



## Stackpole Electronics Inc. Lead Free / RoHS Status

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS). As part of this ongoing program, we periodically update this document with the status regarding the availability of our lead-free components. Most of our products are either currently lead-free or are available as lead-free. Our lead-free part numbers are also fully RoHS compliant. The part numbers that are listed as provisional (PROV) are now manufactured lead-free and RoHS compliant. The compliant version will be shipped when pre-existing inventory of product with terminations containing lead is depleted. In cases where receipt of compliant product must be assured now, please order the alternate RoHS compliant part number.

| Package / Termination Type | Standard Product Series | Description                            | Standard Series Currently Lead Free / RoHS Compliant? | Alternate RoHS Compliant Version Available? | Alternate RoHS Compliant Part Number | Lead Free Termination Composition | Lead Free Manufacturing Effective Date (Standard Product Series) | Lead Free Effective Date Code (YY/WW) |
|----------------------------|-------------------------|--|---|---|--------------------------------------|-----------------------------------|--|---------------------------------------|
| <i>Resistors</i>           |                         |  |   |   |                                      |                                   |  |                                       |
| SMD                        | RMC                     | General Purpose Thick Film Chip        | PROV *  | YES   | RMCF                                 | 100% Matte Sn over Ni             | Jan-04 [Japan]<br>Jan-05 [Taiwan]<br>Jan-05 [China]              | 04/01<br>05/01<br>05/01               |
|                            | RMCG                    | Gold Barrier Thick Film Chip           | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jan-06   | 06/01                                 |
|                            | HMC                     | High Resistance Value Chip             | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jan-04   | 04/01                                 |
|                            | RGC                     | Semi-Precision Chip                    | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jul-04   | 04/27                                 |
|                            | RHC                     | High Power Chip                        | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jul-04   | 04/27                                 |
|                            | RVC                     | Medium Voltage Chip                    | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jan-03   | 03/01                                 |
|                            | RPC                     | Pulse Chip Resistor                    | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jan-03   | 03/01                                 |
|                            | HVC                     | High Voltage Chip                      | YES   | -   | -                                    | 100 % Matte Sn ("T")              | Always   | Always                                |
|                            | FCR                     | Thick Film Trimmable Chip              | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jan-04   | 04/01                                 |
|                            | RNC                     | Thin Film, Nichrome, Precision         | PROV *  | YES   | RNCF                                 | 100% Matte Sn over Ni             | May-04   | 04/18                                 |
|                            | RNCS                    | Anti-Corrosive Chip                    | YES   | -   | -                                    | 100% Matte Sn over Ni             | May-04   | 04/18                                 |
|                            | RNCW                    | Thin Film Wire Bondable Chip Resistors | YES   | -   | -                                    | Gold plating                      | Always   | Always                                |
|                            | RAV                     | Thick Film, Array, Convex              | PROV *  | YES   | RAVF                                 | 100% Matte Sn over Ni             | Jan-04 (Japan)<br>Jul-04 (Taiwan)                                | 04/01<br>04/27                        |
|                            | RAC                     | Thick Film, Array, Concave             | PROV *  | YES   | RACF                                 | 100% Matte Sn over Ni             | Jan-04   | 04/01                                 |
|                            | RAF                     | Thick Film, Array, Flat Termination    | YES   | -   | -                                    | 100% Matte Sn over Ni             | Jul-04   | 04/27                                 |
| HPC                        | High Power Chip         | YES                                    | -   | -   | 100% Matte Sn                        | Always                            | Always   |                                       |

