

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number: SQJQ906E-T1_GE3

Manufacturer: Vishay Siliconix

Package: Please confirm with sales

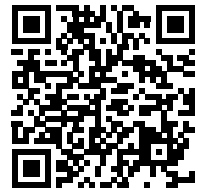
Availability: Please confirm with sales

Product Page:

<https://antrexco.com/product/details/vishay-siliconix/sqjq906e-t1-ge3.html>

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Contact Information

Email: info@antrexco.com

WhatsApp: +86-186-8066-5326

Website: <https://antrexco.com>

Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

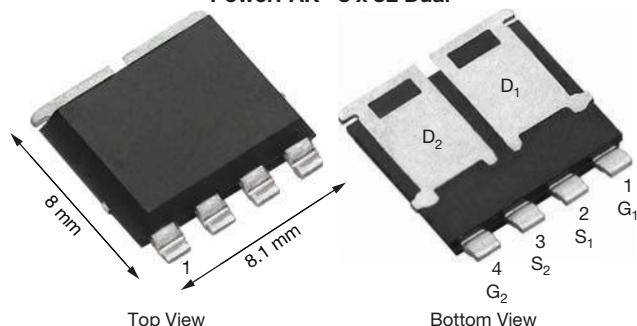
Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

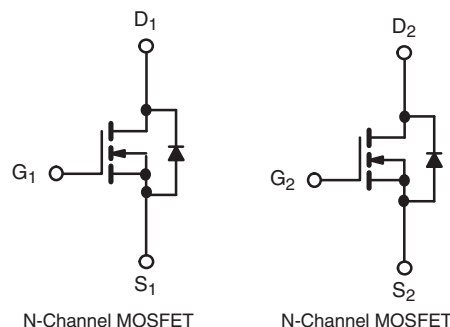
The original manufacturer datasheet follows from the next page.

Automotive Dual N-Channel 40 V (D-S) 175 °C MOSFET

PowerPAK® 8 x 8L Dual


FEATURES

- TrenchFET® power MOSFET
- AEC-Q101 qualified
- 100 % R_g and UIS tested
- Fully lead (Pb)-free device
- Material categorization:
for definitions of compliance please see
www.vishay.com/doc?99912



PRODUCT SUMMARY

V_{DS} (V)	40
$R_{DS(on)}$ (Ω) at $V_{GS} = 10$ V	0.0033
I_D (A) per leg	95
Configuration	Dual
Package	PowerPAK 8 x 8L

ABSOLUTE MAXIMUM RATINGS ($T_C = 25$ °C, unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V_{DS}	40	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	$T_C = 25$ °C ^a	95
		$T_C = 125$ °C	55
Continuous source current (diode conduction) ^a	I_S	45	A
Pulsed drain current ^b	I_{DM}	300	A
Single pulse avalanche current	I_{AS}	36	A
Single pulse avalanche energy	E_{AS}	64	mJ
Maximum power dissipation ^b	P_D	$T_C = 25$ °C	50
		$T_C = 125$ °C	17
Operating junction and storage temperature range	T_J, T_{stg}	-55 to +175	°C
Soldering recommendations (peak temperature) ^{d, e}		260	°C

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-ambient	R_{thJA}	100	°C/W
Junction-to-case (drain)	R_{thJC}	3	°C/W

Notes

- Package limited
- Pulse test; pulse width ≤ 300 μ s, duty cycle ≤ 2 %
- When mounted on 1" square PCB (FR4 material)
- See solder profile (www.vishay.com/doc?73257). The PowerPAK 8 x 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
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components



