Conversion to Copper (Cu) Wire – SQ3426EV

For further information, please contact your regional Vishay office.

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Description of Change: The affected part number listed in this notification will be converted to a Copper wire material set. The new ordering code is SQ3426CEV-T1_GE3, which has the exact same product performance and fit as SQ3426EV. There will be no change to the wafer fab or assembly location (Note: parts with _BE3 suffix will be consolidated to single assembly location in China). There will be no changes to the parameters on the datasheet (reference: SQ3426CEV Doc #62059 Rev.B).

Classification of Change: Standardization of materials

Expected Influence on Quality/Reliability/Performance: None

Part Numbers/Series/Families Affected: SQ3426EV-T1_GE3, SQ3426EV-T1_BE3,

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Last Time Buy Date: Tue Dec 19, 2023

Last Time Ship Date: Fri Jun 21, 2024

Sample Availability: Qualified samples of replacement product are available on request

Product Identification: SQ3426CEV-T1_GE3

Qualification Data: AEC Q101 qualification data of replacement product is available. Qualification PPAP is available now

This PTN is considered approved, without further notification, unless we receive specific customer concerns before Fri Dec 15, 2023 or as specified by contract.

Issued By: Vishay Siliconix, business-americas@vishay.com

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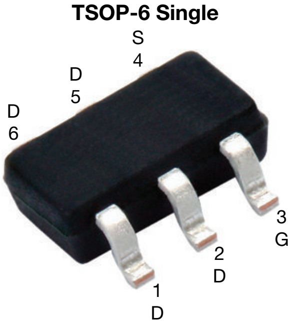
Automotive N-Channel 60 V (D-S) 175 °C MOSFET

TSOP-6 Single



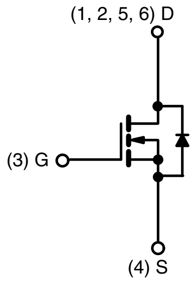
Top View

Marking Code: 9Hxxx

FEATURES

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

AUTOMOTIVE GRADE
Pb-free
RoHS COMPLIANT
HALOGEN FREE



N-Channel MOSFET

PRODUCT SUMMARY	
V_{DS} (V)	60
$R_{DS(on)}$ (Ω) at V_{GS} = 10 V	0.042
$R_{DS(on)}$ (Ω) at V_{GS} = 4.5 V	0.063
I_D (A)	7
Configuration	Single

ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free and halogen-free	SQ3426CEV (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}	60	V
Gate-source voltage		V_{GS}	± 20	
Continuous drain current	T_C = 25 °C	I_D	7	A
	T_C = 125 °C		4	
Continuous source current (diode conduction)		I_S	6	
Pulsed drain current [a]		I_{DM}	29	
Single pulse avalanche current	L = 0.1 mH	I_{AS}	10	
Single pulse avalanche energy		E_{AS}	5	mJ
Maximum power dissipation	T_C = 25 °C	P_D	5	W
	T_C = 125 °C		1.6	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +175	°C

THERMAL RESISTANCE RATINGS

PARAMETER		SYMBOL	LIMIT	UNIT
Junction to ambient	PCB mount [b]	R_{thJA}	110	°C/W
Junction to foot (drain)		R_{thJF}	30	

Notes

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
b. When mounted on 1" square PCB (FR4 material)

