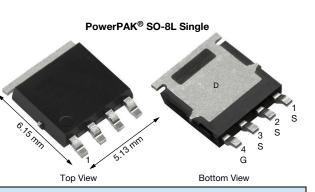
SiJA72ADP Vishay Siliconix

www.vishay.com



PRODUCT SUMMARY	
V _{DS} (V)	40
$R_{DS(on)}$ max. (Ω) at V_{GS} = 10 V	0.00342
$R_{DS(on)}$ max. (Ω) at V_{GS} = 4.5 V	0.00478
Q _g typ. (nC)	14.8
I _D (A)	96
Configuration	Single

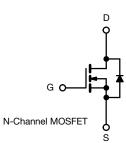
FEATURES

N-Channel 40 V (D-S) MOSFET

- TrenchFET[®] Gen IV power MOSFET
- Tuned for the lowest R_{DS}-Q_{oss} FOM
- 100 % R_q and UIS tested
- Q_{gd}/Q_{gs} ratio < 1 optimizes switching characteristics
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

- Synchronous rectification
- High power density DC/DC
- DC/AC inverters
- Battery and load switch



ORDERING INFORMATION	
Package	PowerPAK SO-8L
Lead (Pb)-free and halogen-free	SiJA72ADP-T1-GE3

PARAMETER		SYMBOL	LIMIT	UNIT	
Drain-source voltage		V _{DS}	40	V	
Gate-source voltage		V _{GS}	+20, -16	- V	
	T _C = 25 °C		96	_	
Continuous drain surrent (T 150 °C)	T _C = 70 °C		77		
Continuous drain current ($T_J = 150 \ ^{\circ}C$)	T _A = 25 °C	I _D	27.9 ^{b, c}		
	T _A = 70 °C		22.4 ^{b, c}		
Pulsed drain current (t = 100 µs)	•	I _{DM}	150	— A	
Continuous source-drain diode current	T _C = 25 °C		51.7		
	T _A = 25 °C	I _S	4.4 ^{b, c}		
Single pulse avalanche current	L = 0.1 mH	I _{AS}	15		
Single pulse avalanche Energy	L = 0.1 MH	E _{AS}	11.25	mJ	
	T _C = 25 °C		56.8	w	
Manimum manual disain sting	T _C = 70 °C		36.4		
Maximum power dissipation	T _A = 25 °C	P _D	4.8 ^{b, c}		
	T _A = 70 °C	1	3.1 ^{b, c}		
Operating junction and storage temperature range		T _J , T _{stg}	-55 to +150	**	
Soldering recommendations (peak temperature) d, e			260		

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient ^{b, f}	t ≤ 10 s	R _{thJA}	22	26	°C/W
Maximum junction-to-case (drain)	Steady state	R _{thJC}	1.8	2.2	C/ W

Notes

a. T_C = 25 °C

b. Surface mounted on 1" x 1" FR4 board

c. t = 10 s

d. See solder profile (<u>www.vishay.com/doc?73257</u>). The PowerPAK SO-8L is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection

e. Rework conditions: manual soldering with a soldering iron is not recommended for leadless components

