTION

AM7296 is available in DFN8 (3.3x3.3) package.

## ORDERING INFORMATION

Package Type	Part Number	
DFN8(3.3x3.3) SPQ: 5,000pcs/Reel	J8	AM7296J8R
		AM7296J8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

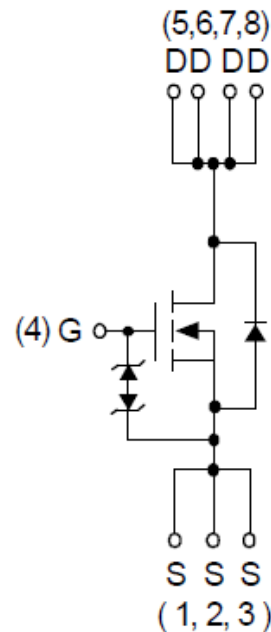
## FEATURES

- 100V/15A,  
 $R_{DS(ON)} = 54m\Omega(\text{max.}) @ V_{GS}=10V$
- 100% UIS +  $R_g$  Tested
- Reliable and Rugged
- Available in DFN8 (3.3x3.3) package.

## APPLICATION

- Power Management in DC/DC Converter.
- POE Protection Switch.

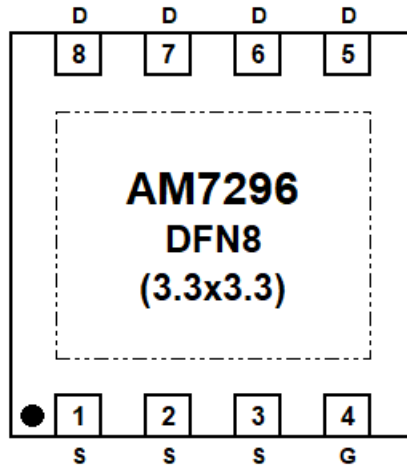
## PIN DESCRIPTION



N-Channel MOSFET



## PIN DESCRIPTION



Top View

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



## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C, unless otherwise noted

V <sub>DSS</sub> , Drain-Source Voltage		100V
V <sub>GSS</sub> , Gate-Source Voltage		±20V
T <sub>J</sub> , Maximum Junction Temperature		150°C
T <sub>STG</sub> , Storage Temperature Range		-55°C~+150°C
I <sub>S</sub> , Diode Continuous Forward Current	T <sub>C</sub> =25°C	7A
I <sub>D</sub> , Continuous Drain Current	T <sub>C</sub> =25°C	15A
	T <sub>C</sub> =100°C	9.6A
I <sub>DM</sub> <sup>NOTE1</sup> , Pulsed Drain Current	T <sub>C</sub> =25°C	60A
P <sub>D</sub> , Maximum Power Dissipation	T <sub>C</sub> =25°C	25W
	T <sub>C</sub> =100°C	10W
R <sub>θJC</sub> , Thermal Resistance-Junction to Case		5°C/W
I <sub>D</sub> , Continuous Drain Current	T <sub>A</sub> =25°C	3.8A
	T <sub>A</sub> =70°C	3A
P <sub>D</sub> , Maximum Power Dissipation	T <sub>A</sub> =25°C	1.56W
	T <sub>A</sub> =70°C	1W
R <sub>θJA</sub> <sup>NOTE3</sup> , Thermal Resistance-Junction to Ambient	Steady State	80°C/W
I <sub>AS</sub> <sup>NOTE2</sup> , Avalanche Current, Single Pulse	L=0.5mH	8A
E <sub>AS</sub> <sup>NOTE2</sup> , Avalanche Energy, Single Pulse	L=0.5mH	16mJ

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: Pulse width limited by maximum junction temperature.

NOTE2: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T<sub>J</sub>=25°C).

NOTE3: Surface Mounted on 1in<sup>2</sup> pad area.