SPECIFICATIONS (T _C = 25 °C, unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-source breakdown voltage	V _{DS}	V _{GS} = 0, I _D = 250 μA		40	-	-	V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		2.5	3	3.5	
Gate-source leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V		-	-	± 100	nA
Zero gate voltage drain current	I _{DSS}	V _{GS} = 0 V	V _{DS} = 20 V	-	-	1	μA
		V _{GS} = 0 V	V _{DS} = 40 V, T _J = 125 °C	-	-	50	
		V _{GS} = 0 V	V _{DS} = 40 V, T _J = 175 °C	-	-	150	
On-state drain current ^a	I _{D(on)}	V _{GS} = 10 V	V _{DS} ≥ 5 V	40	-	-	A
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 10 V	I _D = 5 A	-	0.0027	0.0033	Ω
		V _{GS} = 10 V	I _D = 5 A, T _J = 125 °C	-	-	0.0048	
		V _{GS} = 10 V	I _D = 5 A, T _J = 175 °C	-	-	0.0056	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 15 A		-	75	-	S
Dynamic ^b							
Input capacitance	C _{iss}	V _{GS} = 0 V	V _{DS} = 20 V, f = 1 MHz	-	2880	3600	pF
Output capacitance	C _{oss}			-	1635	2045	
Reverse transfer capacitance	C _{rss}			-	85	105	
Total gate charge ^c	Q _g	V _{GS} = 10 V	V _{DS} = 20 V, I _D = 10 A	-	34	42	nC
Gate-source charge ^c	Q _{gs}			-	11	-	
Gate-drain charge ^c	Q _{gd}			-	4	-	
Gate resistance	R _g	f = 1 MHz		0.7	1.1	1.9	Ω
Turn-on delay time ^c	t _{d(on)}	V _{DD} = 20 V, R _L = 2 Ω I _D ≅ 10 A, V _{GEN} = 10 V, R _g = 1 Ω		-	14	19	ns
Rise time ^c	t _r			-	4	6	
Turn-off delay time ^c	t _{d(off)}			-	26	35	
Fall time ^c	t _f			-	4	6	
Source-Drain Diode Ratings and Characteristics ^b							
Pulsed current ^a	I _{SM}			-	-	600	A
Forward voltage	V _{SD}	I _F = 40 A, V _{GS} = 0		-	1	1.2	V

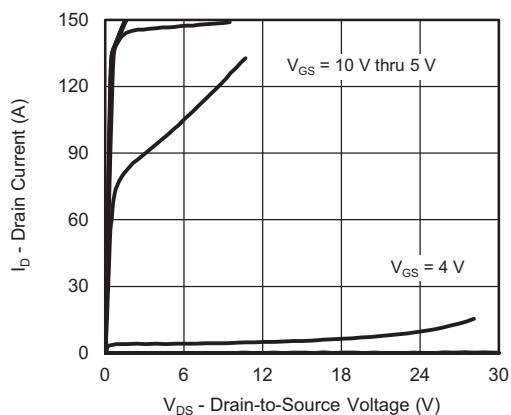
Notes

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
b. Guaranteed by design, not subject to production testing
c. Independent of operating temperature

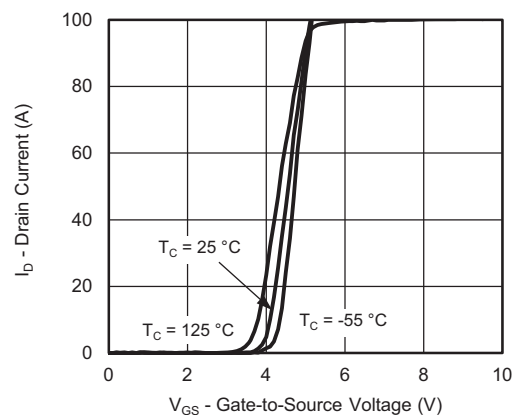
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



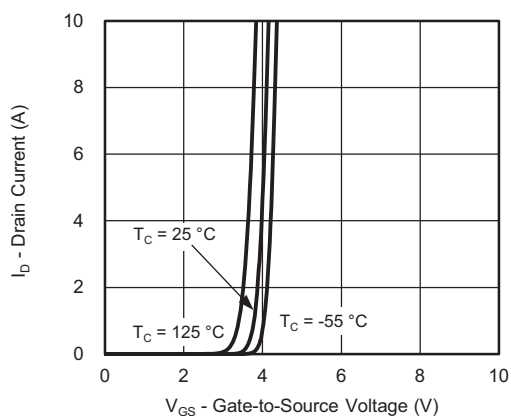
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)



