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Product Termination Notification

Product Group: SIL/Wed Jun 14, 2023/PTN-SIL-030-2023-REV-0



Conversion to Copper (Cu) Wire – SQ2348ES

For further information, please contact your regional Vishay office.

CONTACT INFORMATION

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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 SQ2348CES-T1_GE3, which has the exact same product performance and fit as SQ2348ES. 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: SQ2348CES Doc # 62082 Rev.A).

Classification of Change: Standardization of materials

Expected Influence on Quality/Reliability/Performance: None

Part Numbers/Series/Families Affected: SQ2348ES-T1_GE3, SQ2348ES-T1_BE3,

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Last Time Buy Date: Sun Dec 17, 2023

Last Time Ship Date: Sun Jun 16, 2024

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

Product Identification: SQ2348CES-T1_GE3

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

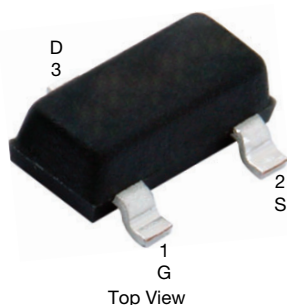
This PTN is considered approved, without further notification, unless we receive specific customer concerns before Sun Dec 17, 2023 or as specified by contract.

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



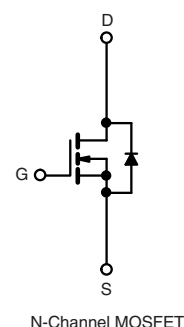
Automotive N-Channel 30 V (D-S) 175 °C MOSFET

SOT-23 (TO-236)

RoHS
COMPLIANT
HALOGEN
FREE

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



Marking Code: 90YXX

PRODUCT SUMMARY

V_{DS} (V)	30
$R_{DS(on)}$ (Ω) at $V_{GS} = 10$ V	0.024
$R_{DS(on)}$ (Ω) at $V_{GS} = 4.5$ V	0.032
I_D (A)	8
Configuration	Single

ORDERING INFORMATION

Package	SOT-23
Lead (Pb)-free and halogen-free	SQ2348CES (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}	30	V
Gate-source voltage	V_{GS}	± 20	
Continuous drain current	I_D	8	A
		5.3	
Continuous source current (diode conduction)	I_S	3.8	
Pulsed drain current ^b	I_{DM}	32	
Single pulse avalanche current	I_{AS}	15.5	
Single pulse avalanche energy	E_{AS}	12	mJ
Maximum power dissipation	P_D	3	W
		1	
Operating junction and storage temperature range	T_J, T_{stg}	-55 to +175	°C

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-ambient	R_{thJA}	166	°C/W
Junction-to-foot (drain)	R_{thJF}	50	

Notes

- Package limited
- Pulse test; pulse width ≤ 300 μ s, duty cycle ≤ 2 %
- When mounted on 1" square PCB (FR4 material)



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 V, I _D = 250 μA		30	-	-	V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		1.5	2.0	2.5	
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} = 30 V	-	-	1	μA
		V _{GS} = 0 V	V _{DS} = 30 V, T _J = 125 °C	-	-	50	
		V _{GS} = 0 V	V _{DS} = 30 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 = 12 A	-	0.020	0.024	Ω
		V _{GS} = 10 V	I _D = 12 A, T _J = 125 °C	-	-	0.036	
		V _{GS} = 10 V	I _D = 12 A, T _J = 175 °C	-	-	0.042	
		V _{GS} = 4.5 V	I _D = 8 A	-	0.026	0.032	
Forward transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 3 A		-	12	-	S
Dynamic ^b							
Input capacitance	C _{iss}	V _{GS} = 0 V	V _{DS} = 15 V, f = 1 MHz	-	450	540	pF
Output capacitance	C _{oss}			-	95	125	
Reverse transfer capacitance	C _{rss}			-	39	50	
Total gate charge ^c	Q _g	V _{GS} = 10 V	V _{DS} = 15 V, I _D = 5.5 A	-	8.15	14.5	nC
Gate-source charge ^c	Q _{gs}			-	1.65	-	
Gate-drain charge ^c	Q _{gd}			-	1.25	-	
Gate resistance	R _g	f = 1 MHz		8.65	13	27	Ω
Turn-on delay time ^c	t _{d(on)}	V _{DD} = 15 V, R _L = 3.4 Ω I _D ≈ 4.4 A, V _{GEN} = 10 V, R _g = 1 Ω		-	6	7	ns
Rise time ^c	t _r			-	4	12	
Turn-off delay time ^c	t _{d(off)}			-	18	32	
Fall time ^c	t _f			-	4	9	
Source-Drain Diode Ratings and Characteristics ^b							
Pulsed current ^a	I _{SM}			-	-	32	A
Forward voltage	V _{SD}	I _F = 3.5 A, V _{GS} = 0 V		-	0.81	1.2	V
Body diode reverse recovery time	t _{rr}	I _F = 4 A, di/dt = 100A/us		-	10	20	ns
Body diode reverse recovery charge	Q _{rr}			-	5	10	nC
Reverse recovery fall time	t _a			-	7	-	ns
Reverse recovery rise time	t _b			-	3	-	
Body diode peak reverse recovery current	I _{RM(REC)}			-	-0.98	-	A

