Revision in SQJ142EP Datasheet from Rev. B to Rev. C

For further information, please contact your regional Vishay office.

CONTACT INFORMATION

Americas

Vishay Siliconix
2565 Junction Ave
-
San Jose CA United States 95134
Phone: (408) 988-8000
Fax:
business-americas@vishay.com

Europe

Vishay Electronic GmbH
Dr.-Felix-Zandman-Platz 1
-
Selb Germany 95100
Phone: 49-9287-71 0
Fax: 49-9287-70435
business-europe@vishay.com

Asia

Vishay Intertechnology Asia Pte. Ltd
37A Tampines Street 92 #07-01
-
Singapore Singapore 528886
Phone: 65 6788 6668
Fax: 65 6788 0988
business-asia@vishay.com

Description of Change: As part of Vishay Siliconix commitment to quality, we would like to extend to you a courtesy notification of a datasheet revision for SQJ142EP (Doc #77422 Rev C attached). There is no change to the materials or processes used in the manufacture of this part.

The changes per this Advisory reflect updates as follows:

- Update Crss typ from 30pF to 53pF and Crss max from 42pF to 75pF
- Update capacitance graph
- Correct typo on Qgd typ from 6.7nC to 6nC

This notification is for information only and there is no need for a response.

Reason for Change: Datasheet Revision

Expected Influence on Quality/Reliability/Performance: None

Part Numbers/Series/Families Affected: SQJ142EP-T1_GE3, SQJ142EP-T1_JE3, SQJ142EP-T2_GE3, SQJ142EP-T2_JE3,

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Start Shipment Date: Thursday September 24, 2026

Sample Availability: This is a datasheet revision only. There is no change to the materials or processes used in the manufacture of this part.

Product Identification: N/A

Qualification Data: N/A

Issued By: Lance Gurrola, automostechsupport@vishay.com

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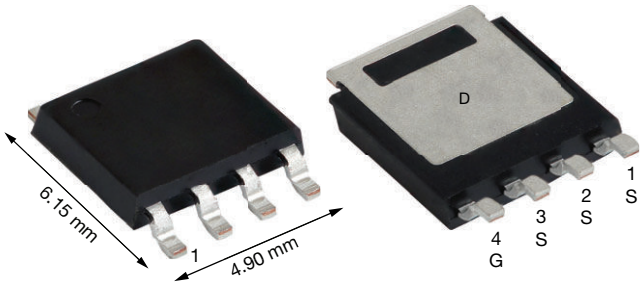
Automotive N-Channel 40 V (D-S) 175 °C MOSFET

PowerPAK® SO-8L



Top View Bottom View

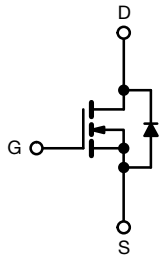
FEATURES

- TrenchFET® Gen IV power MOSFET
- AEC-Q101 qualified
- 100 % R_g and UIS tested
- Q_{gd}/Q_{gs} ratio < 1 optimizes switching characteristics
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE



N-Channel MOSFET

PRODUCT SUMMARY	
V_{DS} (V)	40
$R_{DS(on)}$ (Ω) at V_{GS} = 10 V	0.0036
I_D (A)	167
Configuration	Single

ORDERING INFORMATION	
Package	PowerPAK SO-8L
Lead (Pb)-free and halogen-free	SQJ142EP (for detailed order number please see www.vishay.com/doc?79771)

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	
Continuous drain current	T_C = 25 °C	I_D	167	A
	T_C = 125 °C		97	
Continuous source current (diode conduction)		I_S	134	
Pulsed drain current [a]		I_{DM}	315	
Single pulse avalanche current	L = 0.1 mH	I_{AS}	30	
Single pulse avalanche energy		E_{AS}	45	mJ
Maximum power dissipation [a]	T_C = 25 °C	P_D	191	W
	T_C = 125 °C		64	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +175	°C
Soldering recommendations (peak temperature) [c]			260	

THERMAL RESISTANCE RATINGS

PARAMETER		SYMBOL	LIMIT	UNIT
Junction-to-ambient	PCB mount [b]	R_{thJA}	68	°C/W
Junction-to-case (drain)		R_{thJC}	0.79	