f. Maximum under steady state conditions is 70 °C/W

S18-0643-Rev. A, 25-Jun-2018

1

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>



HALOGEN

FREE

www.vishay.com

SiJA72ADP Vishay Siliconix

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Static			•	•			
Drain-source breakdown voltage	V _{DS}	$V_{GS} = 0 \text{ V}, \text{ I}_{D} = 250 \mu\text{A}$	40	-	-	V	
V _{DS} temperature coefficient	$\Delta V_{DS}/T_{J}$	/T		22	-		
V _{GS(th)} temperature coefficient	$\Delta V_{GS(th)}/T_J$	I _D = 250 μA	-	-5.4	-	mV/°C	
Gate-source threshold voltage	V _{GS(th)}	$V_{DS} = V_{GS}$, $I_D = 250 \ \mu A$	1	-	2.4	V	
Gate-source leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = +20, -16 V$	-	-	± 100	nA	
		$V_{DS} = 40 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$	-	-	1	^	
Zero gate voltage drain current	IDSS	$V_{DS} = 40 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 \text{ °C}$	-	-	10	μA	
On-state drain current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, \text{ V}_{GS} = 10 \text{ V}$	30	-	-	А	
		V _{GS} = 10 V, I _D = 10 A -		0.00285	0.00342		
Drain-source on-state resistance ^a	R _{DS(on)}	$V_{GS} = 4.5 \text{ V}, \text{ I}_{D} = 10 \text{ A}$	-	0.00398	0.00478	- Ω	
Forward transconductance ^a	g _{fs}	$V_{DS} = 10 \text{ V}, \text{ I}_{D} = 10 \text{ A}$	-	76	-	S	
Dynamic ^b	·		•		1		
Input capacitance	C _{iss}		-	2530	-	pF	
Output capacitance	C _{oss}		-	465	-		
Reverse transfer capacitance		$V_{DS} = 20 V, V_{GS} = 0 V, f = 1 MHz$	-	19	-		
C _{rss} /C _{iss} ratio			-	0.0075	0.0150		
	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	50					
Total gate charge			-	14.8	23	nC	
Gate-source charge	Q _{qs}	$V_{DS} = 20 \text{ V}, \text{ V}_{GS} = 4.5 \text{ V}, \text{ I}_{D} = 26 \text{ A}$	-	8.2	-		
Gate-drain charge	Q _{gd}		-	2.3	-		
Output charge	Q _{oss}	$V_{DS} = 20 \text{ V}, V_{GS} = 0 \text{ V}$	-	17.6	27		
Gate resistance	Rg	f = 1 MHz	0.26	1.3	2.6	Ω	
Turn-on delay time	t _{d(on)}		-	15	30		
Rise time	t _r	$V_{DD} = 20 \text{ V}, \text{ R}_{L} = 1 \Omega$	-	7	14		
Turn-off delay time	t _{d(off)}	$I_D \cong 20.8 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 1 \Omega$	-	35	70		
Fall time	t _f		-	5	10		
Turn-on delay time	t _{d(on)}		-	30	60	ns	
Rise time	t _r	$V_{DD} = 20 \text{ V}, \text{ R}_{L} = 1 \Omega$	-	150	300		
Turn-off delay time	t _{d(off)}	$I_D \cong 20.8$ Å, V_{GEN} = 4.5 V, R_g = 1 Ω	-	35	70		
Fall time	t _f		-	14	28		
Drain-Source Body Diode Characteristic	s			•			
Continuous source-drain diode current	I _S	T _C = 25 °C	-	-	51.7		
Pulse diode forward current ($t_p = 100 \ \mu s$)	I _{SM}		-	-	150	A	
Body diode voltage	V _{SD}	I _S = 10 A	-	0.74	1.1	V	
Body diode reverse recovery time	t _{rr}		-	22	44	ns	
Body diode reverse recovery charge	Q _{rr}	I _F = 20.8 A, di/dt = 100 A/μs,	-	10	20	nC	
Reverse recovery Fall time	t _a	$T_{\rm J} = 25 \ ^{\circ}{\rm C}$	-	12	-		
Reverse recovery rise time	t _b		-	10	-	ns	

Notes

a. Pulse test; pulse width $\leq 300~\mu s,~duty~cycle \leq 2~\%$

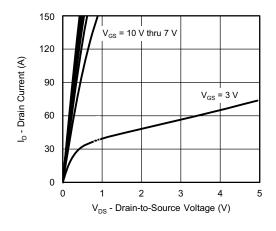
b. Guaranteed by design, not subject to production testing

Stresses beyond those listed under "Absolute Maximum Ratings" 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 operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