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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	60	-	-	V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.5	2	2.5	V
Gate-source leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V	-	-	± 100	nA
		V_{DS} = 0 V, V_{GS} = ± 20 V	-	-	± 300	
Zero gate voltage drain current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 60 V	-	-	1	μA
		V_{GS} = 0 V, V_{DS} = 60 V, T_J = 125 °C	-	-	50	
		V_{GS} = 0 V, V_{DS} = 60 V, T_J = 175 °C	-	-	150	
On-state drain current [a]	$I_{D(on)}$	V_{GS} = 10 V, V_{DS} ≥ 5 V	10	-	-	A
Drain-source on-state resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 5 A	-	0.034	0.042	Ω
		V_{GS} = 10 V, I_D = 5 A, T_J = 125 °C	-	-	0.073	
		V_{GS} = 10 V, I_D = 5 A, T_J = 175 °C	-	-	0.092	
		V_{GS} = 4.5 V, I_D = 4 A	-	0.037	0.063	
Forward transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 4 A	-	21	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 30 V, f = 1 MHz	-	718	790	pF
Output Capacitance	C_{oss}		-	75	110	
Reverse Transfer Capacitance	C_{rss}		-	29	70	
Total Gate Charge [c]	Q_g	V_{GS} = 4.5 V, V_{DS} = 30 V, I_D = 4 A	-	6.8	12	nC
Gate-Source Charge [c]	Q_{gs}		-	2.9	-	
Gate-Drain Charge [c]	Q_{gd}		-	2.0	-	
Gate Resistance	R_g	f = 1 MHz	1.9	3.1	5.7	Ω
Turn-On Delay Time [c]	$t_{d(on)}$	V_{DD} = 30 V, R_L = 7.5 Ω I_D ≅ 4 A, V_{GEN} = 10 V, R_g = 1 Ω	-	9	14	ns
Rise Time [c]	t_r		-	3	18	
Turn-Off Delay Time [c]	$t_{d(off)}$		-	19	29	
Fall Time [c]	t_f		-	4	11	
Source-Drain Diode Ratings and Characteristics [b]						
Pulsed current [a]	I_{SM}		-	-	29	A
Forward voltage	V_{SD}	I_F = 1.6 A, V_{GS} = 0 V	-	0.77	1.2	V
Body diode reverse recovery time	t_{rr}	I_F = 4 A, di/dt = 100 A/μs	-	19	38	ns
Body diode reverse recovery charge	Q_{rr}		-	18	36	nC
Reverse recovery fall time	t_a		-	15	-	ns
Reverse recovery rise time	t_b		-	4	-	
Body diode peak reverse recovery current	$I_{RM(REC)}$		-	-2.1	-	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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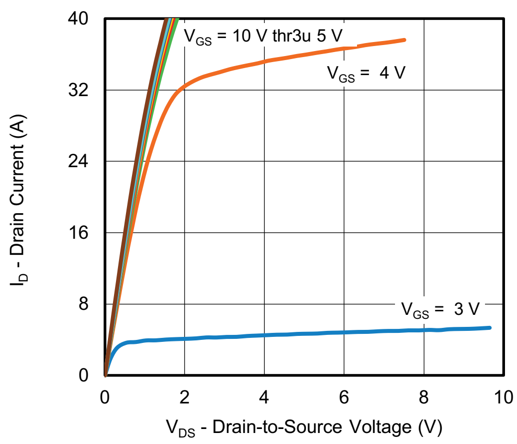
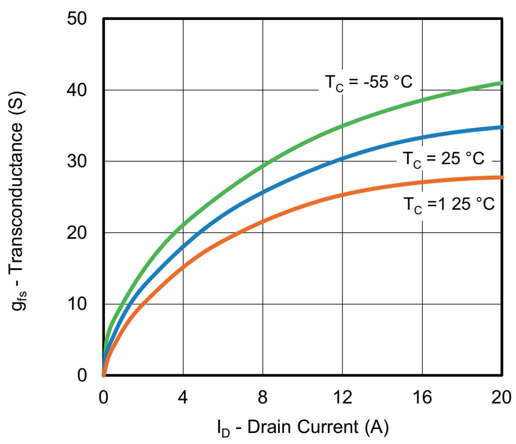
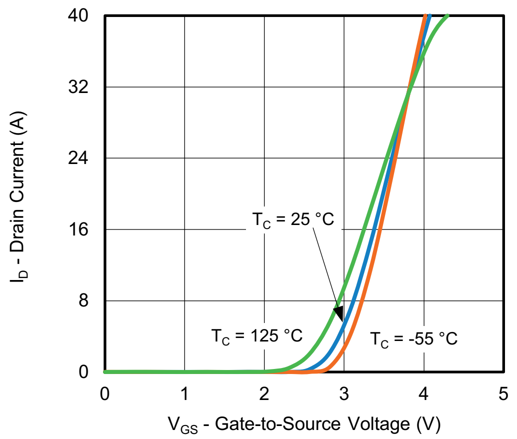
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



