



The DNA of tech.™

Product Termination Notification



Product Group: SIL/Wednesday April 22, 2026/PTN-SIL-026-2026-REV-0

Conversion to Copper (Cu) Wire – SQ2301ES-T1_BE3

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: The affected part number listed in this notification will be converted from a Gold (Au) bond wire to a Copper (Cu) bond wire material set. The new ordering code is SQ2301CES-T1_GE3 which has Identical silicon technology and silicon die design as SQ2301ES. Small changes to the data sheet AC parameters are a consequence of lot to lot variation and/or updated characterization methods (reference: SQ2301CES Doc # 62454 Rev. A). Device performance in the application will not be impacted. There will be no change to the wafer fab location.

Reason for Change: Standardization of materials

Expected Influence on Quality/Reliability/Performance: None

Part Numbers/Series/Families Affected: SQ2301ES-T1_BE3

Vishay Brand(S): Vishay Siliconix

Time Schedule:

Last Time Buy Date: Sunday October 25, 2026

Last Time Ship Date: Sunday April 25, 2027

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

Product Identification: SQ2301CES-T1_BE3

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

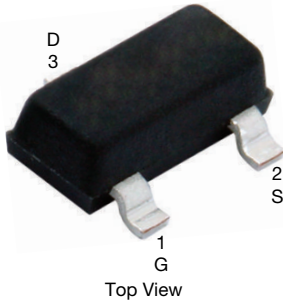
This PTN is considered approved, without further notification, unless we receive specific customer concerns before Sunday June 28, 2026 or as specified by contract.

Issued By: Lance Gurrola, automostechsupport@vishay.com



Automotive P-Channel 20 V (D-S) 175 °C MOSFET

SOT-23 (TO-236)

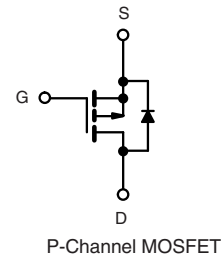


FEATURES

- 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



RoHS
COMPLIANT
HALOGEN
FREE



| PRODUCT SUMMARY | |
|---|--------|
| V _{DS} (V) | -20 |
| R _{DS(on)} (Ω) at V _{GS} = -4.5 V | 0.120 |
| R _{DS(on)} (Ω) at V _{GS} = -2.5 V | 0.180 |
| I _D (A) | -3.9 |
| Configuration | Single |

| ORDERING INFORMATION | |
|---------------------------------|---|
| Package | SOT-23 |
| Lead (Pb)-free and halogen-free | SQ2301CES (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} | -20 | V |
| Gate-source voltage | | V _{GS} | ± 8 | |
| Continuous drain current | T _C = 25 °C | I _D | -3.9 | A |
| | T _C = 125 °C | | -2.2 | |
| Continuous source current (diode conduction) | | I _S | -3.7 | |
| Pulsed drain current ^a | | I _{DM} | -15 | |
| Single pulse avalanche current | L = 0.1 mH | I _{AS} | -9 | mJ |
| Single pulse avalanche energy | | E _{AS} | 4 | |
| Maximum power dissipation | T _C = 25 °C | P _D | 3 | W |
| | T _C = 125 °C | | 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 | PCB mount ^c | R _{thJA} | 166 | °C/W |
| Junction-to-case (drain) | | R _{thJF} | 50 | |