Notes

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

b. When mounted on 1" square PCB (FR4 material)

c. See solder profile (www.vishay.com/doc?73257). 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

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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	3.0	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} = 40 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	-	-	250	
On-state drain current [a]	$I_{D(on)}$	V_{GS} = 10 V	V_{DS} ≥ 5 V	30	-	-	A
Drain-source on-state resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V	I_D = 15 A	-	0.0028	0.0036	Ω
		V_{GS} = 10 V	I_D = 15 A, T_J = 125 °C	-	-	0.0057	
		V_{GS} = 10 V	I_D = 15 A, T_J = 175 °C	-	-	0.0068	
Forward transconductance [b]	g_{fs}	V_{DS} = 15 V, I_D = 10 A		-	50	-	S
Dynamic [b]							
Input capacitance	C_{iss}	V_{GS} = 0 V	V_{DS} = 25 V, f = 1 MHz	-	1890	2650	pF
Output capacitance	C_{oss}			-	625	875	
Reverse transfer capacitance	C_{rss}			-	53	75	
Total gate charge [c]	Q_g	V_{GS} = 10 V	V_{DS} = 20 V, I_D = 10 A	-	32	45	nC
Gate-source charge [c]	Q_{gs}			-	9	-	
Gate-drain charge [c]	Q_{gd}			-	6	-	
Gate resistance	R_g	f = 1 MHz		1.2	3.5	5.6	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		-	11	15.6	ns
Rise time [c]	t_r			-	4.2	6.0	
Turn-off delay time [c]	$t_{d(off)}$			-	23.4	33	
Fall time [c]	t_f			-	7.1	10	
Source-Drain Diode Ratings and Characteristics [b]							
Pulsed current [a]	I_{SM}			-	-	315	A
Forward voltage	V_{SD}	I_F = 15 A, V_{GS} = 0 V		-	-	1.1	V
Body diode reverse recovery time	t_{rr}	I_F = 40 A, di/dt = 100 A/μs		-	31.8	44	ns
Body diode reverse recovery charge	Q_{rr}			-	20.4	28.6	nC
Reverse recovery fall time	t_a			-	16.1	22.6	ns
Reverse recovery rise time	t_b			-	15.7	22	
Body diode peak reverse recovery current	$I_{RM(REC)}$			-	1.1	1.5	A

Notes

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 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.

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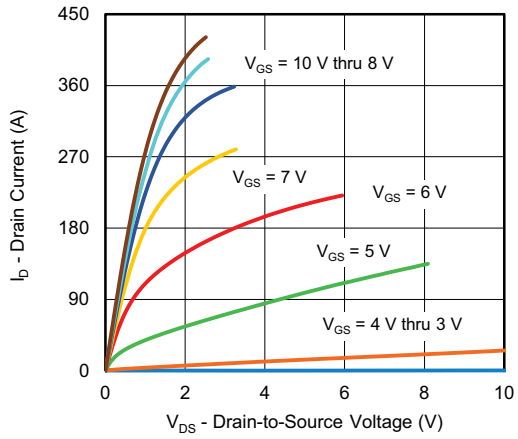
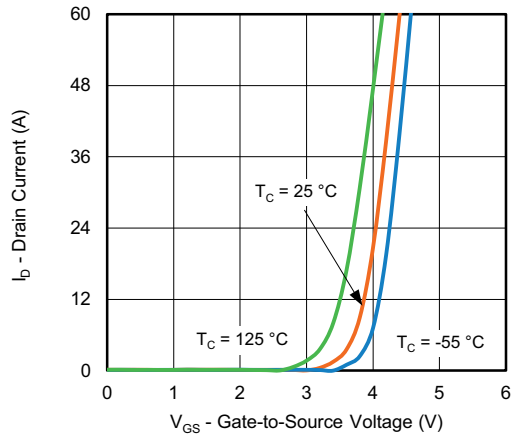
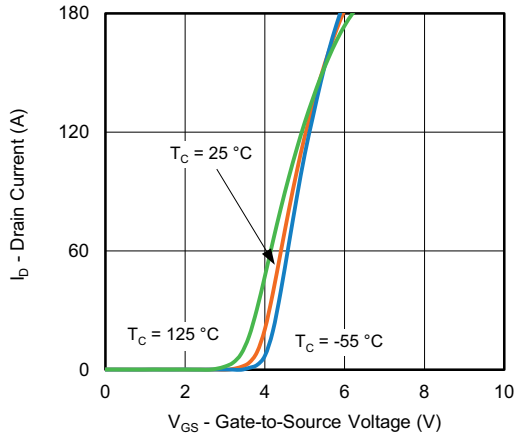
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