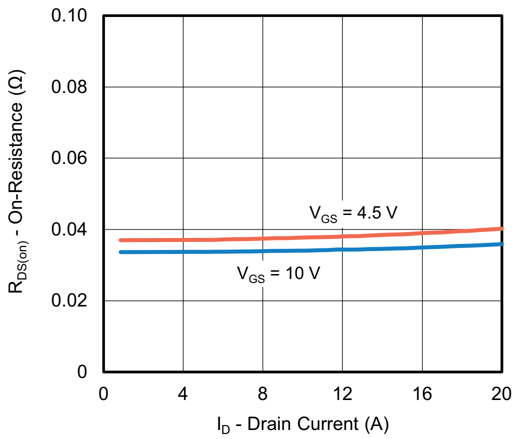
Output Characteristics



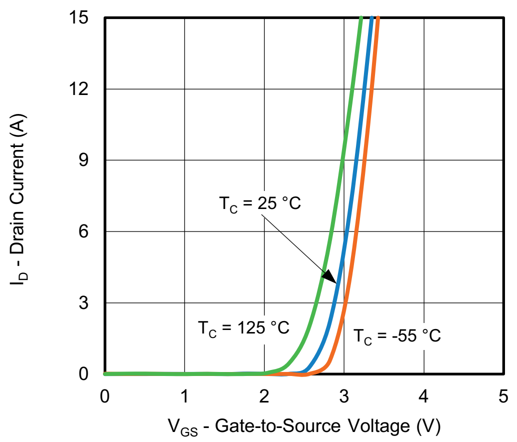
Transconductance



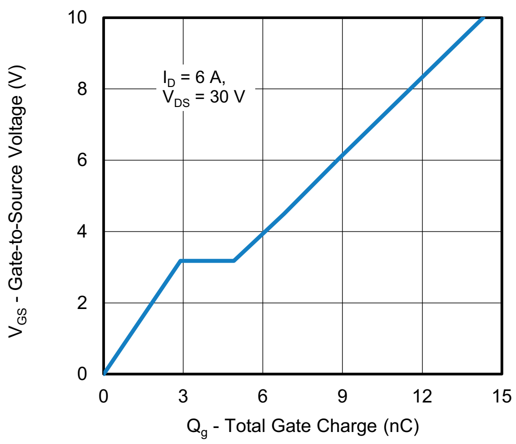
Transfer Characteristics



On-Resistance vs. Drain Current



Transfer Characteristics



Gate Charge

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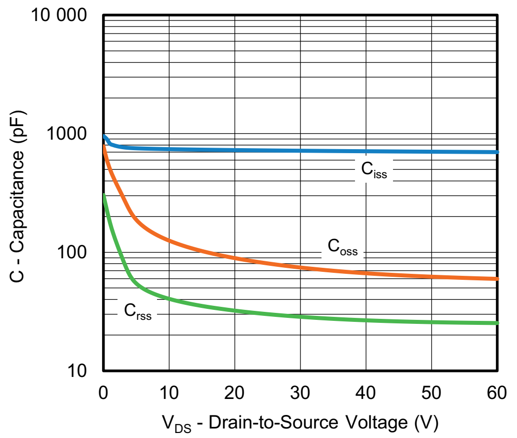
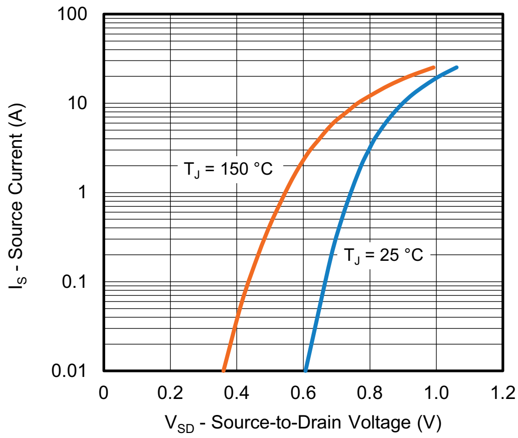
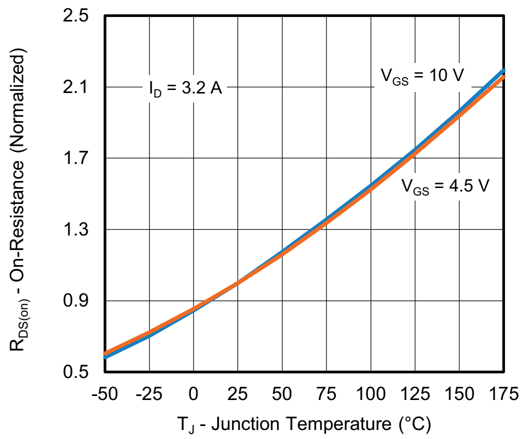


