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# Product Termination Notification



Product Group: SIL/Wednesday June 10, 2026/PTN-SIL-049-2026-REV-0

## Conversion to Copper (Cu) Wire – SQ2319ADS-T1\_BE3

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 SQ2319CES-T1\_GE3, which has the exact same product performance and fit as SQ2319ADS-T1\_BE3. There will be no change to the wafer fab or assembly location. There will be no changes to the parameters on the datasheet (reference: SQ2319CES Doc # 62475 Rev. A).

**Reason for Change:** Standardization of materials

**Expected Influence on Quality/Reliability/Performance:** None

**Part Numbers/Series/Families Affected:** SQ2319ADS-T1\_BE3

**Vishay Brand(S):** Vishay Siliconix

#### Time Schedule:

Last Time Buy Date: Sunday December 20, 2026

Last Time Ship Date: Monday June 21, 2027

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

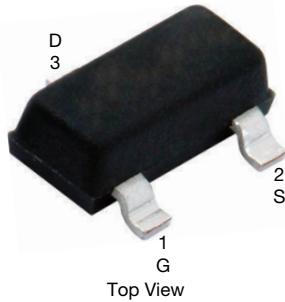
**Product Identification:** SQ2319CES-T1\_GE3

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

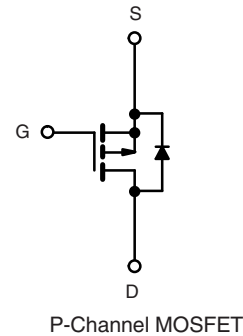
**This PTN is considered approved, without further notification, unless we receive specific customer concerns before Sunday October 11, 2026 or as specified by contract.**

**Issued By:** Lance Gurrola, automostechsupport@vishay.com

## Automotive P-Channel 40 V (D-S) MOSFET

**SOT-23 (TO-236)**

**FEATURES**

- TrenchFET® power MOSFET
- AEC-Q101 qualified
- 100 % R<sub>G</sub> and UIS tested
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

**Marking Code: TF**

| PRODUCT SUMMARY                                     |        |
|---|--------|
| V <sub>DS</sub> (V)                                 | -40    |
| R <sub>DS(on)</sub> (Ω) at V <sub>GS</sub> = -10 V  | 0.075  |
| R <sub>DS(on)</sub> (Ω) at V <sub>GS</sub> = -4.5 V | 0.145  |
| I <sub>D</sub> (A)                                  | -4.6   |
| Configuration                                       | Single |

| ORDERING INFORMATION            |   |
|---------------------------------|---|
| Package                         | SOT-23  |
| Lead (Pb)-free and halogen-free | SQ2319CES<br>(for detailed order number please see <a href="http://www.vishay.com/doc?79771">www.vishay.com/doc?79771</a> ) |

| ABSOLUTE MAXIMUM RATINGS (T <sub>C</sub> = 25 °C, unless otherwise noted) |                         |                                   |             |      |
|---|-------------------------|-----------------------------------|-------------|------|
| PARAMETER   |                         | SYMBOL                            | LIMIT       | UNIT |
| Drain-source voltage  |                         | V <sub>DS</sub>                   | -40         | V    |
| Gate-source voltage   |                         | V <sub>GS</sub>                   | ± 20        |      |
| Continuous drain current  | T <sub>C</sub> = 25 °C  | I <sub>D</sub>                    | -4.6        | A    |
|   | T <sub>C</sub> = 125 °C |                                   | -2.6        |      |
| Continuous source current (diode conduction)                              |                         | I <sub>S</sub>                    | -2.6        |      |
| Pulsed drain current <sup>a</sup>   |                         | I <sub>DM</sub>                   | -18         |      |
| Single pulse avalanche current  | L = 0.1 mH              | I <sub>AS</sub>                   | -13         |      |
| Single pulse avalanche energy   |                         | E <sub>AS</sub>                   | 8.4         | mJ   |
| Maximum power dissipation   | T <sub>C</sub> = 25 °C  | P <sub>D</sub>                    | 3.0         | W    |
|   | T <sub>C</sub> = 125 °C |                                   | 1.0         |      |
| Operating junction and storage temperature range                          |                         | T <sub>J</sub> , T <sub>stg</sub> | -55 to +175 | °C   |