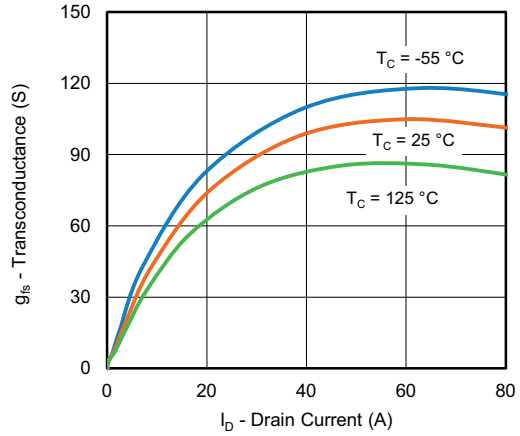
Output Characteristics



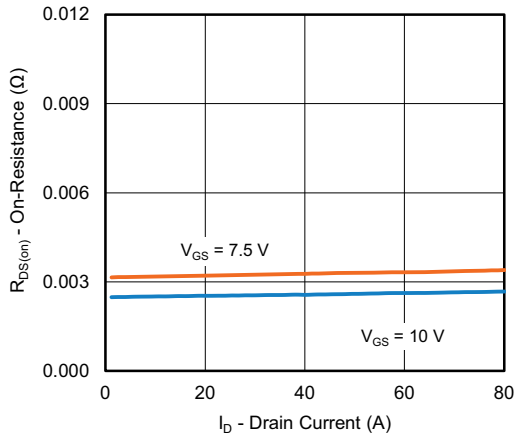
Transfer Characteristics



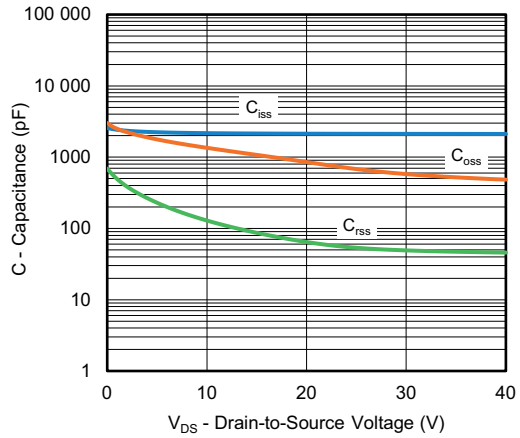
Transfer Characteristics



Transconductance



On-Resistance vs. Drain Current



Capacitance

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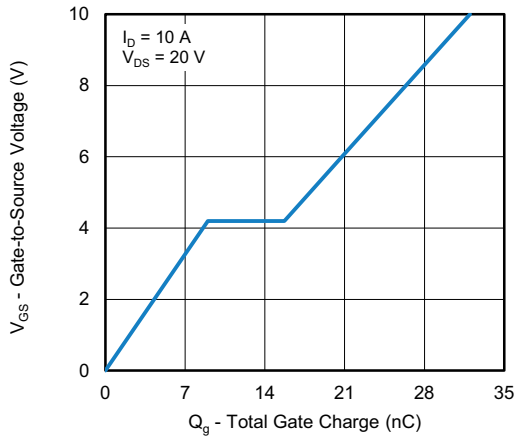
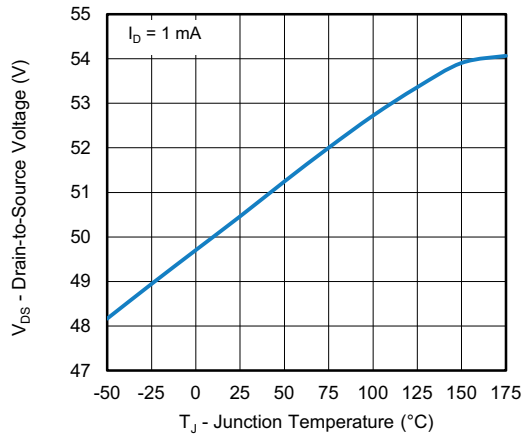
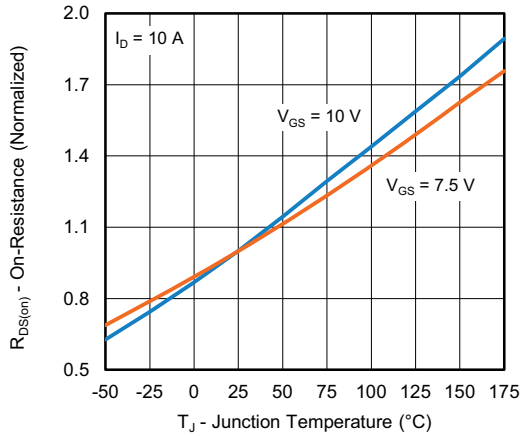


