Product Termination Notification

Product Group: SIL/Tuesday April 28, 2026/PTN-SIL-026-2026-REV-1

Conversion to Copper (Cu) Wire – SQ2301ES-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 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.

REV-1 PTN issued to correct new ordering part number to SQ2301CES-T1_GE3.

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: Friday April 23, 2027

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

Product Identification: SQ2301CES-T1_GE3

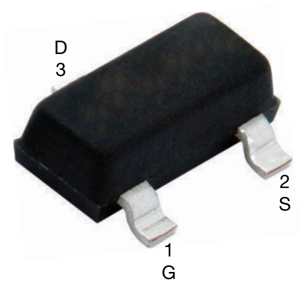
Qualification Data: AEC Q101 qualification data of replacement product is available. Qualification PPAP is available now.

This PTN is considered approved, without further notification, unless we receive specific customer concerns before Wednesday May 27, 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)



Top View

FEATURES

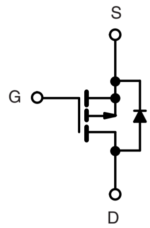
- TrenchFET® power MOSFET
- AEC-Q101 qualified
- 100 % R_g and UIS tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

RoHS COMPLIANT

HALOGEN FREE



P-Channel MOSFET

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	
Single pulse avalanche energy		E_{AS}	4	mJ
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

a. Package limited

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

c. When mounted on 1" square PCB (FR-4 material)

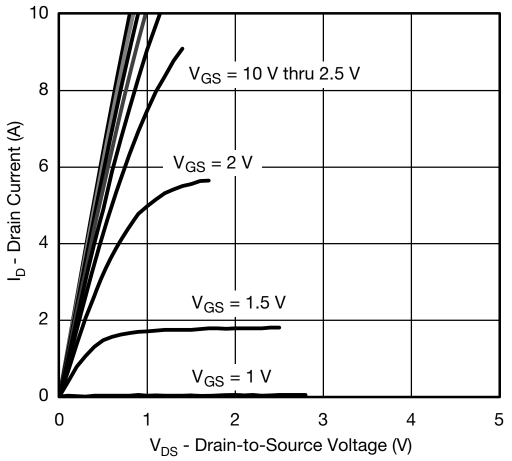
SPECIFICATIONS (T_C = 25 °C, unless otherwise noted)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static							
Drain-source breakdown voltage	V_{DS}	V_{GS} = 0, I_D = -250 μA		-20	-	-	V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA		-0.45	-	-1.5	
Gate-source leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 8 V		-	-	± 100	nA
Zero gate voltage drain current	I_{DSS}	V_{GS} = 0 V	V_{DS} = -20 V	-	-	-1	μA
		V_{GS} = 0 V	V_{DS} = -20 V, T_J = 125 °C	-	-	-50	
		V_{GS} = 0 V	V_{DS} = -20 V, T_J = 175 °C	-	-	-150	
On-state drain current [a]	$I_{D(on)}$	V_{GS} = -4.5 V	$V_{DS} \geq 5$ V	-8	-	-	A
Drain-source on-state resistance[a]	$R_{DS(on)}$	V_{GS} = -4.5 V	I_D = -2.8 A	-	0.080	0.120	Ω
		V_{GS} = -2.5 V	I_D = -2 A	-	0.110	0.180	
Forward transconductance [a]	g_{fs}	V_{DS} = -1.6 V, I_D = -2.8 A		-	7	-	S
Dynamic [b]							
Input capacitance	C_{iss}	V_{GS} = 0 V	V_{DS} = -10 V, f = 1 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 V	V_{DS} = -10 V, I_D = -2.8 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 MHz		3	6	14.5	Ω
Turn-on delay time [c]	$t_{d(on)}$	V_{DD} = -10 V, R_L = 10 Ω $I_D \cong$ -1 A, V_{GEN} = -4.5 V, R_g = 1 Ω		-	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 A, V_{GS} = 0		-	-0.8	-1.2	V
Body diode reverse recovery time	t_{rr}	I_F = -1.2 A, di/dt = 100 A/μs		-	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	-	A