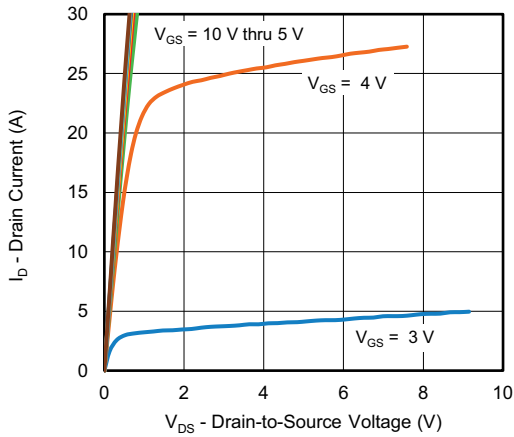
Notes

- 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

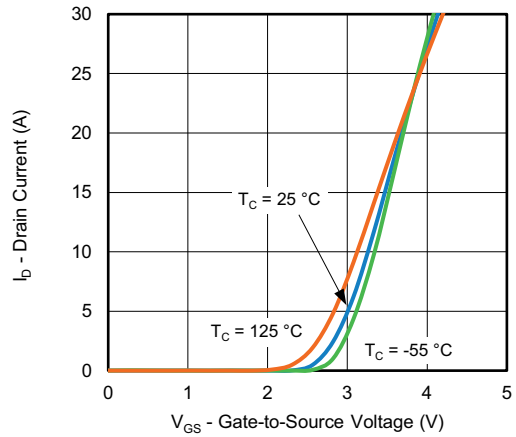
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



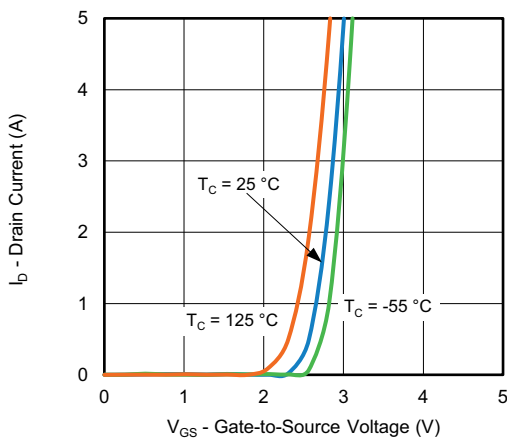
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)