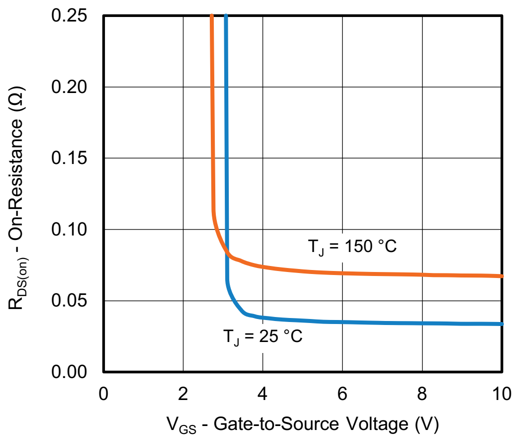
Capacitance



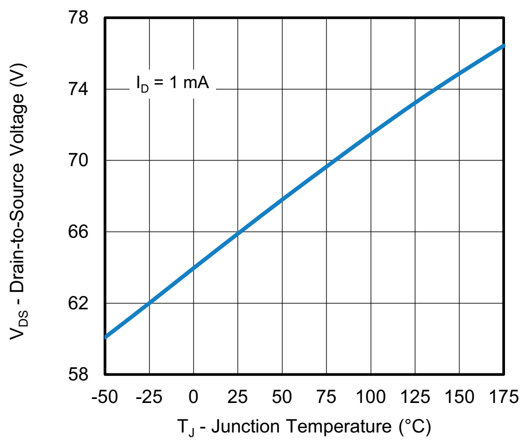
Source Drain Diode Forward Voltage



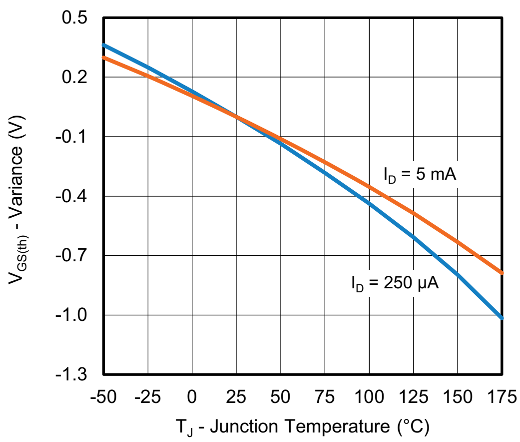
On-Resistance vs. Junction Temperature



On-Resistance vs. Gate-Source Voltage



Drain Source Breakdown vs. Junction Temperature



Threshold Voltage

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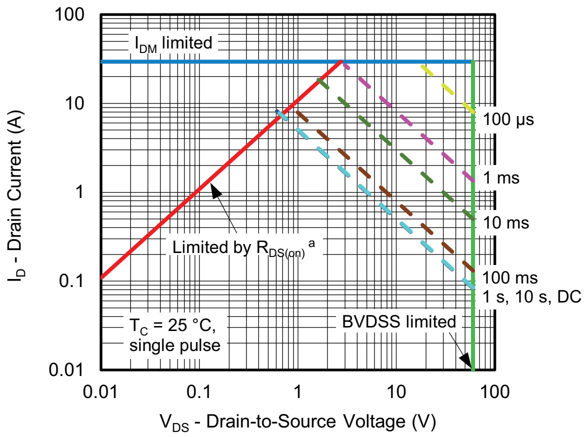
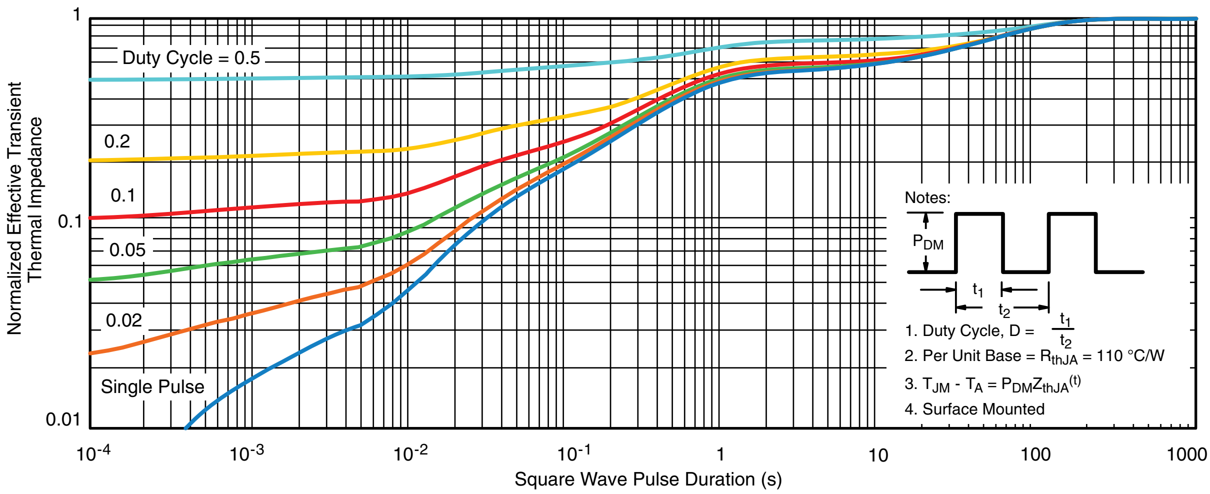