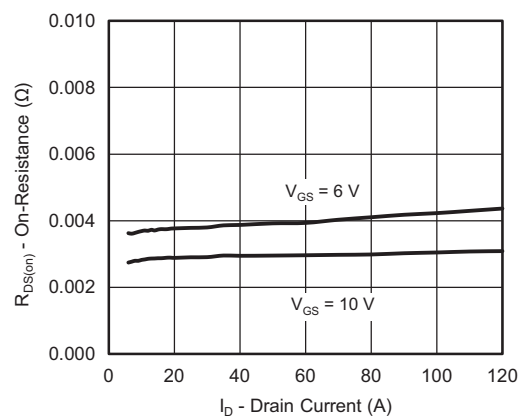
Output Characteristics



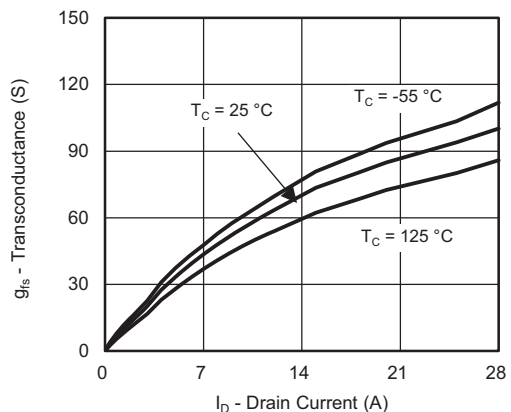
Transfer Characteristics



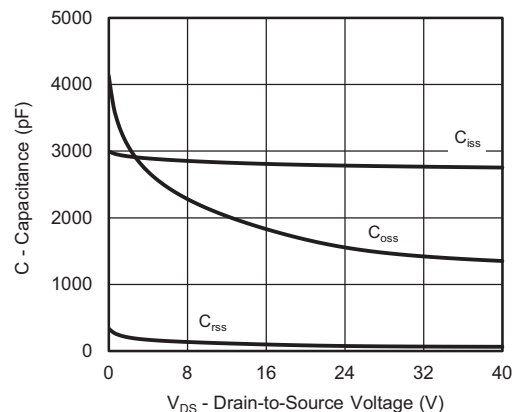
Transfer Characteristics



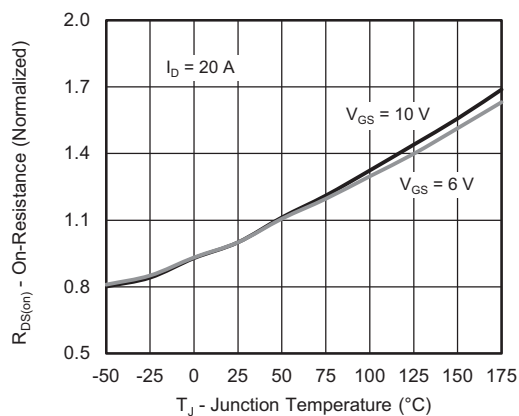