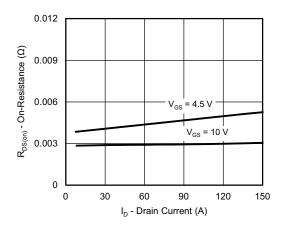
2



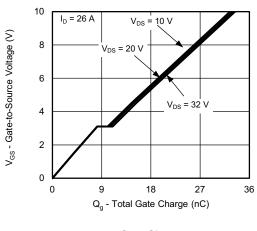
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



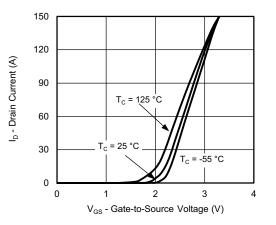
Output Characteristics



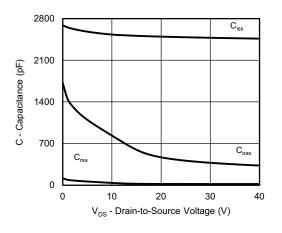
On-Resistance vs. Drain Current



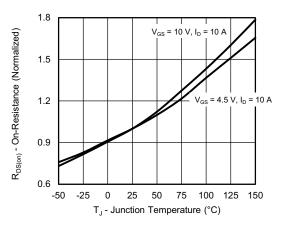
Gate Charge



Transfer Characteristics



Capacitance



On-Resistance vs. Junction Temperature

S18-0643-Rev. A, 25-Jun-2018

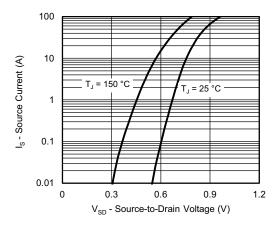
3

Document Number: 75342

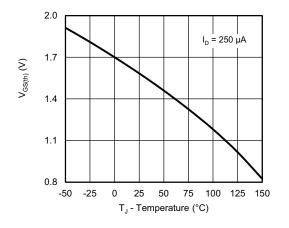
For technical questions, contact: <u>pmostechsupport@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>



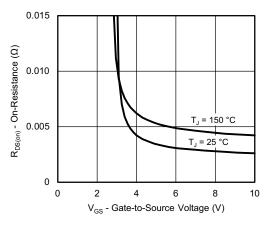
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



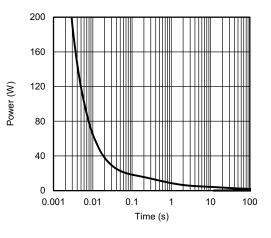
Source-Drain Diode Forward Voltage



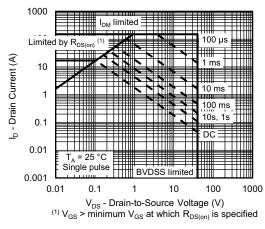
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient



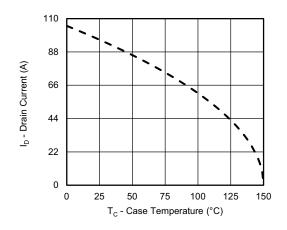
Safe Operating Area

4

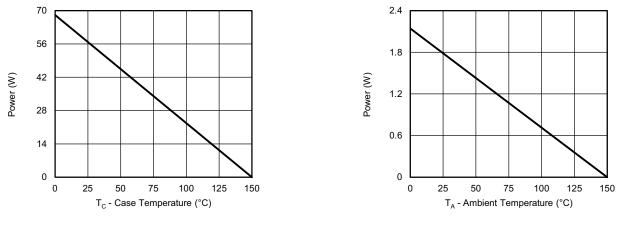
For technical questions, contact: <u>pmostechsupport@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating ^a