Notes

- Package limited
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
- When mounted on 1" square PCB (FR-4 material)



| SPECIFICATIONS ($T_C = 25\text{ }^\circ\text{C}$, unless otherwise noted) | | | | | | | |
|--|---------------|--|--|-------|-------|-----------|---------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | MIN. | TYP. | MAX. | UNIT |
| Static | | | | | | | |
| Drain-source breakdown voltage | V_{DS} | $V_{GS} = 0, I_D = -250\text{ }\mu\text{A}$ | | -20 | - | - | V |
| Gate-source threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$ | | -0.45 | - | -1.5 | |
| Gate-source leakage | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$ | | - | - | ± 100 | nA |
| Zero gate voltage drain current | I_{DSS} | $V_{GS} = 0\text{ V}$ | $V_{DS} = -20\text{ V}$ | - | - | -1 | μA |
| | | $V_{GS} = 0\text{ V}$ | $V_{DS} = -20\text{ V}, T_J = 125\text{ }^\circ\text{C}$ | - | - | -50 | |
| | | $V_{GS} = 0\text{ V}$ | $V_{DS} = -20\text{ V}, T_J = 175\text{ }^\circ\text{C}$ | - | - | -150 | |
| On-state drain current ^a | $I_{D(on)}$ | $V_{GS} = -4.5\text{ V}$ | $V_{DS} \geq 5\text{ V}$ | -8 | - | - | A |
| Drain-source on-state resistance ^a | $R_{DS(on)}$ | $V_{GS} = -4.5\text{ V}$ | $I_D = -2.8\text{ A}$ | - | 0.080 | 0.120 | Ω |
| | | $V_{GS} = -2.5\text{ V}$ | $I_D = -2\text{ A}$ | - | 0.110 | 0.180 | |
| Forward transconductance ^a | g_{fs} | $V_{DS} = -1.6\text{ V}, I_D = -2.8\text{ A}$ | | - | 7 | - | S |
| Dynamic ^b | | | | | | | |
| Input capacitance | C_{iss} | $V_{GS} = 0\text{ V}$ | $V_{DS} = -10\text{ V}, f = 1\text{ MHz}$ | - | 369 | 425 | pF |
| Output capacitance | C_{oss} | | | - | 91 | 100 | |
| Reverse transfer capacitance | C_{rss} | | | - | 64 | 70 | |
| Total gate charge ^c | Q_g | $V_{GS} = -4.5\text{ V}$ | $V_{DS} = -10\text{ V}, I_D = -2.8\text{ A}$ | - | 5.4 | 8 | nC |
| Gate-source charge ^c | Q_{GS} | | | - | 0.81 | - | |
| Gate-drain charge ^c | Q_{gd} | | | - | 1.75 | - | |
| Gate resistance | R_g | $f = 1\text{ MHz}$ | | 3 | 6 | 14.5 | Ω |
| Turn-on delay time ^c | $t_{d(on)}$ | $V_{DD} = -10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \cong -1\text{ A}, V_{GEN} = -4.5\text{ V}, R_g = 1\text{ }\Omega$ | | - | 10 | 22 | ns |
| Rise time ^c | t_r | | | - | 17 | 21 | |
| Turn-off delay time ^c | $t_{d(off)}$ | | | - | 23 | 45 | |
| Fall time ^c | t_f | | | - | 9 | 15 | |
| Source-Drain Diode Ratings and Characteristics ^b | | | | | | | |
| Pulsed current ^a | I_{SM} | | | - | - | -15 | A |
| Forward voltage | V_{SD} | $I_F = -1.6\text{ A}, V_{GS} = 0$ | | - | -0.8 | -1.2 | V |
| Body diode reverse recovery time | t_{rr} | $I_F = -1.2\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$ | | - | 15 | 30 | ns |
| Body diode reverse recovery charge | Q_{rr} | | | - | 6.5 | 13 | nC |
| Reverse recovery fall time | t_a | | | - | 6 | - | ns |
| Reverse recovery rise time | t_b | | | - | 9 | - | |
| Body diode peak reverse recovery current | $I_{RM(REC)}$ | | | | | - | -1 |