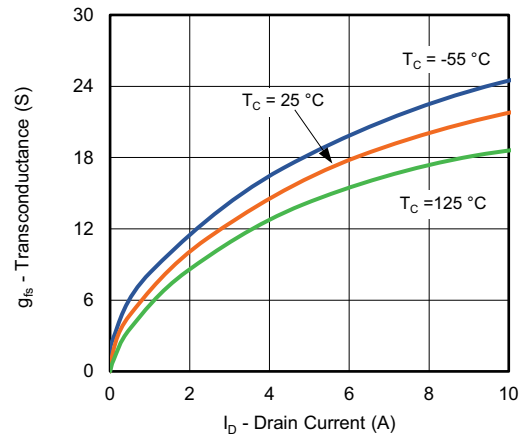
Output Characteristics



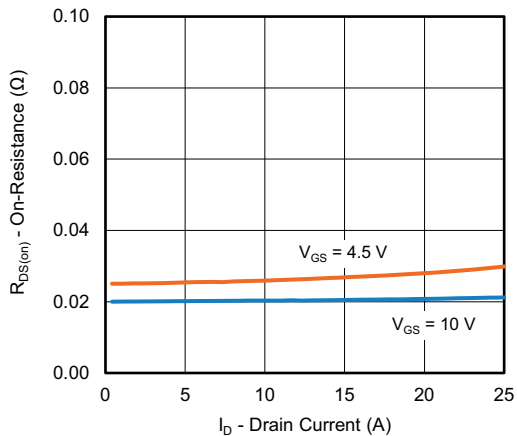
Transfer Characteristics



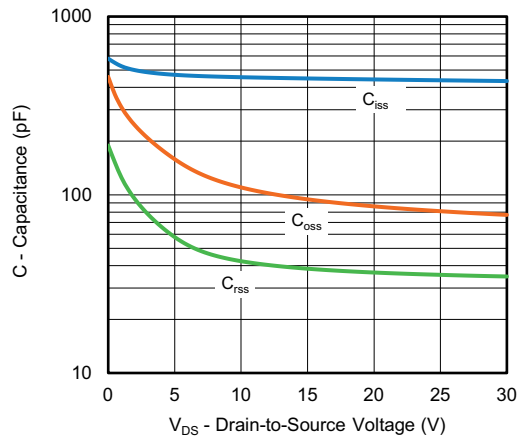
Transfer Characteristics



Transconductance



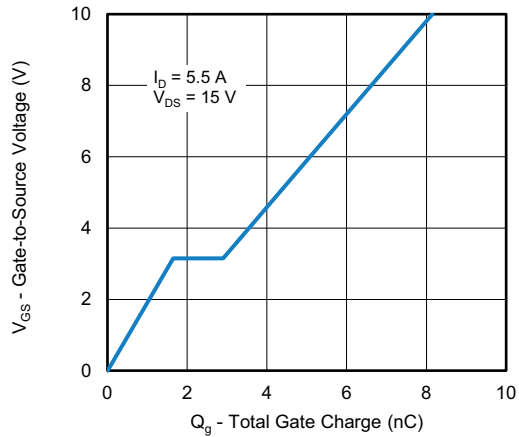
On-Resistance vs. Drain Current



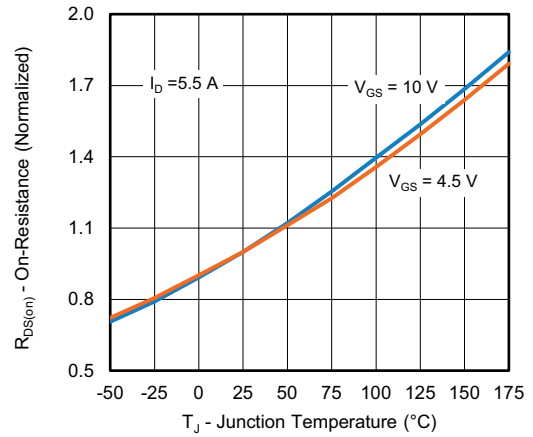
Capacitance



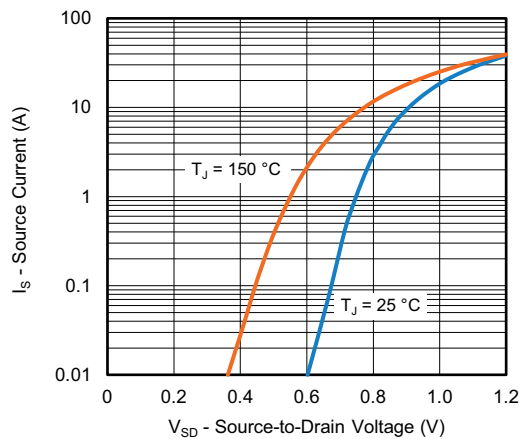
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)



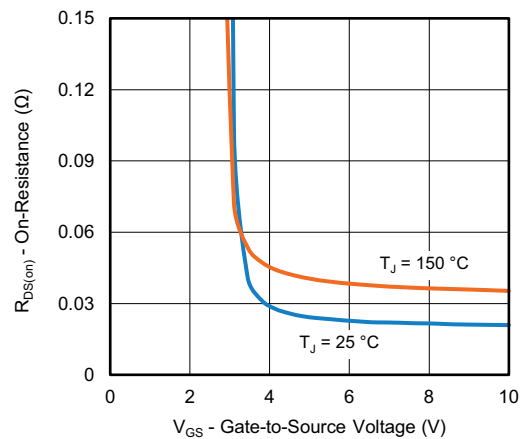
Gate Charge



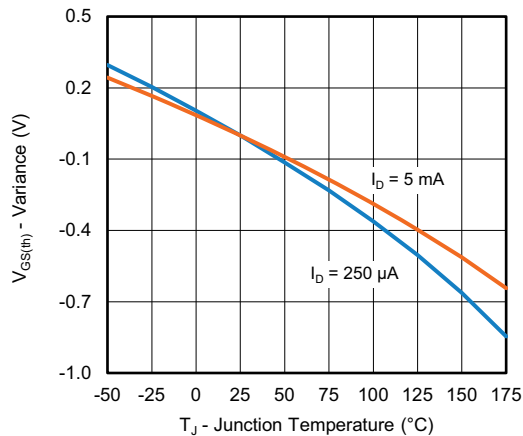
On-Resistance vs. Junction Temperature



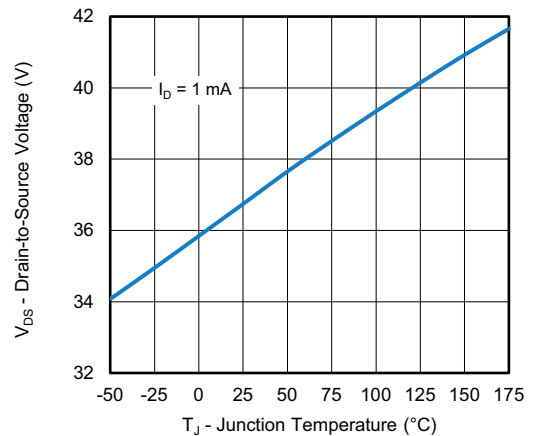
Source Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