| THERMAL RESISTANCE RATINGS |                        |                   |       |      |
|----------------------------|------------------------|-------------------|-------|------|
| PARAMETER                  |                        | SYMBOL            | LIMIT | UNIT |
| Junction-to-Ambient        | PCB mount <sup>b</sup> | R <sub>thJA</sub> | 166   | °C/W |
| Junction-to-Foot (Drain)   |                        | R <sub>thJF</sub> | 50    |      |

**Notes**

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



| SPECIFICATIONS ( $T_C = 25\text{ }^\circ\text{C}$ , unless otherwise noted) |               |  |  |      |       |           |               |
|---|---------------|--|--|------|-------|-----------|---------------|
| PARAMETER   | SYMBOL        | TEST CONDITIONS  |  | MIN. | TYP.  | MAX.      | UNIT          |
| <b>Static</b>   |               |  |  |      |       |           |               |
| Drain-source breakdown voltage  | $V_{DS}$      | $V_{GS} = 0, I_D = -250\text{ }\mu\text{A}$  |  | -40  | -     | -         | V             |
| Gate-source threshold voltage   | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$   |  | -1.5 | -2.0  | -2.5      |               |
| Gate-source leakage   | $I_{GSS}$     | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$  |  | -    | -     | $\pm 100$ | nA            |
| Zero gate voltage drain current   | $I_{DSS}$     | $V_{GS} = 0\text{ V}$  | $V_{DS} = -40\text{ V}$                                  | -    | -     | -1        | $\mu\text{A}$ |
|   |               | $V_{GS} = 0\text{ V}$  | $V_{DS} = -40\text{ V}, T_J = 125\text{ }^\circ\text{C}$ | -    | -     | -50       |               |
|   |               | $V_{GS} = 0\text{ V}$  | $V_{DS} = -40\text{ V}, T_J = 150\text{ }^\circ\text{C}$ | -    | -     | -150      |               |
| On-state drain current <sup>a</sup>   | $I_{D(on)}$   | $V_{GS} = -10\text{ V}$  | $V_{DS} \leq -5\text{ V}$                                | -10  | -     | -         | A             |
| Drain-source on-state resistance <sup>a</sup>                               | $R_{DS(on)}$  | $V_{GS} = -10\text{ V}$  | $I_D = -3\text{ A}$                                      | -    | 0.068 | 0.075     | $\Omega$      |
|   |               | $V_{GS} = -10\text{ V}$  | $I_D = -3\text{ A}, T_J = 125\text{ }^\circ\text{C}$     | -    | 0.105 | -         |               |
|   |               | $V_{GS} = -10\text{ V}$  | $I_D = -3\text{ A}, T_J = 175\text{ }^\circ\text{C}$     | -    | 0.118 | -         |               |
|   |               | $V_{GS} = -4.5\text{ V}$   | $I_D = -2.4\text{ A}$                                    | -    | 0.105 | 0.145     |               |
| Forward transconductance <sup>b</sup>                                       | $g_{fs}$      | $V_{DS} = -5\text{ V}, I_D = -3\text{ A}$  |  | -    | 8     | -         | S             |
| <b>Dynamic <sup>b</sup></b>   |               |  |  |      |       |           |               |
| Input capacitance   | $C_{iss}$     | $V_{GS} = 0\text{ V}$  | $V_{DS} = -20\text{ V}, f = 1\text{ MHz}$                | -    | 491   | 620       | pF            |
| Output capacitance  | $C_{oss}$     |  |  | -    | 89    | 120       |               |
| Reverse transfer capacitance  | $C_{rss}$     |  |  | -    | 54    | 70        |               |
| Total gate charge <sup>c</sup>  | $Q_g$         | $V_{GS} = -10\text{ V}$  | $V_{DS} = -20\text{ V}, I_D = -3\text{ A}$               | -    | 11    | 16        | nC            |
| Gate-source charge <sup>c</sup>   | $Q_{gs}$      |  |  | -    | 2.1   | -         |               |
| Gate-drain charge <sup>c</sup>  | $Q_{gd}$      |  |  | -    | 2.6   | -         |               |
| Gate resistance   | $R_g$         | $f = 1\text{ MHz}$   |  | 2.1  | 4.4   | 6.4       | $\Omega$      |
| Turn-on delay time <sup>c</sup>   | $t_{d(on)}$   | $V_{DD} = -20\text{ V}, R_L = 6.7\text{ }\Omega$<br>$I_D \cong -3\text{ A}, V_{GEN} = -10\text{ V}, R_g = 1\text{ }\Omega$ |  | -    | 8     | 12        | ns            |
| Rise time <sup>c</sup>  | $t_r$         |  |  | -    | 3     | 28        |               |
| Turn-off delay time <sup>c</sup>  | $t_{d(off)}$  |  |  | -    | 18    | 27        |               |
| Fall time <sup>c</sup>  | $t_f$         |  |  | -    | 3     | 27        |               |
| <b>Source-Drain Diode Ratings and Characteristics <sup>b</sup></b>          |               |  |  |      |       |           |               |
| Pulsed current <sup>a</sup>   | $I_{SM}$      |  |  | -    | -     | -18       | A             |
| Forward voltage   | $V_{SD}$      | $I_F = -1.5\text{ A}, V_{GS} = 0$  |  | -    | -0.8  | -1.2      | V             |
| Body diode reverse recovery time  | $t_{rr}$      | $I_F = -1.5\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$  |  | -    | 16    | 32        | ns            |
| Body diode reverse recovery charge  | $Q_{rr}$      |  |  | -    | 13    | 26        | nC            |
| Reverse recovery fall time  | $t_a$         |  |  | -    | 13    | -         | ns            |
| Reverse recovery rise time  | $t_b$         |  |  | -    | 3     | -         |               |
| Body diode peak reverse recovery current                                    | $I_{RM(REC)}$ |  |  | -    | -1.9  | -         | A             |