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C	-	-	1	μA
			-	-	30	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	2	3	4	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±10	μA
Drain-Source On-state Resistance	R <sub>DS(ON)</sub> NOTE4	V <sub>GS</sub> =10V, I <sub>DS</sub> =7A	-	45	54	mΩ
<b>Diode Characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub> NOTE4	I <sub>SD</sub> =7A, V <sub>GS</sub> =0V	-	0.8	1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>SD</sub> =7A, dI <sub>SD</sub> /dt=100A/μs	-	30	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	40	-	nC
<b>Dynamic Characteristics</b> <sup>NOTE5</sup>						
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	-	1.5	-	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, Frequency=1.0MHz	-	350	460	pF
Output Capacitance	C <sub>oss</sub>		-	120	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	11	-	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, R <sub>L</sub> =30Ω, I <sub>DS</sub> =1A, V <sub>GEN</sub> =10V, R <sub>G</sub> =6Ω	-	9	17	ns
Turn-on Rise Time	t <sub>r</sub>		-	6	11	
Turn-off Delay Time	t <sub>d(off)</sub>		-	14	26	
Turn-off Fall Time	t <sub>f</sub>		-	12	22	
<b>Gate Charge Characteristics</b> <sup>NOTE5</sup>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>DS</sub> =7A	-	7.5	11	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.6	-	

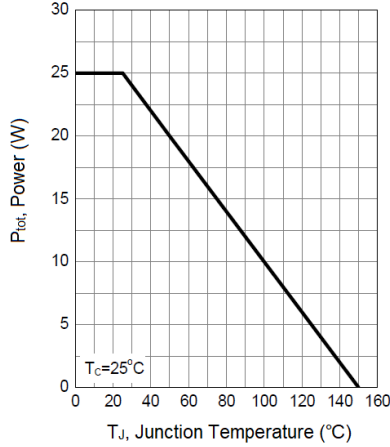
NOTE4: Pulse test; pulse width≤300μs, duty cycle≤2%.

NOTE5: Guaranteed by design, not subject to production testing.