Notes

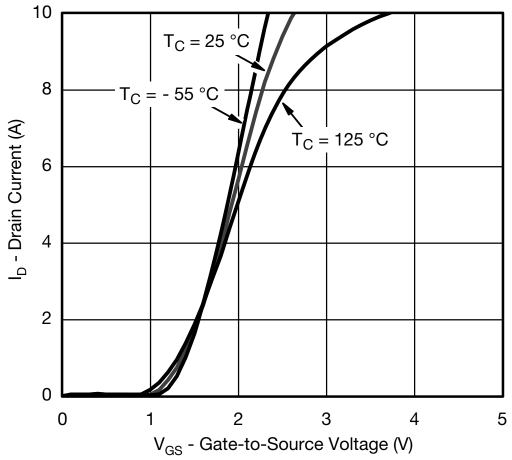
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
b. Guaranteed by design, not subject to production testing
c. Independent of operating temperature

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.

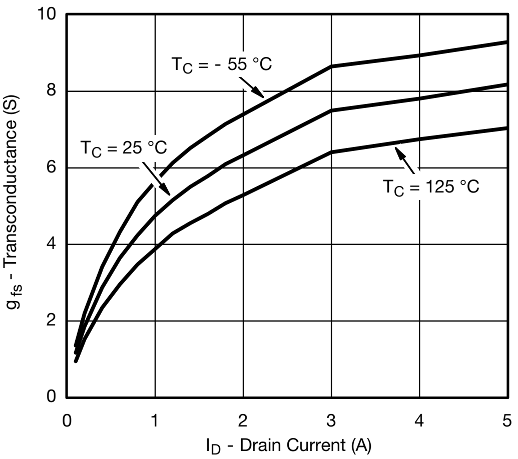
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