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|                         |                                  |   |        |     |               |                       |                        |        |
|-------------------------|----------------------------------|---|--------|-----|---------------|-----------------------|------------------------|--------|
|                         | <b>CSS</b>                       | Ultra Precision Current Sensing Resistors                                     | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>CSSH</b>                      | Ultra Precision Current Sensing Resistors                                     | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>RMCP</b>                      | Gener Purpose High Power Thick Film Chip Resistor                             | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>RNCP</b>                      | High Power Anti-Sulfur Tin Film Chip Resistor                                 | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>ESA(U)</b>                    | Low and Ultra-Low Capacitance ESD Suppressor Array                            | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>ESD(U)</b>                    | Low and Ultra Low Capacitance ESD Suppressor                                  | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>MLF</b>                       | Precision Metal Film Melf Resistor  | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
|                         | <b>MLFM</b>                      | Precision Metal Film Mini Melf Resistor                                       | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
| <b>SIP</b>              | <b>LC</b>                        | Thick Film SIP Resistor Network   | PROV * | YES | LCF           | 100% Matte Sn         | Feb-08                 | 08/06  |
|                         | <b>MAC</b>                       | Thick Film Surface Mount Multi Value Chip Resistor Array Concave Terminations | YES    | -   | -             | 100% Matte Sn over Ni | Always                 | Always |
|                         | <b>HVR</b>                       | High Voltage Leaded Resistor Networks   | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
|                         | <b>HVD</b>                       | High Voltage Leaded Resistors   | YES    | -   | -             | 96.3/3.7 Sn/Ag        | Always                 | Always |
| <b>SMD</b>              | <b>CSR</b>                       | Current Sensing Chip  | YES    | -   | -             | 100% Matte Sn over Ni | May-04                 | 04/18  |
|                         | <b>CSRN</b>                      | Current Sensing Chip  | YES    | -   | -             | 100% Matte Sn over Ni | May-04                 | 04/18  |
|                         | <b>CSNL</b>                      | Metal Strip Current Sensing Chip  | YES    | -   | -             | 100% Matte Sn over Ni | May-04                 | 04/18  |
|                         | <b>CSRFB</b>                     | Foil on Ceramic Current Sensing Chip  | YES    | -   | -             | 100% Matte Sn over Ni | Jul-04                 | 04/27  |
| <b>Radial / Special</b> | <b>MPR</b>                       | Flameproof Metal Plate  | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
|                         | <b>TR</b>                        | TO-220 Style Power Resistors  | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
| <b>Axial / Kelvin</b>   | <b>MR/TMR</b>                    | Low Resistance - Current Sensing  | YES    | -   | -             | 100% Matte Sn         | Jan-06                 | 06/01  |
| <b>Special</b>          | <b>HLD</b>                       | High Current Shunt / Sensing  | YES    | -   | -             | 100% Matte Sn         | Always                 | Always |
| <b>Axial</b>            | <b>RN/RNM</b>                    | General Purpose Metal Film  | PROV * | YES | RNF/RNMF      | 99.3/0.7 Sn/Cu        | Apr-05 (Japan)         | 05/14  |
|                         |                                  |   |        |     |               | 100% Matte Sn         | Jan-04 (Taiwan, China) | 04/01  |
|                         | <b>RS/RSM</b>                    | Metal Oxide   | PROV * | YES | RSF/RSMF      | 99.3/0.7 Sn/Cu        | Apr-05 (Japan)         | 05/14  |
|                         |                                  |   |        |     |               | 100% Matte Sn         | Jan-04 (Taiwan, China) | 04/01  |
|                         | <b>ASR/ASRM</b>                  | Anti-Surge  | YES    | -   | -             | 99.3/0.7 Sn/Cu        | Apr-05                 | 05/14  |
|                         | <b>SPR</b>                       | Discharge Path  | YES    | -   | -             | 99.3/0.7 Sn/Cu        | Apr-05                 | 05/14  |
|                         | <b>RSPF/RSPFL</b>                | Flameproof Power  | YES    | -   | -             | 99.3/0.7 Sn/Cu        | Apr-05                 | 05/14  |
|                         | <b>FRN</b>                       | Fusing  | YES    | -   | -             | 99.3/0.7 Sn/Cu        | Apr-05                 | 05/14  |
|                         | <b>JW</b>                        | Jumper Wire   | YES    | -   | -             | 100% Matte Sn         | Jan-04                 | 04/01  |
|                         | <b>CD</b>                        | Zero-Ohm  | YES    | -   | -             | 100% Matte Sn         | Jan-04                 | 04/01  |
| <b>MG</b>               | Metal Glaze                      | YES   | -      | -   | 100% Matte Sn | Jan-06                | 04/01                  |        |
| <b>MGM</b>              | Mini Metal Glaze Leaded Resistor | YES   | -      | -   | 100% Matte Sn | Always                | Always                 |        |