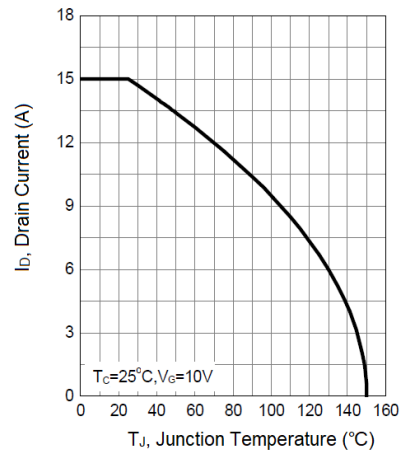


## TYPICAL CHARACTERISTICS

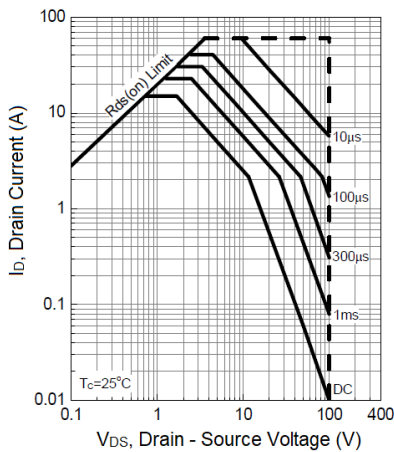
### 1. Power Dissipation



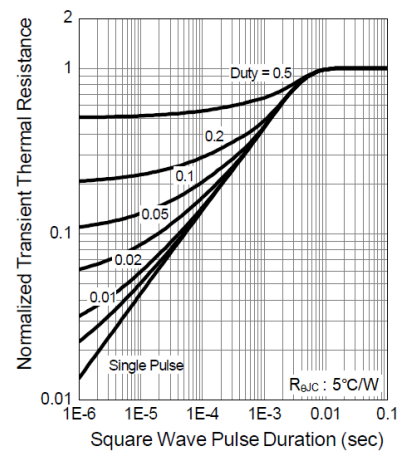
### 2. Drain Current



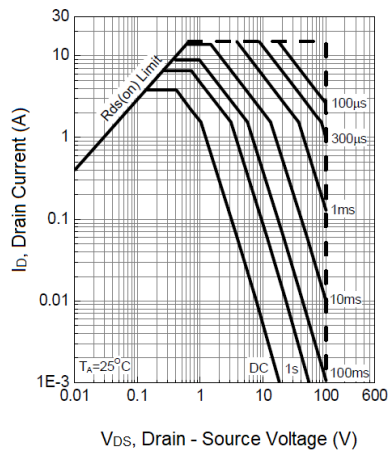
### 3. Safe Operation Area



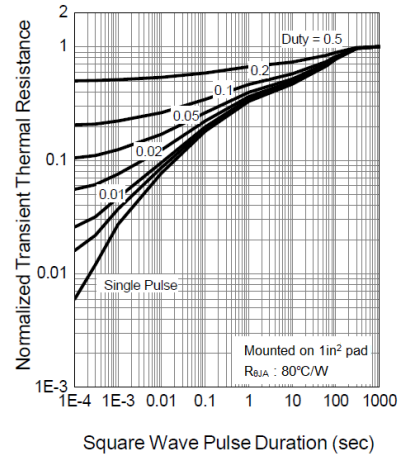
### 4. Thermal Transient Impedance



### 5. Safe Operation Area

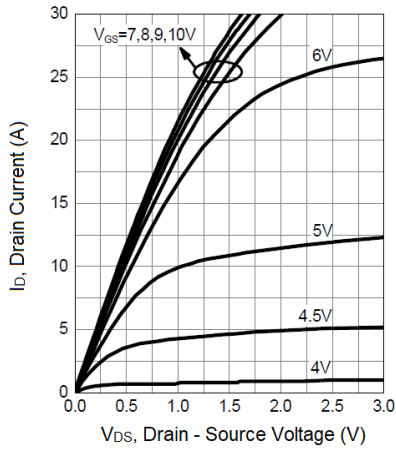


### 6. Thermal Transient Impedance

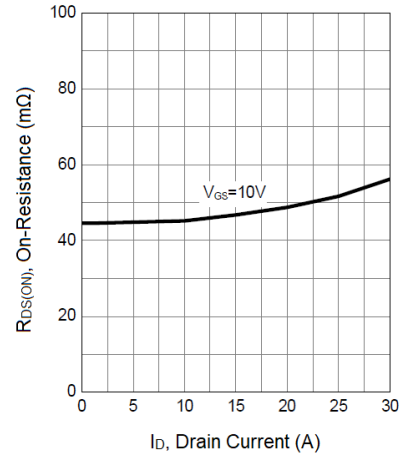




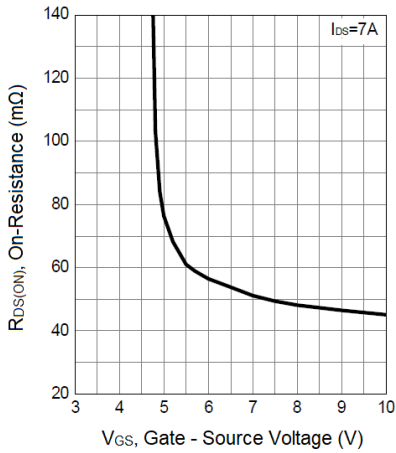