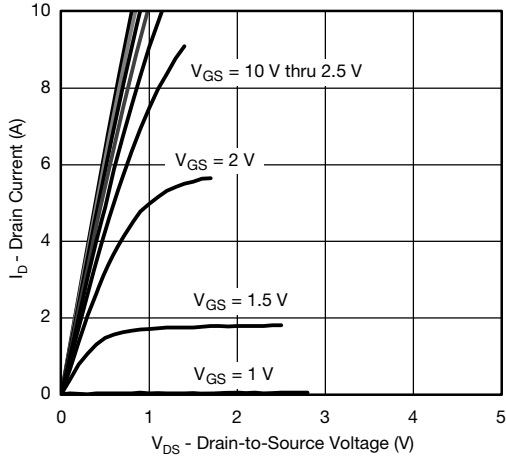
Notes

- 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

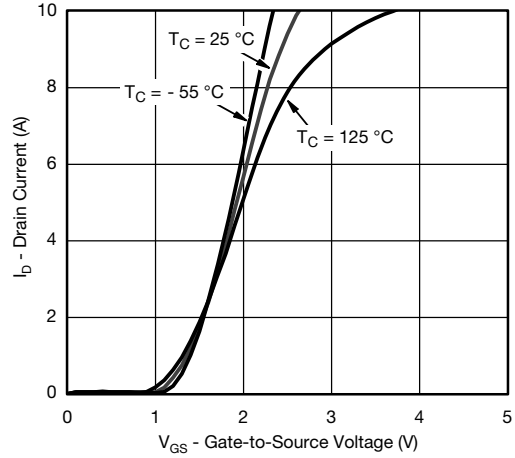
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



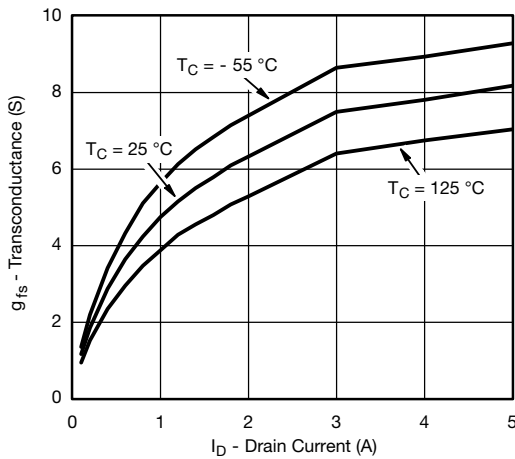
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