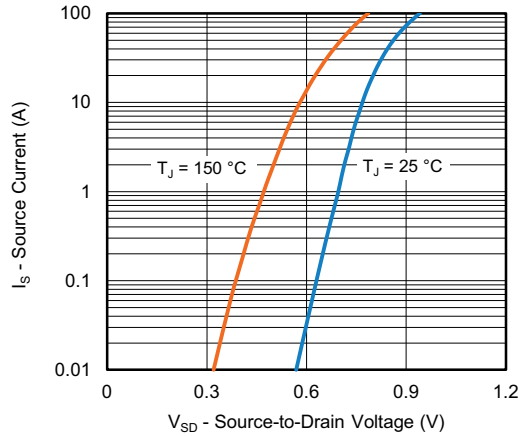
Gate Charge



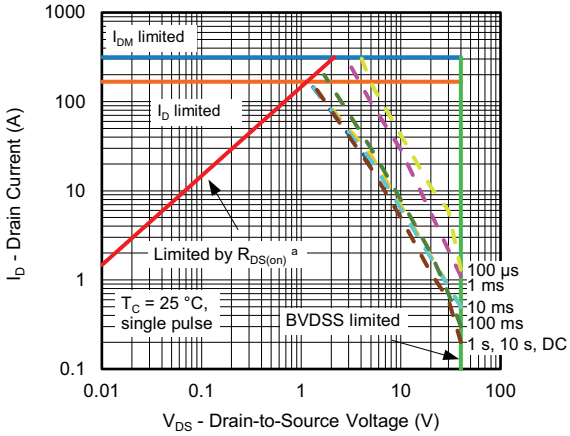
Drain Source Breakdown vs. Junction Temperature



On-Resistance vs. Junction Temperature



Source Drain Diode Forward Voltage



Safe Operating Area

Note

a. V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

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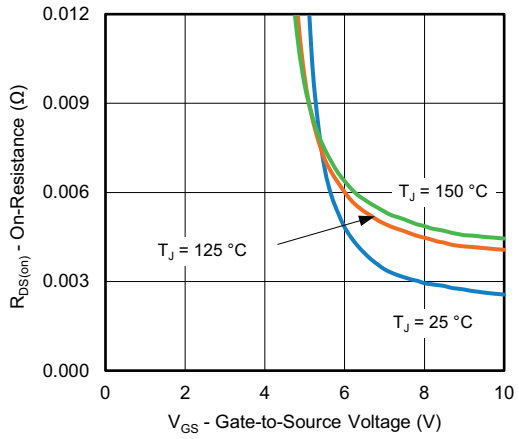
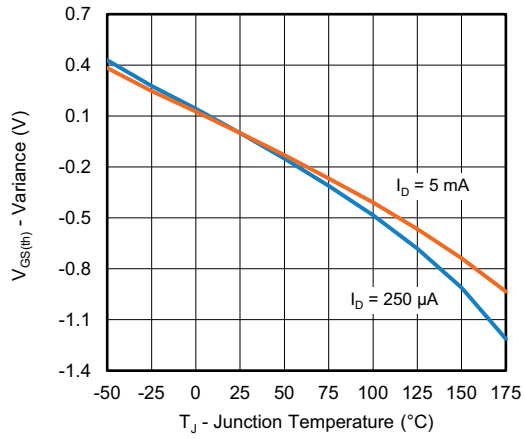