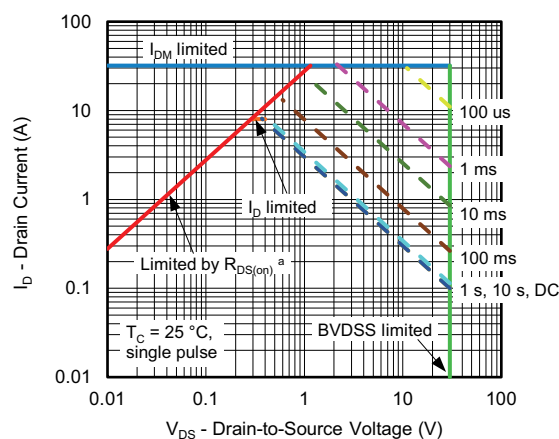
Threshold Voltage



Drain Source Breakdown vs. Junction Temperature



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

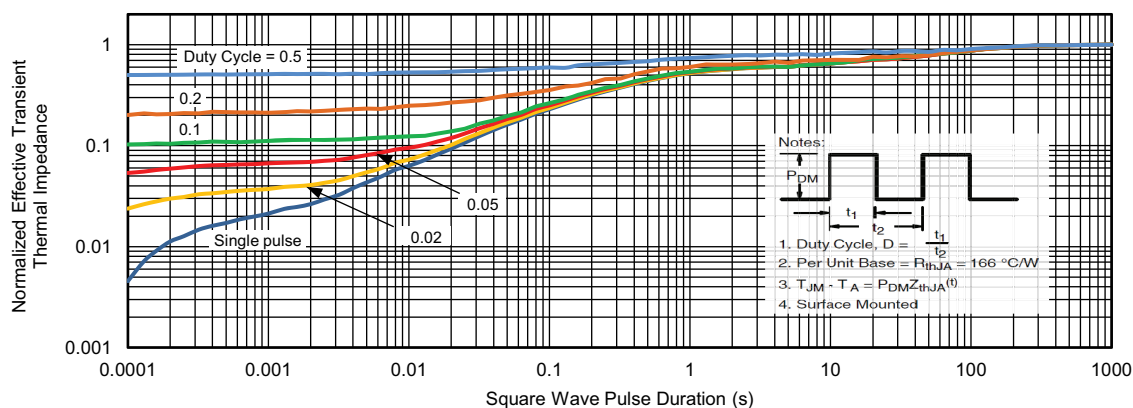


Note

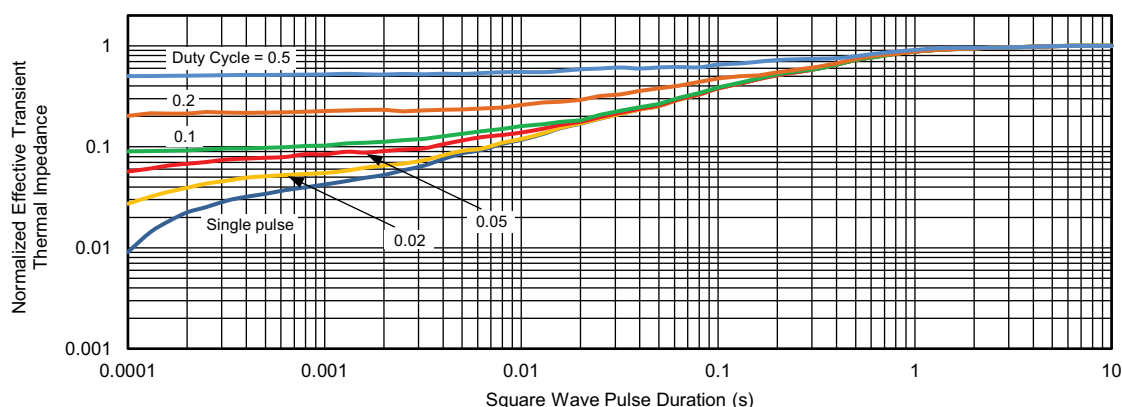
a. $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified



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



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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-Foot ($25\text{ }^{\circ}\text{C}$)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.

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