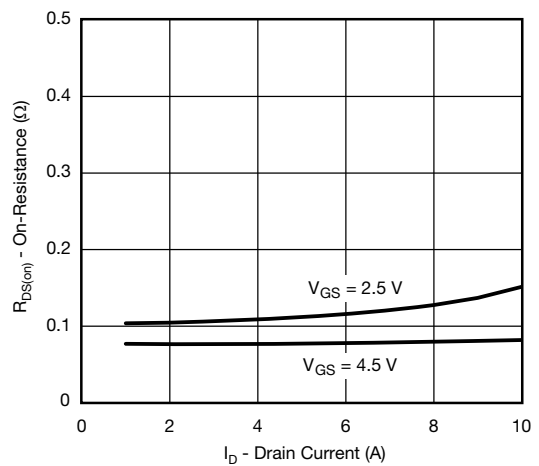
Output Characteristics



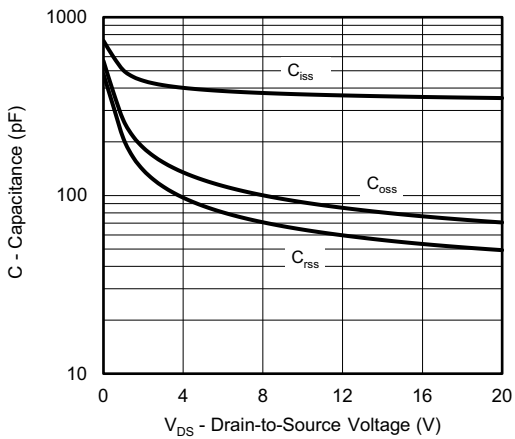
Transfer Characteristics



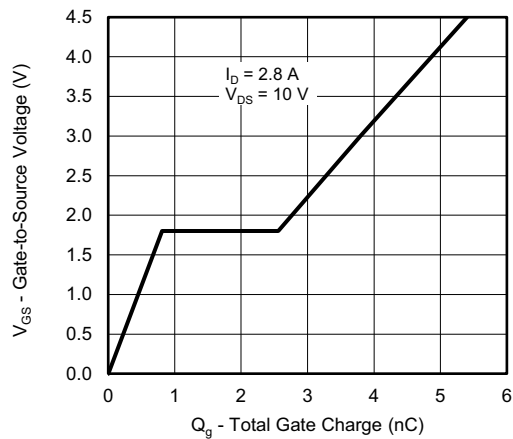
Transconductance



On-Resistance vs. Drain Current



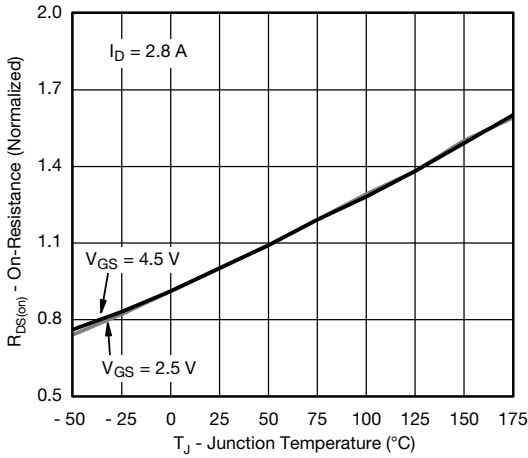
Capacitance



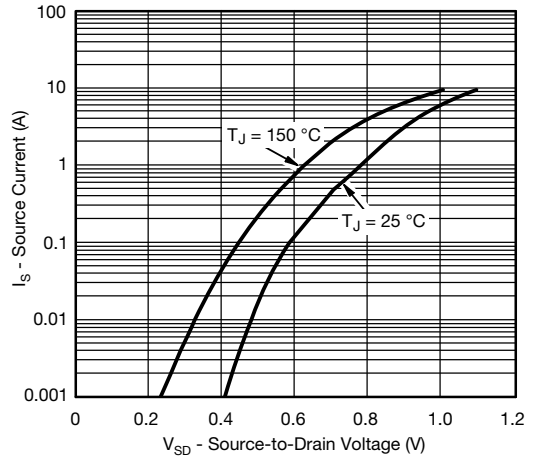
Gate Charge



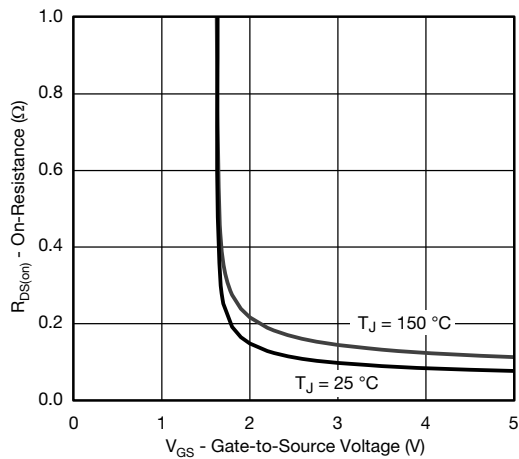
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