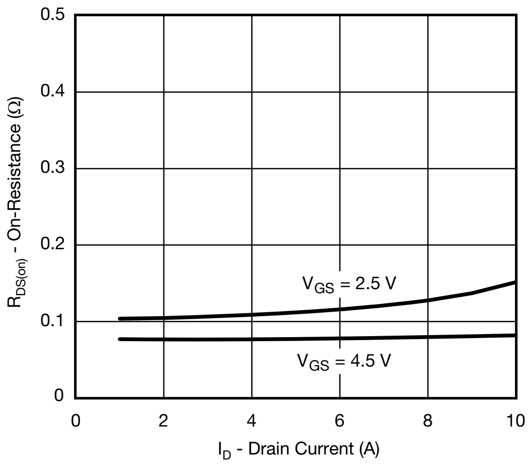
Output Characteristics



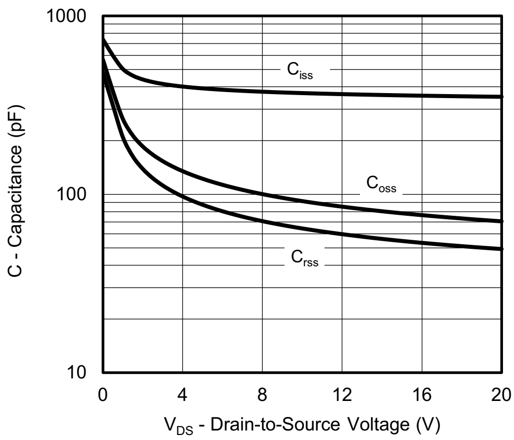
Transfer Characteristics



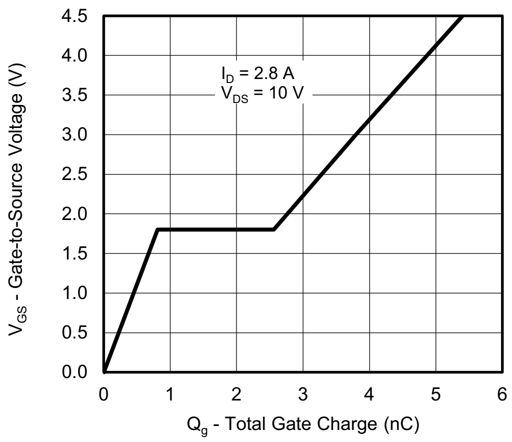
Transconductance



On-Resistance vs. Drain Current

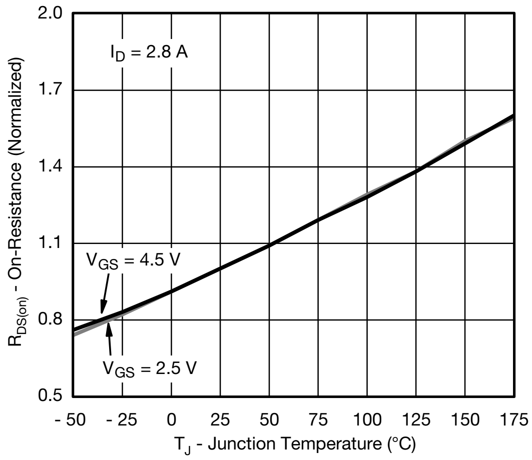


Capacitance

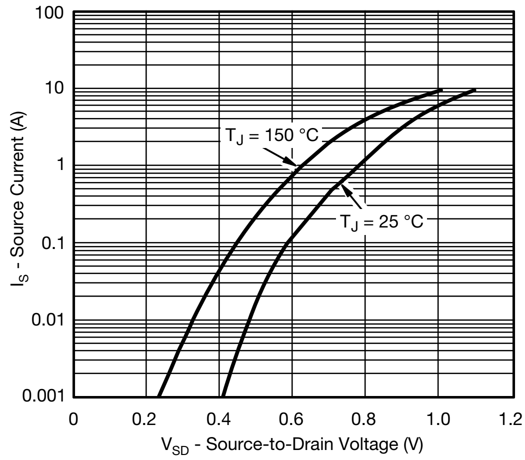


Gate Charge

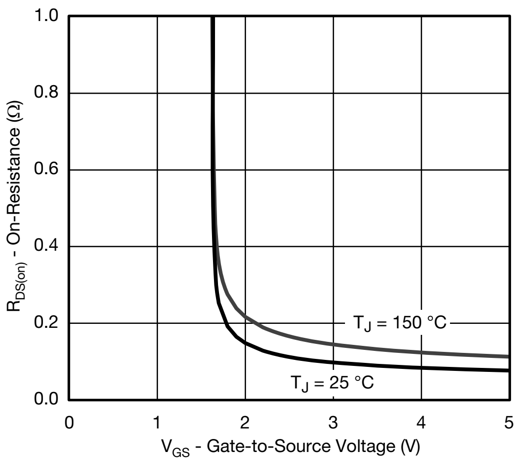
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



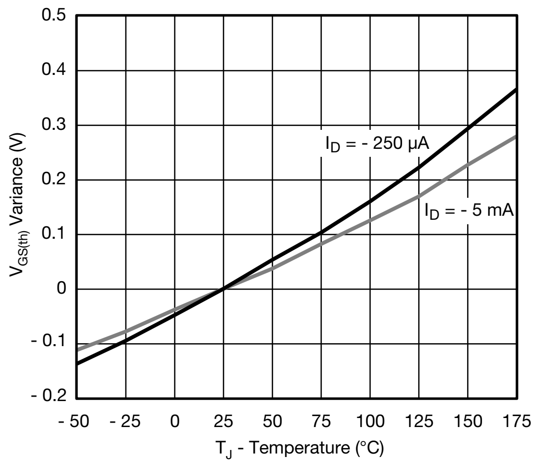
On-Resistance vs. Junction Temperature



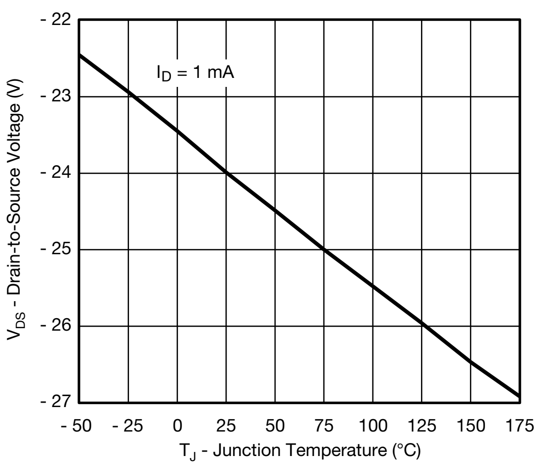
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