### 7. Output Characteristics



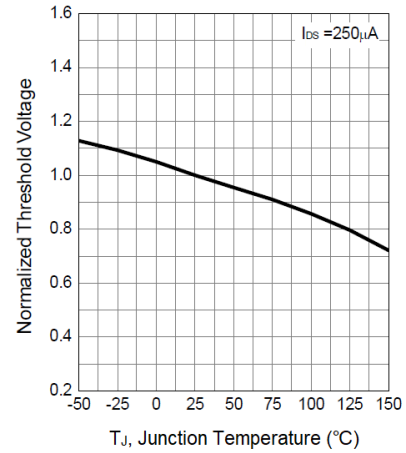
### 8. Drain-Source On Resistance



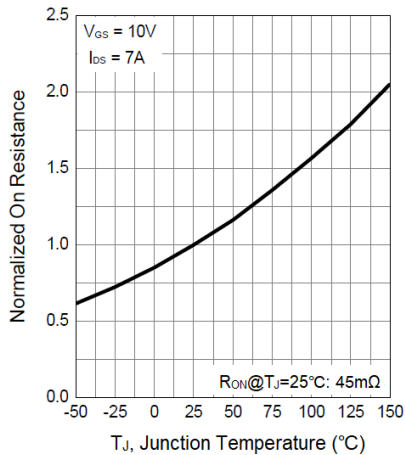
### 9. Gate-Source On Resistance



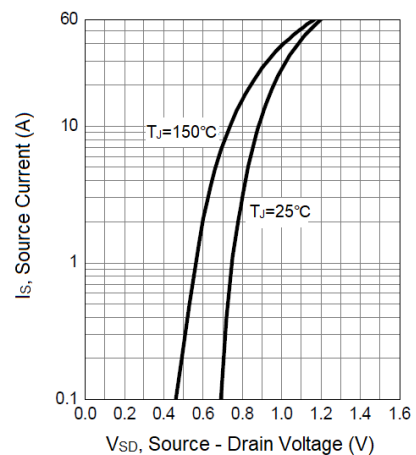
### 10. Gate Threshold Voltage



### 11. Drain-Source On Resistance

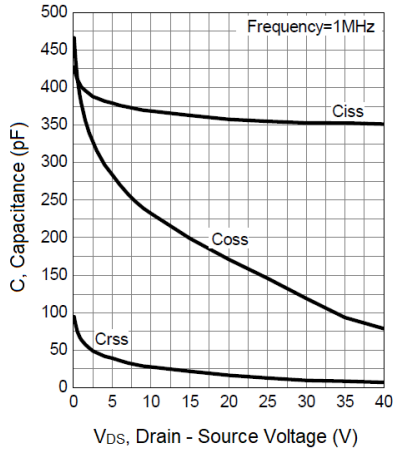


### 12. Source-Drain Diode Forward

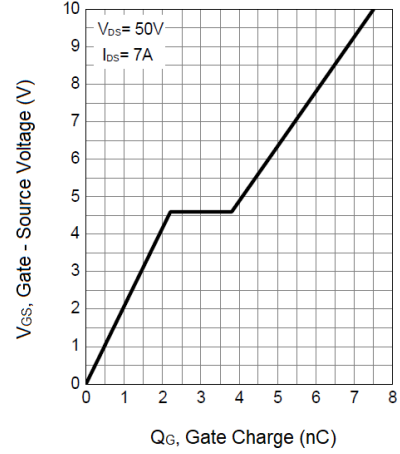




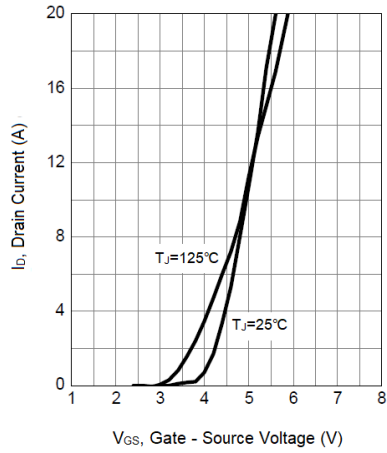
### 13. Capacitance



### 14. Gate Charge

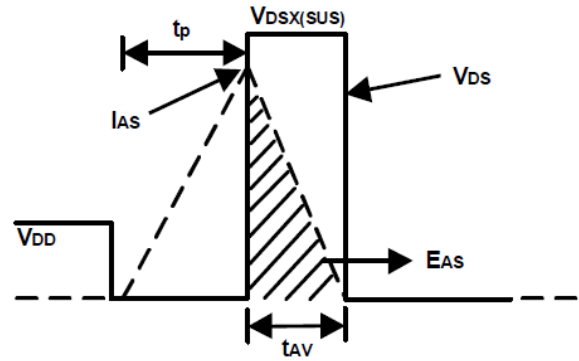
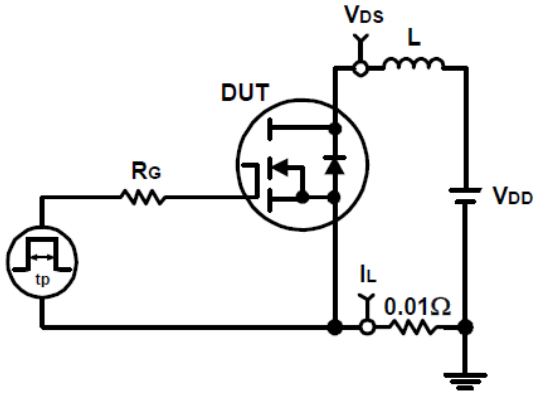