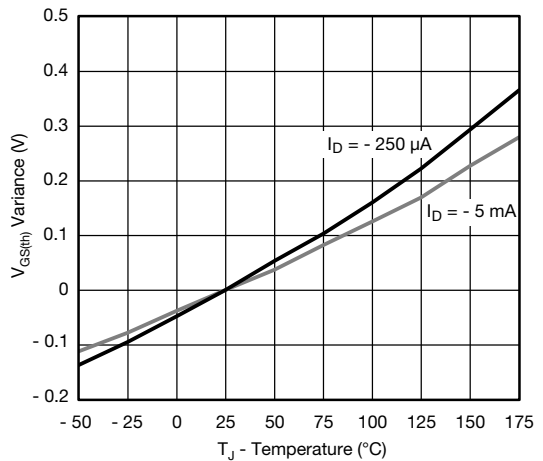
On-Resistance vs. Junction Temperature



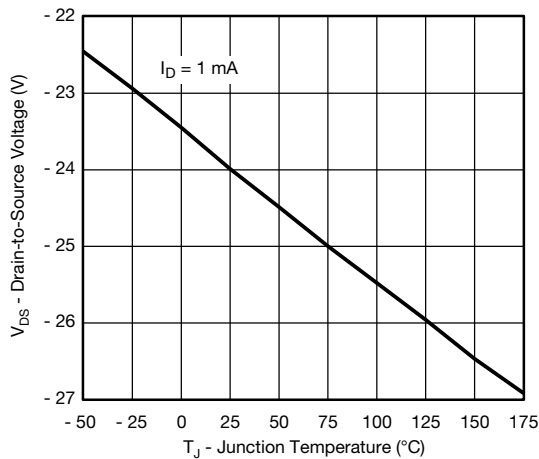
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



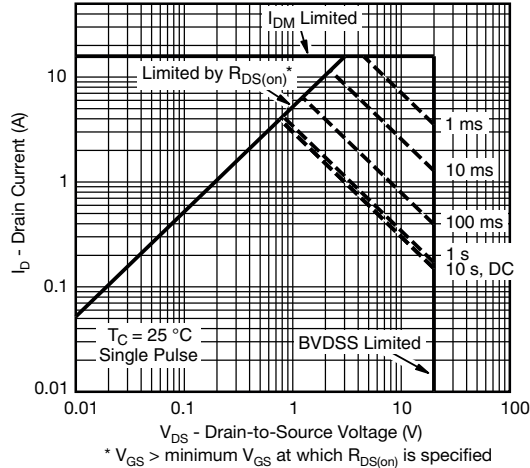
Threshold Voltage



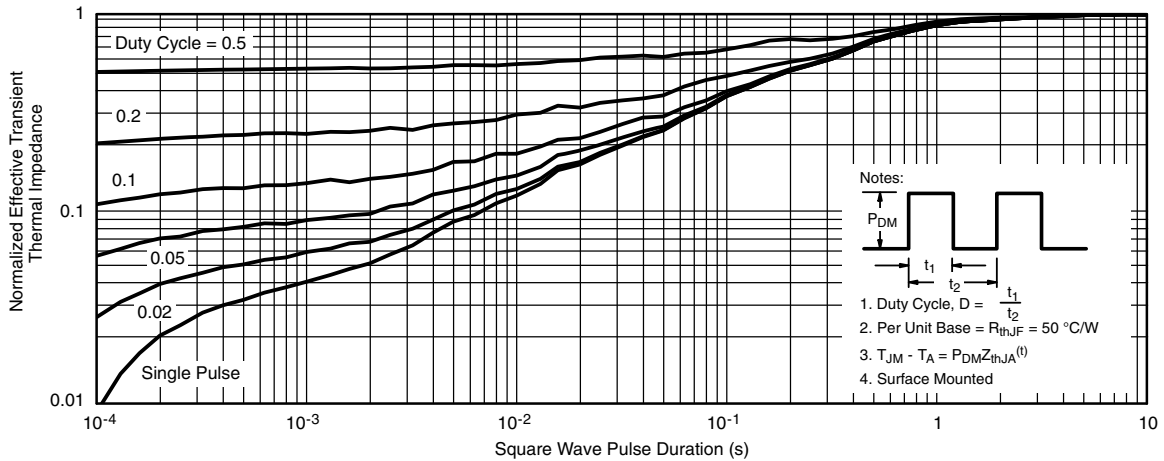
Drain Source Breakdown vs. Junction Temperature