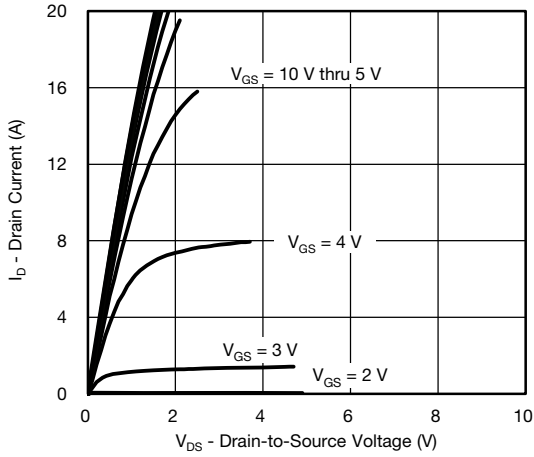
**Notes**

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

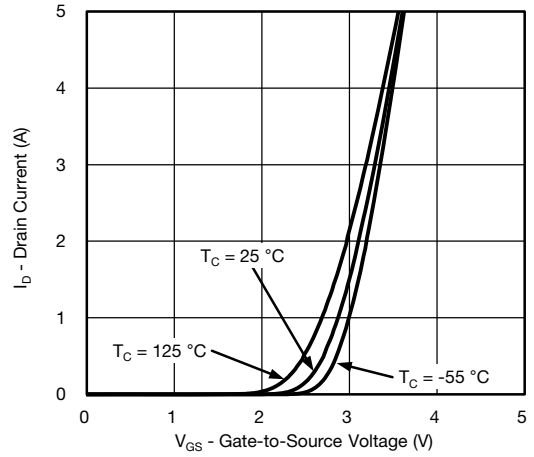
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