On-Resistance vs. Gate-to Source Voltage



Threshold Voltage

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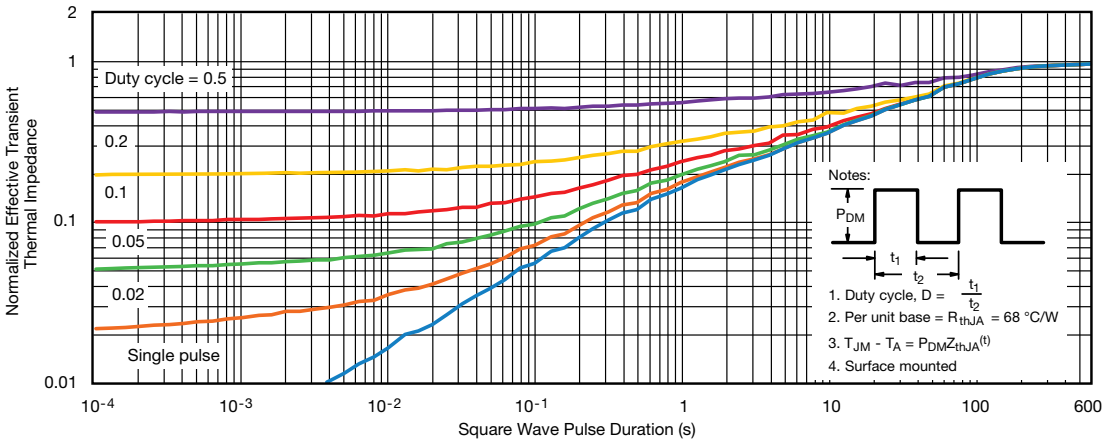
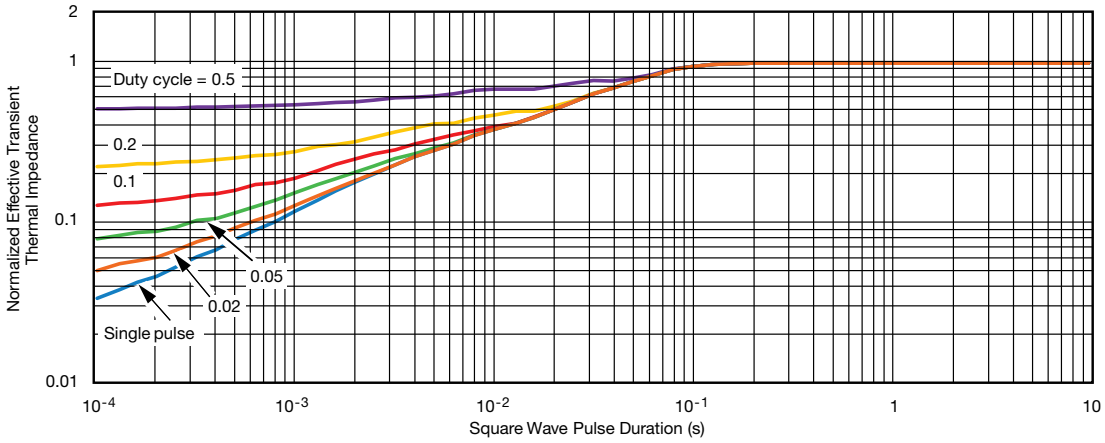


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

Note

- The characteristics shown in the two graphs
  - Normalized Transient Thermal Impedance Junction-to-Ambient (25 °C)
  - Normalized Transient Thermal Impedance Junction-to-Case (25 °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

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Vishay Material Code	Customer Material	Location
SQJ142EP-T1_GE3	SLNSQJ142EP-T1-GE3	Ft Worth