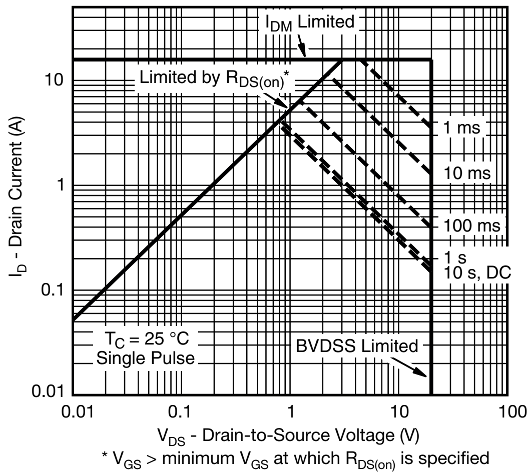


Threshold Voltage

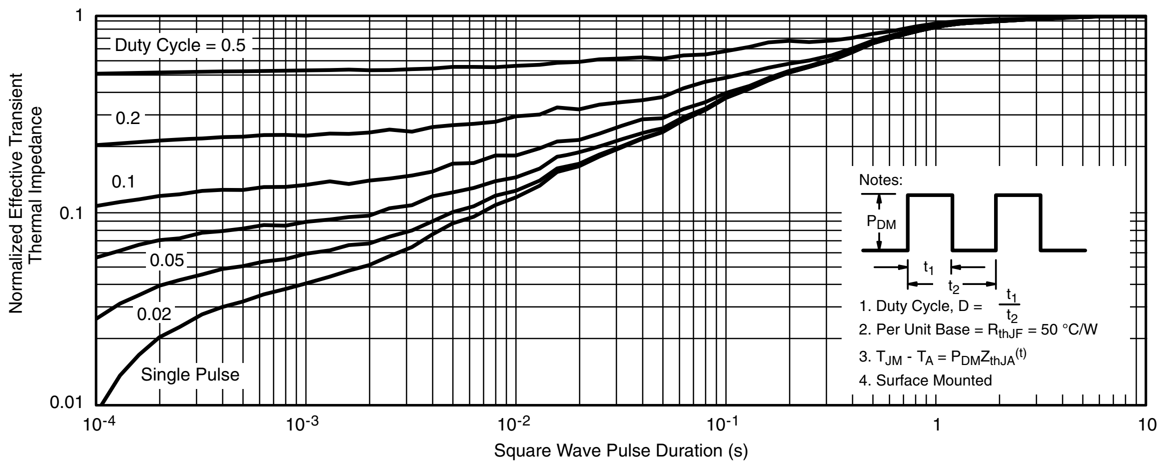


Drain Source Breakdown vs. Junction Temperature

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

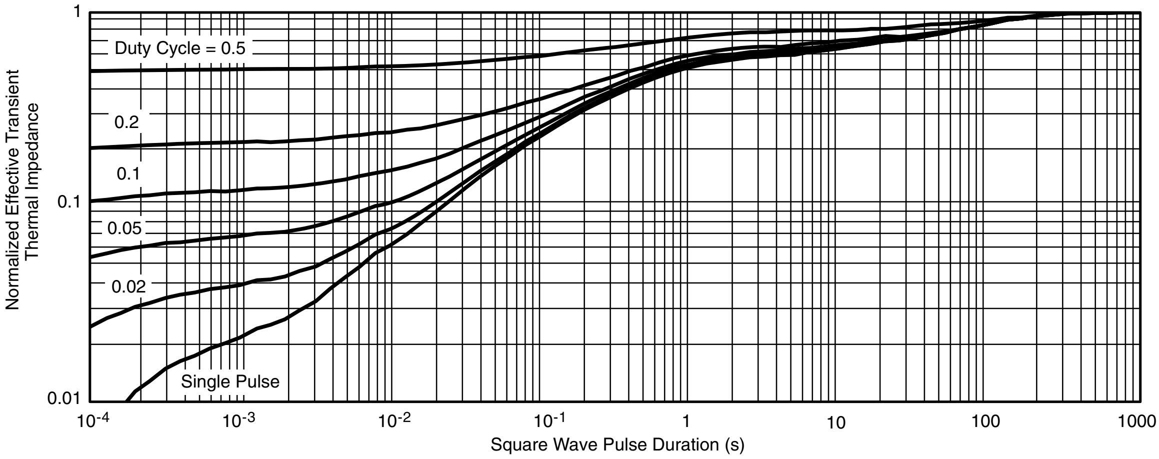


Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Foot

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



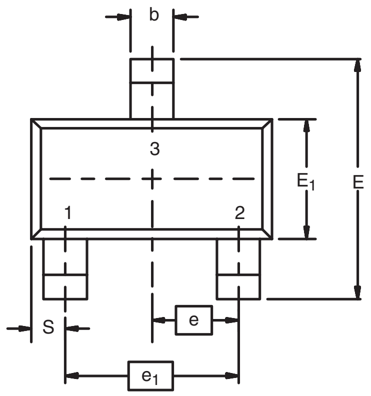
Normalized Thermal Transient Impedance, Junction-to-Ambient

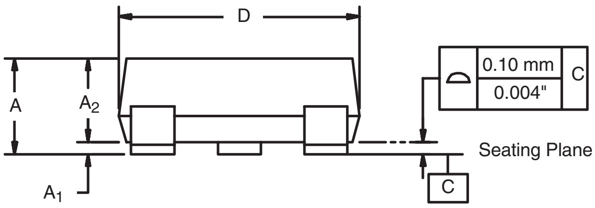
Note

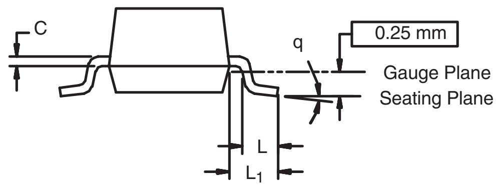
- The characteristics shown in the two graphs