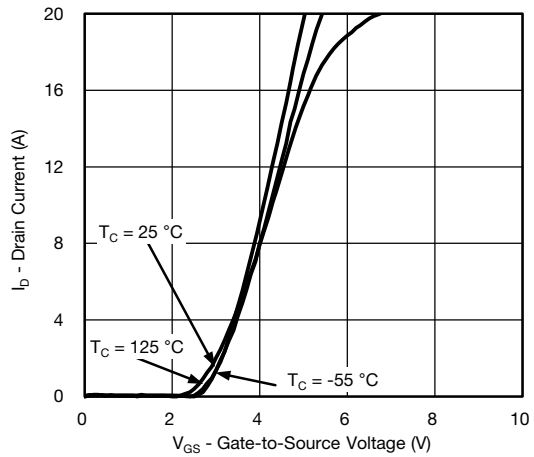
**TYPICAL CHARACTERISTICS** ( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise noted)



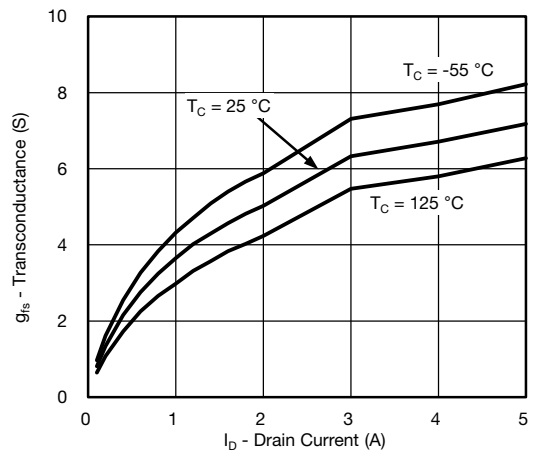
**Output Characteristics**



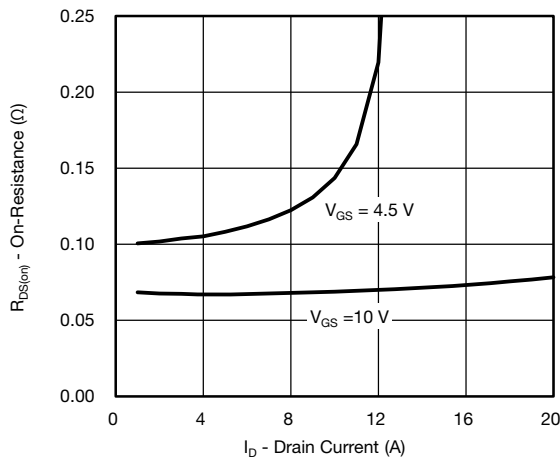
**Transfer Characteristics**



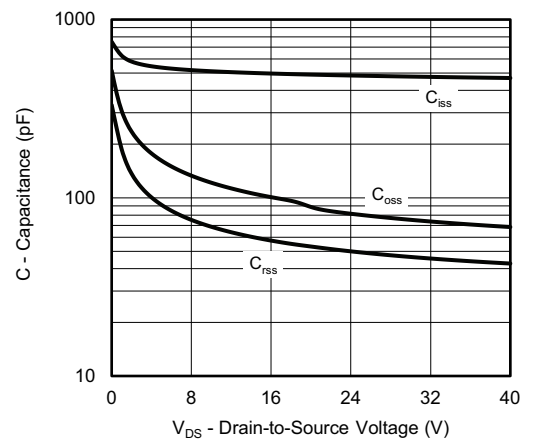
**Transfer Characteristics**



**Transconductance**



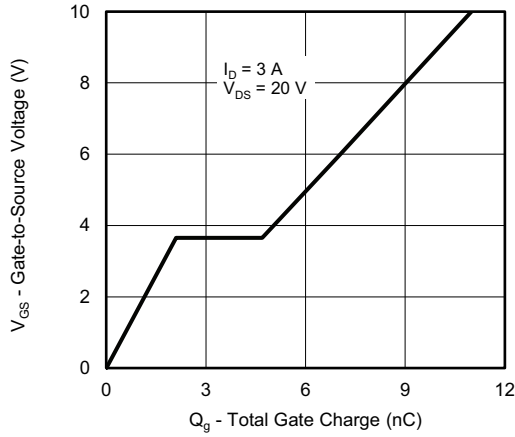
