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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Model Number<br><b>4115K-03A</b>                                                                                                                                                         |  | <b>ROTARY TRANSFORMER TORQUE SENSOR</b> |                                   |                                                                                                                                                                                                                                                                                                 | Revision: E<br>ECN #: 43820                                                                                                                                                                                                                 |                 |
| <b>Performance</b>                                                                                                                                                                       |  | <b>ENGLISH</b>                          | <b>SI</b>                         |                                                                                                                                                                                                                                                                                                 | <b>OPTIONAL VERSIONS</b>                                                                                                                                                                                                                    |                 |
| Measurement Range(Full Scale Capacity)                                                                                                                                                   |  | 200 in-lb                               | 23 Nm                             | [1]                                                                                                                                                                                                                                                                                             | Optional versions have identical specifications and accessories as listed for the standard model except where noted below. More than one option may be used.                                                                                |                 |
| Sensitivity(± 15 %)(output at rated capacity)                                                                                                                                            |  | 2.5 mV/V                                | 2.5 mV/V                          | [1][3]                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                 |
| Non-Linearity                                                                                                                                                                            |  | ≤ 0.05 % FS                             | ≤ 0.05 % FS                       | [3]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Hysteresis                                                                                                                                                                               |  | ≤ 0.05 % FS                             | ≤ 0.05 % FS                       | [3]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Non-Repeatability                                                                                                                                                                        |  | ≤ 0.03 % FS                             | ≤ 0.03 % FS                       | [3]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| <b>Environmental</b>                                                                                                                                                                     |  |                                         |                                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Overload Limit                                                                                                                                                                           |  | 600 in-lb                               | 68 Nm                             |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Temperature Range(Operating)                                                                                                                                                             |  | -65 to 285 °F                           | -54 to 141 °C                     |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Temperature Range(Compensated)                                                                                                                                                           |  | +70 to +170 °F                          | +21 to 77 °C                      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Temperature Effect on Output(Maximum)                                                                                                                                                    |  | ± 0.002 %Reading/°F                     | ± 0.0036 %Reading/°C              | [4]                                                                                                                                                                                                                                                                                             | <b>NOTES:</b><br>[1]Nominal.<br>[2]Recommended 10 VAC RMS.<br>[3]FS - Full Scale.<br>[4]Over compensated operating temperature range.<br>[5]Mounting per AND10262 and AND20002.<br>[6]See PCB Declaration of Conformance PS062 for details. |                 |
| Temperature Effect on Zero Balance(Maximum)                                                                                                                                              |  | ± 0.002 %FS/°F                          | ± 0.0036 %FS/°C                   | [4][3]                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                 |
| <b>Electrical</b>                                                                                                                                                                        |  |                                         |                                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Bridge Resistance                                                                                                                                                                        |  | 350 Ohm                                 | 350 Ohm                           | [1]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Excitation Frequency                                                                                                                                                                     |  | 3.28 kHz                                | 3.28 kHz                          |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Excitation Voltage                                                                                                                                                                       |  | 2 to 10 VAC rms                         | 2 to 10 VAC rms                   | [2]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Insulation Resistance                                                                                                                                                                    |  | >5,000,000 kohm                         | >5,000,000 kohm                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Zero Balance                                                                                                                                                                             |  | ≤ 2 % FS                                | ≤ 2 % FS                          | [3]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Bridge Current(at 5 VAC)                                                                                                                                                                 |  | 50 mA                                   | 50 mA                             |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| <b>Physical</b>                                                                                                                                                                          |  |                                         |                                   |                                                                                                                                                                                                                                                                                                 | <b>SUPPLIED ACCESSORIES:</b>                                                                                                                                                                                                                |                 |
| Size (Shaft Length x Housing Length x Housing Height)                                                                                                                                    |  | 9.56 in x 8.25 in x 6.00 in             | 242.82 mm x 209.55 mm x 152.40 mm |                                                                                                                                                                                                                                                                                                 | Model 180-019A 5-socket mating connector for Series 3100, 4100, 4200 torque sensors<br>Model 8113-105A Relay activated precision shunt calibration module                                                                                   |                 |
| Weight                                                                                                                                                                                   |  | 47 lb                                   | 21.3 kg                           |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Mounting                                                                                                                                                                                 |  | Flange w/ Splined Shaft                 | Flange w/ Splined Shaft           | [5]                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                 |
| Sensing Element                                                                                                                                                                          |  | Strain Gage                             | Strain Gage                       |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Housing Material                                                                                                                                                                         |  | Black Oxided Steel                      | Black Oxided Steel                |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Shaft Material                                                                                                                                                                           |  | Steel                                   | Steel                             |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Electrical Connector                                                                                                                                                                     |  | MS3102A-14S-5P                          | MS3102A-14S-5P                    |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Torsional Stiffness                                                                                                                                                                      |  | 33,000 in-lb/radian                     | 3700 N-m/radian                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Rotating Inertia                                                                                                                                                                         |  | 0.0050 in-lb sec <sup>2</sup>           | 0.0006 N-m sec <sup>2</sup>       |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| Maximum Speed                                                                                                                                                                            |  | 15,000 RPM                              | 15,000 RPM                        |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
|                                                                                                        |  |                                         |                                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
| All specifications are at room temperature unless otherwise specified.<br>In the interest of constant product improvement, we reserve the right to change specifications without notice. |  |                                         |                                   |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                             |                 |
|                                                                                                                                                                                          |  |                                         |                                   | Entered: AP                                                                                                                                                                                                                                                                                     | Engineer: PE                                                                                                                                                                                                                                | Sales: KWW      |
|                                                                                                                                                                                          |  |                                         |                                   | Date: 2/12/2015                                                                                                                                                                                                                                                                                 | Date: 2/12/2015                                                                                                                                                                                                                             | Date: 2/12/2015 |
|                                                                                                                                                                                          |  |                                         |                                   | Date: 2/12/2015                                                                                                                                                                                                                                                                                 | Date: 2/12/2015                                                                                                                                                                                                                             | <b>18483</b>    |
|                                                                                                                                                                                          |  |                                         |                                   | <b>PCB Load &amp; Torque, Inc.</b><br><b>24350 Indoplex Circle</b><br><b>Farmington Hills, MI 48335</b><br><b>UNITED STATES</b><br><b>Phone: 866-684-7107</b><br><b>Fax: 716-684-0987</b><br><b>E-Mail: ltinfo@pcbloadtorque.com</b><br><b>Web site:</b><br><b>http://www.pcbloadtorque.com</b> |                                                                                                                                                                                                                                             |                 |