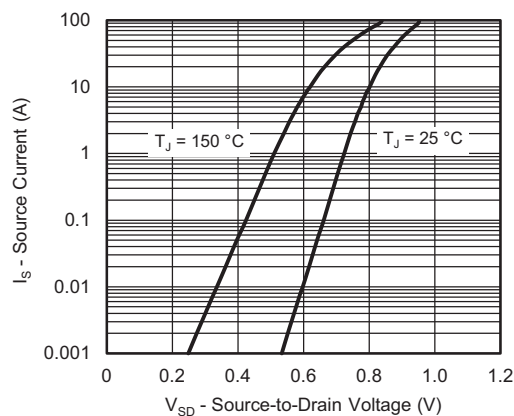
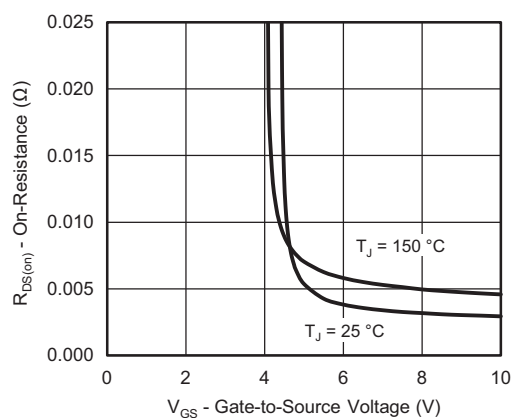
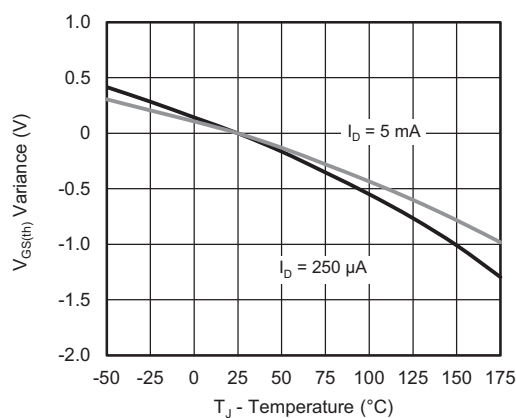
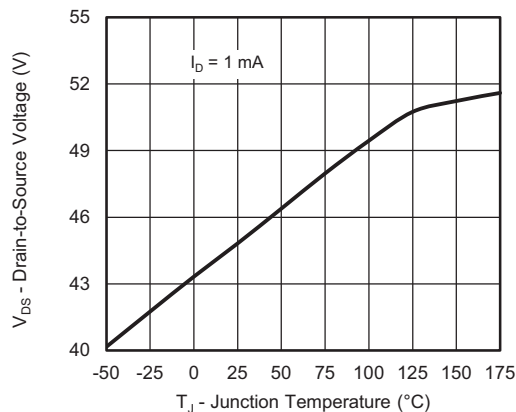
On-Resistance vs. Drain Current

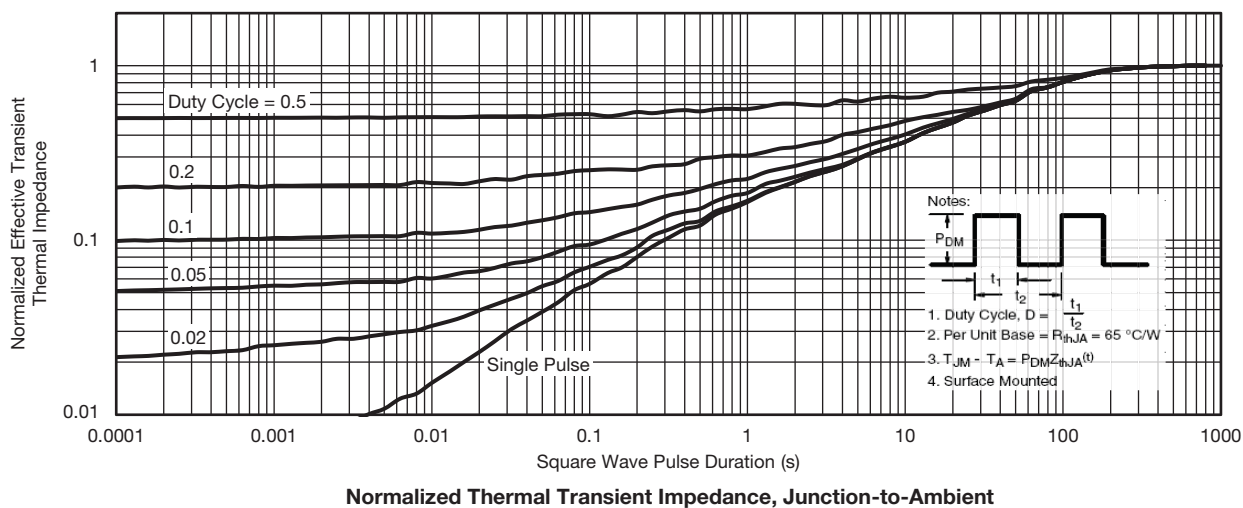
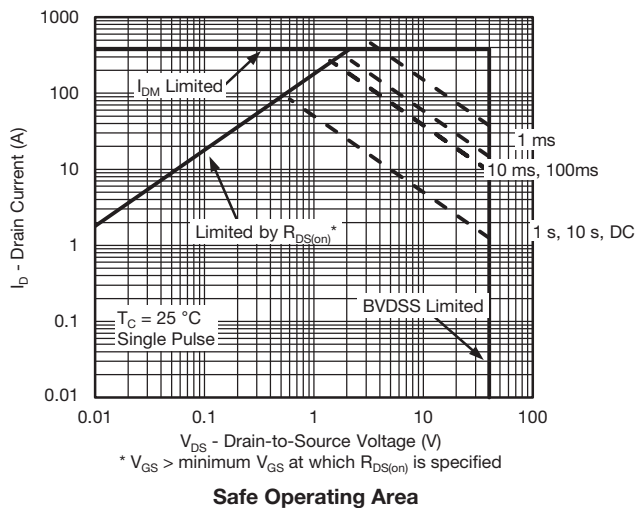