THERMAL RATINGS (T_A = 25 °C, unless otherwise noted)



Safe Operating Area

Note

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



Normalized Thermal Transient Impedance, Junction-to-Ambient

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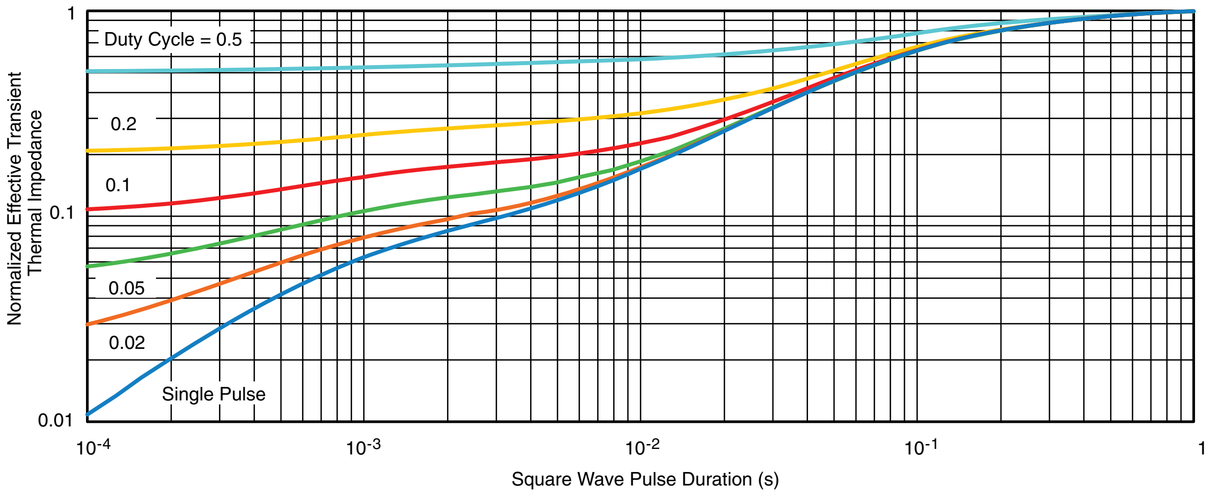
THERMAL RATINGS (T_A = 25 °C, unless otherwise noted)



Normalized thermal Transient Impedance, Junction-to-Foot

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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