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



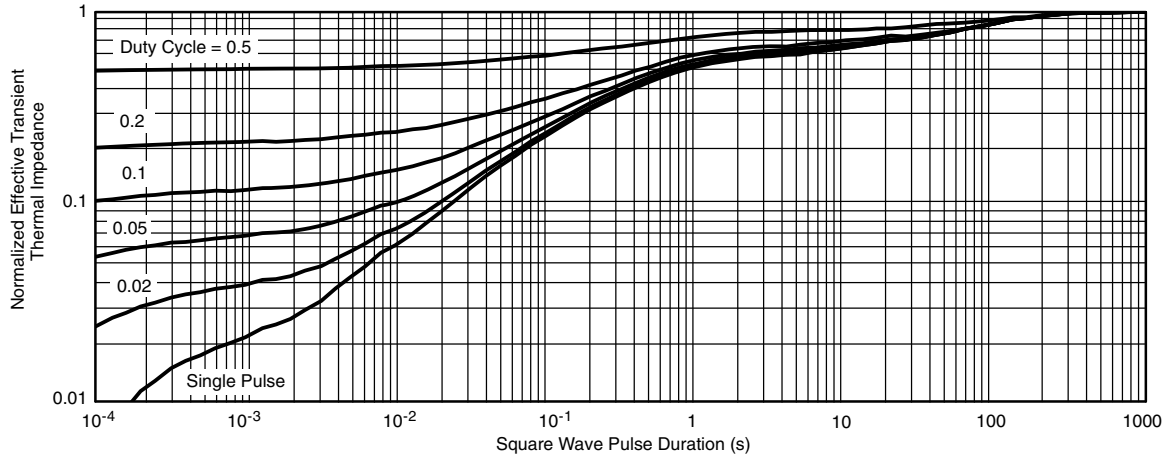
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Foot