Transconductance



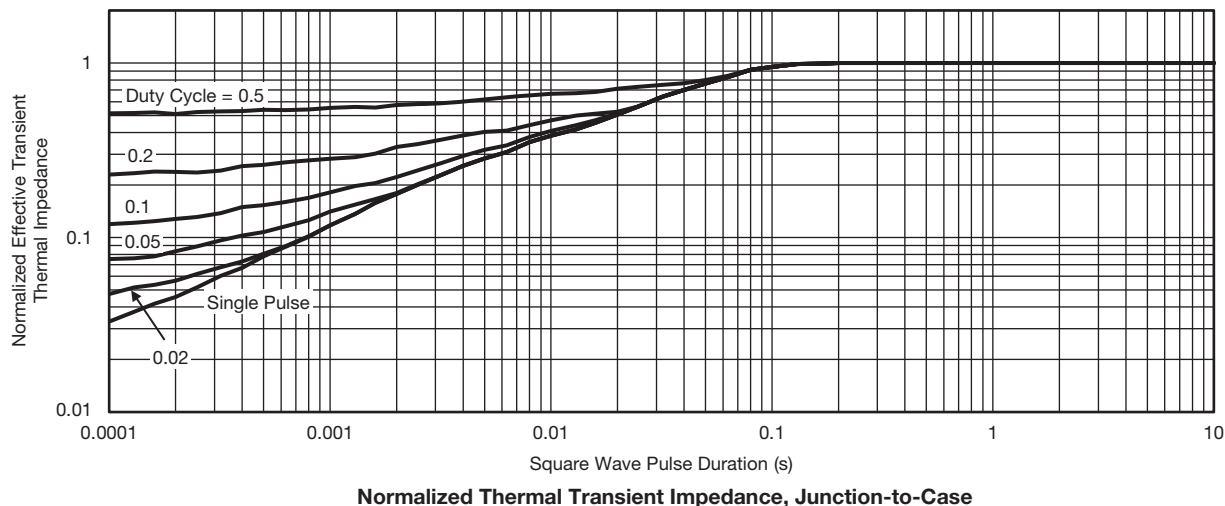
Capacitance

TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

On-Resistance vs. Junction Temperature

Source Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Drain Source Breakdown vs. Junction Temperature

THERMAL RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)




THERMAL RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)



Note

- The characteristics shown in the two graphs
 - Normalized Transient Thermal Impedance Junction to Ambient ($25\text{ }^{\circ}\text{C}$)
 - Normalized Transient Thermal Impedance Junction to Case ($25\text{ }^{\circ}\text{C}$)are given for general guidelines only to enable the user to get a “ball park” indication of part capabilities. The data are extracted from single pulse transient thermal impedance characteristics which are developed from empirical measurements. The latter is valid for the part mounted on printed circuit board - FR4, size 1" x 1" x 0.062", double sided with 2 oz. copper, 100 % on both sides. The part capabilities can widely vary depending on actual application parameters and operating conditions.

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?76462.



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