Power, Junction-to-Case

Power, Junction-to-Ambient

Note

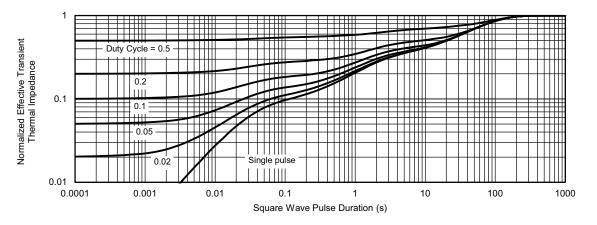
a. The power dissipation P_D is based on T_J max. = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit



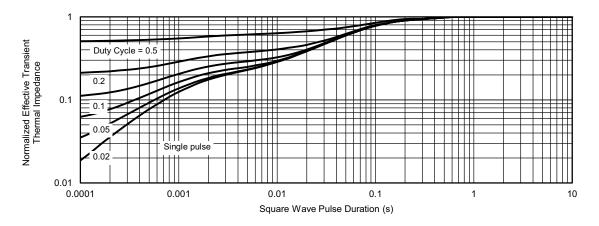
SiJA72ADP

Vishay Siliconix

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package / tape drawings, part marking, and reliability data, see www.vishay.com/ppg?75342.

6

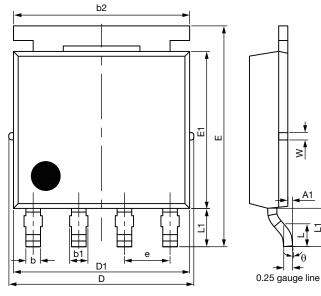


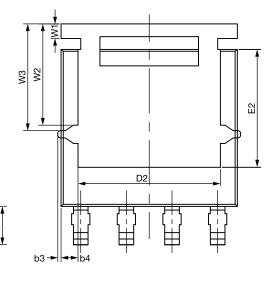


.

A1

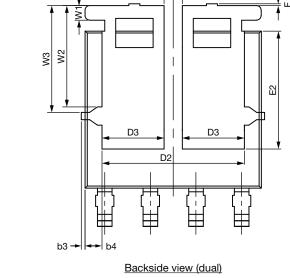
≥

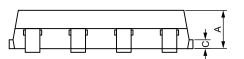




Topside view

Backside view (single)





THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Package Information



www.vishay.com

Vishay Siliconix

DIM	MILLIMETERS			INCHES				
DIM.	MIN.	NOM.	MAX.	MIN.	MIN. NOM.			
А	1.00	1.07	1.14	0.039	0.042	0.045		
A1	0.00	-	0.127	0.00	-	0.005		
b	0.33	0.41	0.48	0.013	0.016	0.019		
b1	0.44	0.51	0.58	0.017	0.020	0.023		
b2	4.80	4.90	5.00	0.189	0.193	0.197		
b3		0.094			0.004			
b4		0.47			0.019			
С	0.20	0.25	0.30	0.008	0.010	0.012		
D	5.00	5.13	5.25	0.197	0.202	0.207		
D1	4.80	4.90	5.00	0.189	0.193	0.197		
D2	3.86	3.96	4.06	0.152	0.156	0.160		
D3	1.63	1.73	1.83	0.064	0.068	0.072		
е		1.27 BSC		0.050 BSC				
E	6.05	6.15	6.25	0.238	0.242	0.246		
E1	4.27	4.37	4.47	0.168	0.172	0.176		
E2	3.18	3.28	3.38	0.125	0.129	0.133		
F	-	-	0.15	-	-	0.006		
L	0.62	0.72	0.82	0.024	0.028	0.032		
L1	0.92	1.07	1.22	0.036	0.042	0.048		
К		0.51			0.020			
W		0.23		0.009				
W1	0.41			0.016				
W2		2.82		0.111				
W3		2.96		0.117				
θ	0°	-	10°	0°	-	10°		

Note

• Millimeters will gover



RECOMMENDED MINIMUM PAD FOR PowerPAK[®] SO-8L SINGLE



Recommended Minimum Pads Dimensions in mm (inches)

Revision: 07-Feb-12



Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

© 2025 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Revision: 01-Jan-2025

1