  - Normalized Transient Thermal Impedance Junction-to-Ambient (25 °C)
  - Normalized Transient Thermal Impedance Junction-to-Foot (25 °C)

  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

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

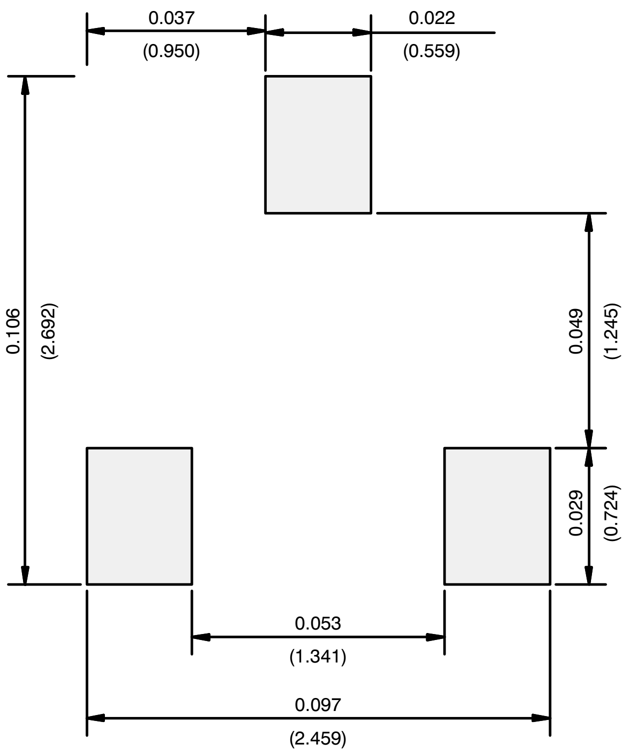






Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A_1	0.01	0.10	0.0004	0.004
A_2	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E_1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e_1	1.90 BSC		0.0748 Ref	
L	0.40	0.60	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)

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