### 15. Transfer Characteristics

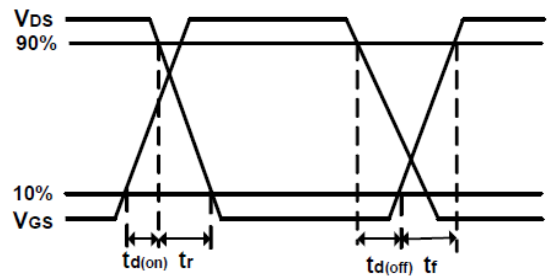
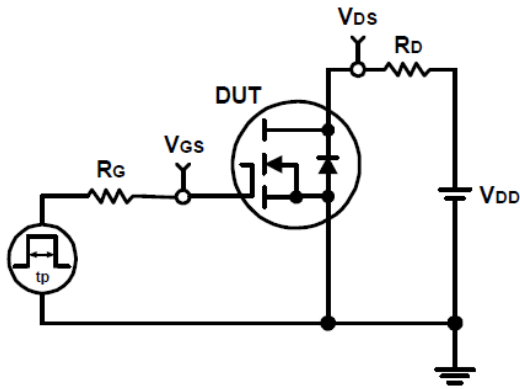




**Avalanche Test Circuit and Waveforms**



**Switching Time Test Circuit and Waveforms**

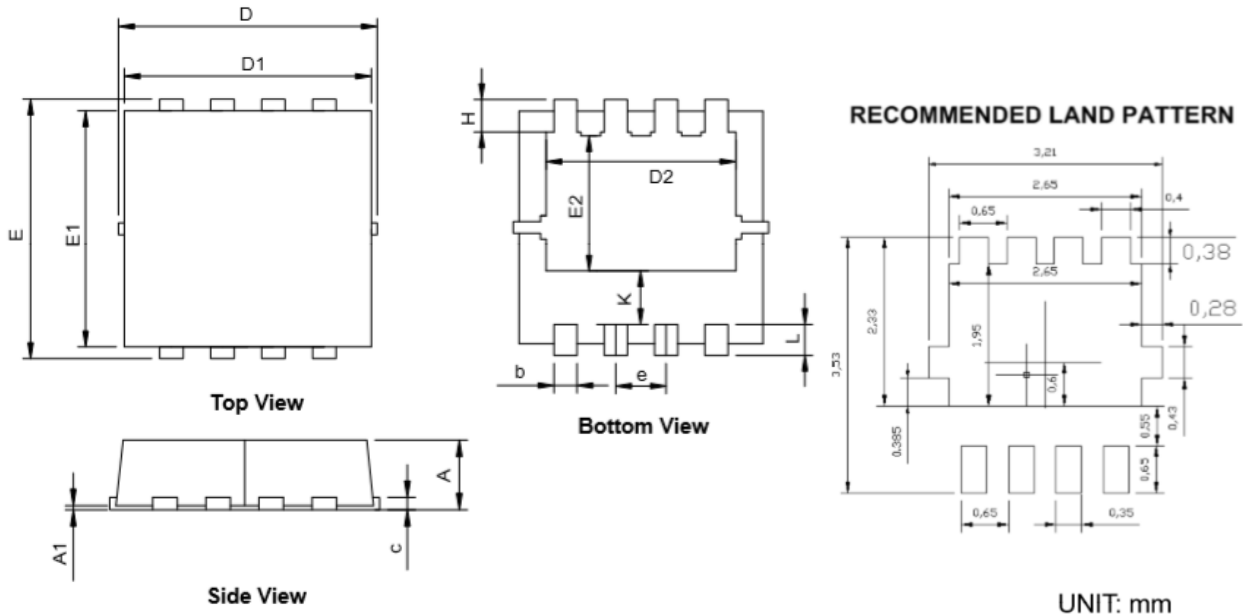






## PACKAGE INFORMATION

Dimension in DFN8 (3.3x3.3) Package (Unit: mm)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.59	0.093	0.102
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.98	0.065	0.078
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022



## IMPORTANT NOTICE

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