**On-Resistance vs. Drain Current**



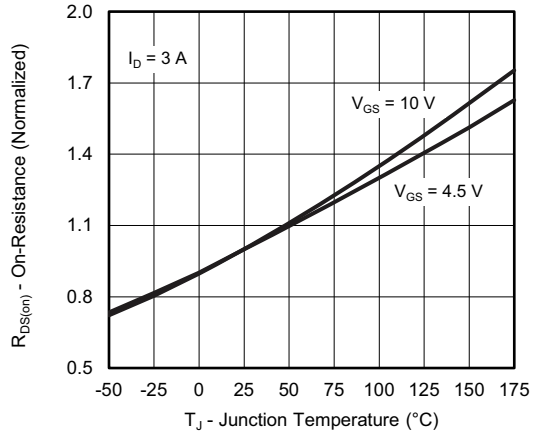
**Capacitance**



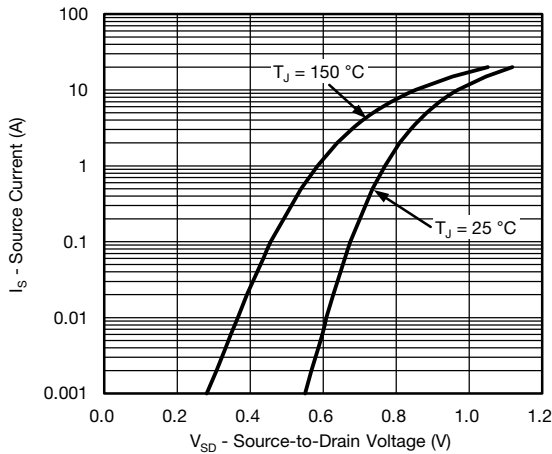
**TYPICAL CHARACTERISTICS** ( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise noted)



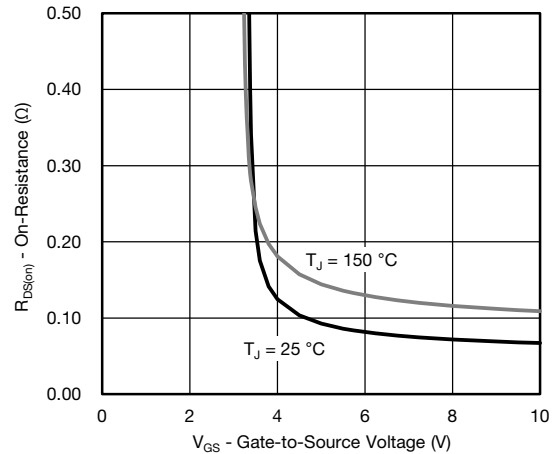
**Gate Charge**



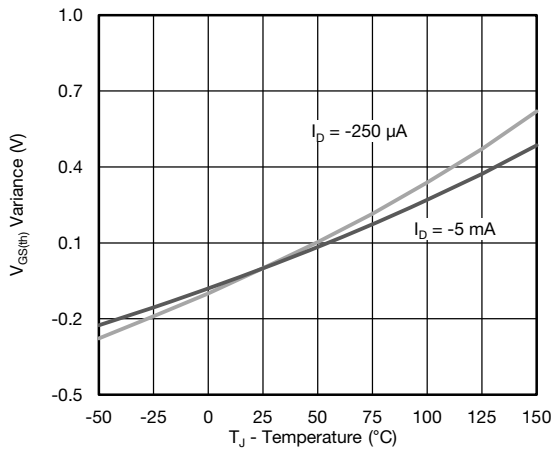
**On-Resistance vs. Junction Temperature**