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



Normalized Thermal Transient Impedance, Junction-to-Ambient

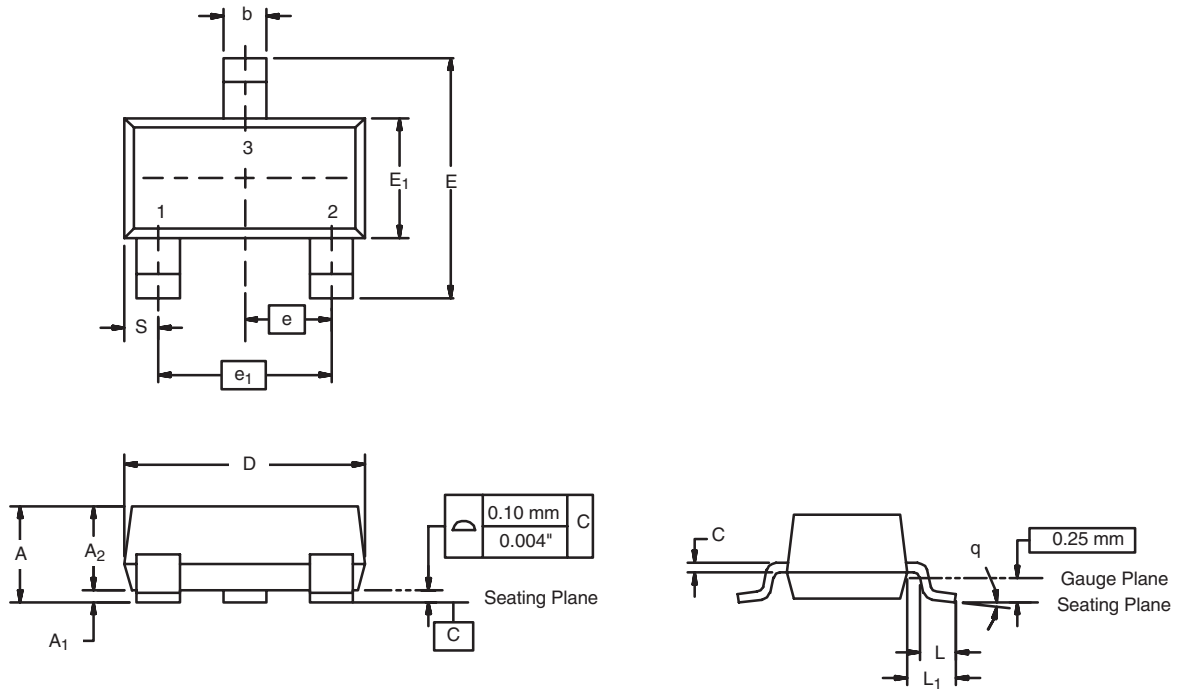
Note

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

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/jpgg?62454.



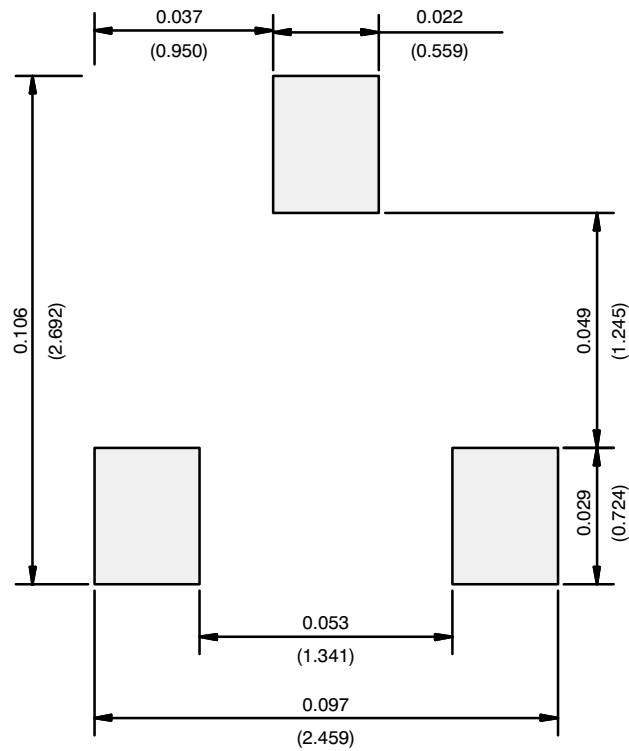
SOT-23 (TO-236): 3-LEAD



| Dim | MILLIMETERS | | INCHES | |
|----------------|-------------|------|------------|-------|
| | Min | Max | Min | Max |
| A | 0.89 | 1.12 | 0.035 | 0.044 |
| A ₁ | 0.01 | 0.10 | 0.0004 | 0.004 |
| A ₂ | 0.88 | 1.02 | 0.0346 | 0.040 |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.085 | 0.18 | 0.003 | 0.007 |
| D | 2.80 | 3.04 | 0.110 | 0.120 |
| E | 2.10 | 2.64 | 0.083 | 0.104 |
| E ₁ | 1.20 | 1.40 | 0.047 | 0.055 |
| e | 0.95 BSC | | 0.0374 Ref | |
| e ₁ | 1.90 BSC | | 0.0748 Ref | |
| L | 0.40 | 0.60 | 0.016 | 0.024 |
| L ₁ | 0.64 Ref | | 0.025 Ref | |
| S | 0.50 Ref | | 0.020 Ref | |
| q | 3° | 8° | 3° | 8° |

ECN: S-03946-Rev. K, 09-Jul-01
 DWG: 5479

RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads
Dimensions in Inches/(mm)

[Return to Index](#)



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.

| Vishay Material Code | Customer Material | Location |
|----------------------|--------------------|----------|
| SQ2301ES-T1_BE3 | SLNSQ2301ES-T1-BE3 | Ft Worth |