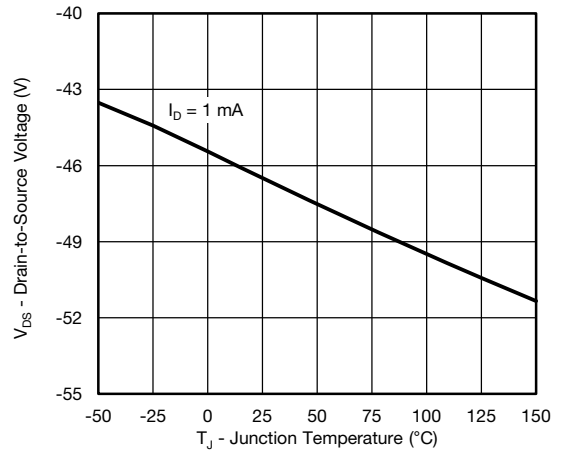
**Source Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**



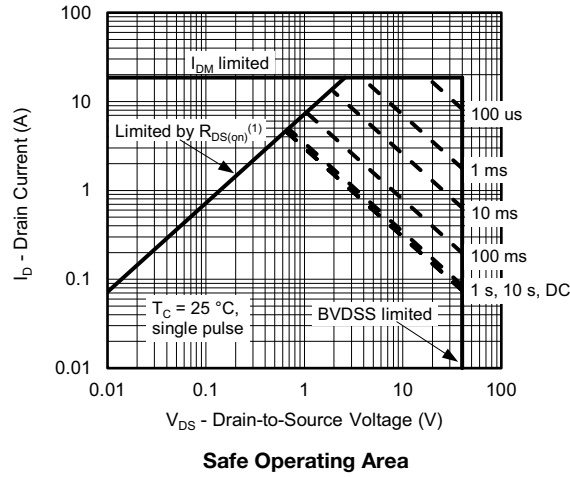
**Threshold Voltage**



**Drain Source Breakdown vs. Junction Temperature**

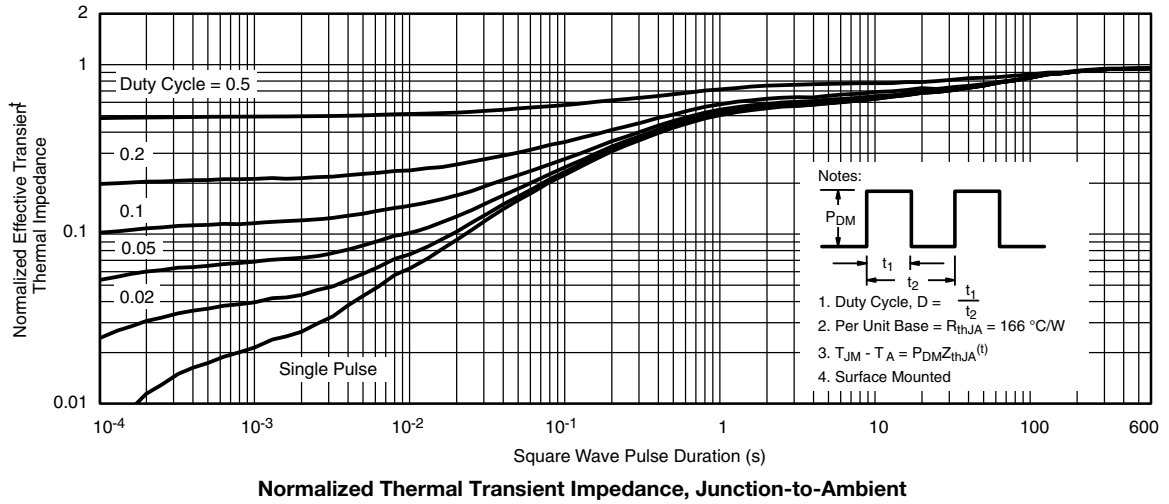


**THERMAL RATINGS** ( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise noted)



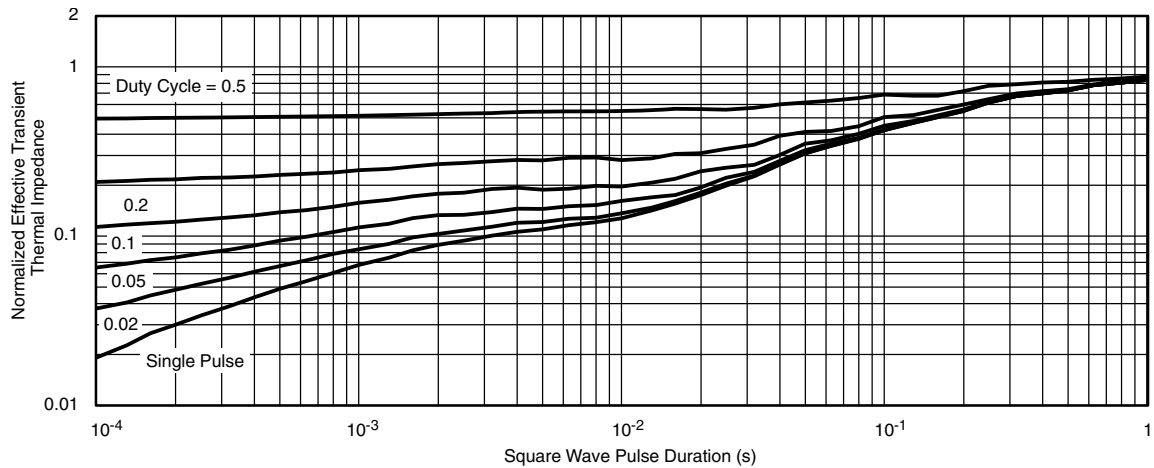
**Note**

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-Foot**

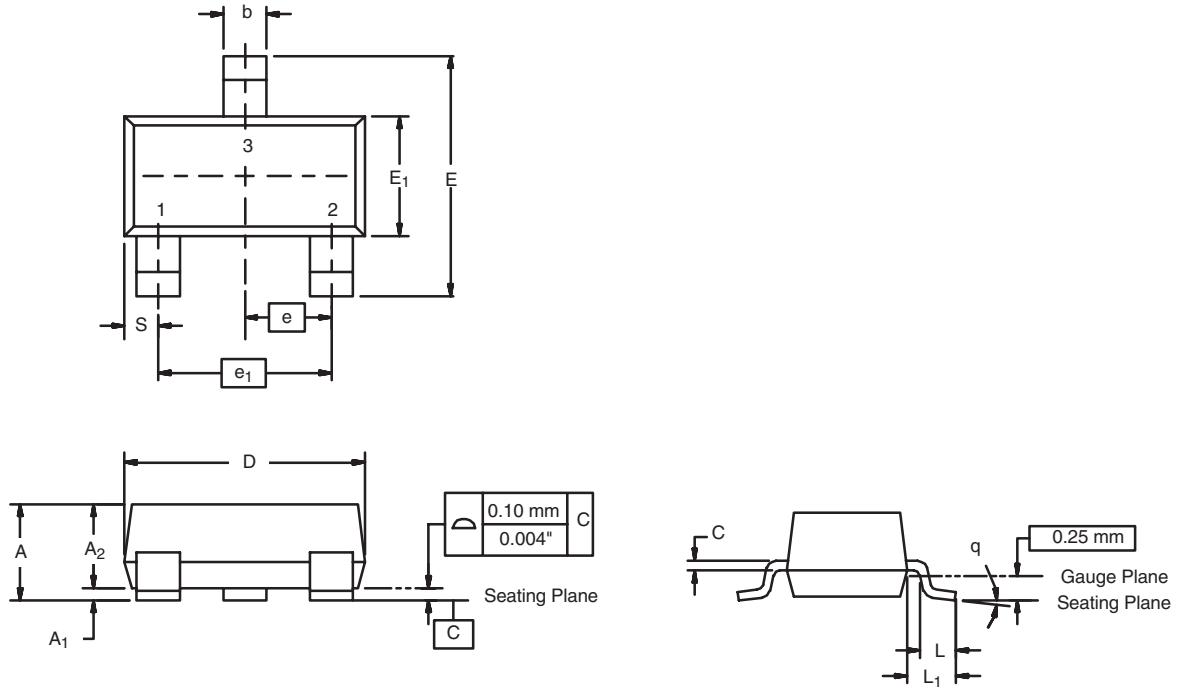
**Note**

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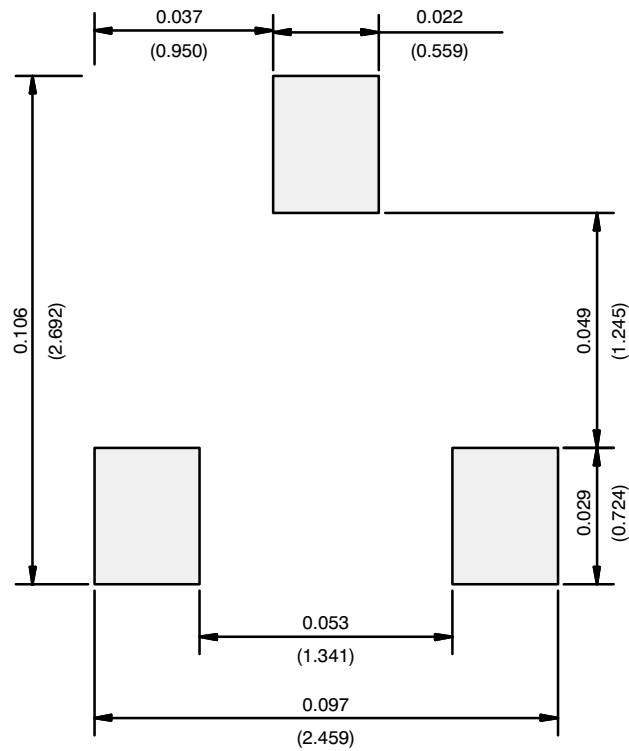
**SOT-23 (TO-236): 3-LEAD**



| Dim            | MILLIMETERS |      | INCHES     |       |
|----------------|-------------|------|------------|-------|
|                | Min         | Max  | Min        | Max   |
| A              | 0.89        | 1.12 | 0.035      | 0.044 |
| A <sub>1</sub> | 0.01        | 0.10 | 0.0004     | 0.004 |
| A <sub>2</sub> | 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 <sub>1</sub> | 1.20        | 1.40 | 0.047      | 0.055 |
| e              | 0.95 BSC    |      | 0.0374 Ref |       |
| e <sub>1</sub> | 1.90 BSC    |      | 0.0748 Ref |       |
| L              | 0.40        | 0.60 | 0.016      | 0.024 |
| L <sub>1</sub> | 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)

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| Vishay Material Code | Customer Material   | Location |
|----------------------|---------------------|----------|
| SQ2319ADS-T1_BE3     | SLNSQ2319ADS-T1-BE3 | Ft Worth |