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|                   |                |  |     |   |   |                |                        |        |
|-------------------|----------------|--|-----|---|---|----------------|------------------------|--------|
| Axial             | RC             | Carbon Composition   | YES | - | - | 100% Matte Sn  | Jan-86                 | 86/01  |
|                   | CF/CFM         | Carbon Film  | YES | - | - | 100% Matte Sn  | Jan-04 (Taiwan, China) | 04/01  |
|                   | HDM            | Moisture Resistant Carbon Film   | YES | - | - | 100% Matte Sn  | Always                 | Always |
|                   | SHP            | Thick Film on Steel Resistor   | YES | - | - | 100% Matte Sn  | Always                 | Always |
| SMD               | SM             | Wirewound, Molded Package  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
| Special           | KAL            | General Purpose, Aluminum Housed   | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
| Axial             | WRF            | Consumer Grade - Conformal Coated Wirewound  | YES | - | - | 99.3/0.7 Sn/Cu | Jan-04                 | 04/01  |
|                   | GP             | Commercial Grade WW, conformal coated  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | WW/MWW         | General Purpose WW conformal coated  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | NWW            | General Purpose/Precision Ledged Wirewound Resistor - Conformal Coated - Non Inductive | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | NSP            | Ceramic Housed - Consumer Grade  | YES | - | - | 99.3/0.7 Sn/Cu | Jan-04                 | 04/01  |
| Special           | NSZ            | Specialty Lead, Ceramic Housed - Consumer Grade  | YES | - | - | 99.3/0.7 Sn/Cu | Jan-04                 | 04/01  |
| Axial             | CB             | General Purpose, Ceramic Housed  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
| Axial             | LCB            | General Purpose, C.H., Low resistance  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
| Special / 4 Leads | TCB            | General Purpose, C.H., Low Resistance, 4 terminal                                      | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | MCB            | Ceramic Housed General Purpose Metal Oxide Element Resistor                            | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | WCB            | Ceramic Housed Precision Ledged Wirewound Resistor                                     | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | WRC            | Conformal Coated Welded Wirewound Resistor   | YES | - | - | 100% Matte Sn  | Always                 | Always |
|                   | BR             | Open Air Bare Element Current Sense Resistor   | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
| Radial            | VM/MVM/LVM/WVM | General Purpose, Ceramic Housed, Vertical Mount  | YES | - | - | 100% Matte Sn  | Jan-06                 | 06/01  |
|                   | RWT            | Thermal Fusing Vertical Mount Ledged Resistor  | YES | - | - | 100% Matte Sn  | Always                 | Always |
|                   | SWT/EWT        | Non-Flammable Edgewound Tubular Wirewound  | YES | - | - | 100% Matte Sn  | Always                 | Always |
| Axial             | EL/CEL         | Commercial Power   | YES | - | - | 100% Matte Sn  | Always                 | Always |

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| Varistors |                             |   |     |   |               |   |        |        |
|-----------|-----------------------------|---|-----|---|---------------|---|--------|--------|
| SMD       | PV                          | Plastic Encapsulated Varistor               | YES | - | -             | Tinned Cu   | Always | Always |
|           | DV                          | Multilayer Varistor Chip Varistor           | YES | - | -             | Proprietary Barrier Termination   | Always | Always |
|           | AV, ZV, ZVX, ZVE            | Multilayer Varistor Chip Varistor           | YES | - | -             | Proprietary Barrier Termination ( <i>special designation "N"</i> ) for Lead-free assembly; AgPd for Pb-containing assembly. | Always | Always |
|           | ZOV                         | High Energy Varistors                       | YES | - | -             | 100% Matte Sn   | Always | Always |
| Leaded    | CV, CV+, SV, ZV             | Disc Varistors                              | YES | - | -             | 100% Matte Sn   | Jul-05 | 05/27  |
|           | ZV, AV, MV, OV              | Through-hole Varistors                      | YES | - | -             | 100% Matte Sn   | Jul-05 | 05/27  |
| Inductors |                             |   |     |   |               |   |        |        |
| SMD       | VLH                         | Miniature Power Inductor                    | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | NL                          | SMD Ferrite Wirewound Inductor              | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | AL                          | Thin Film Chip Inductor                     | YES | - | -             | 100% Matte Sn over Ni   | May-04 | 04/18  |
|           | WL                          | Wirewound Ceramic Chip Inductor             | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | CL                          | Multilayer Chip Inductor                    | YES | - | -             | 100% Matte Sn over Ni   | Aug-05 | 05/31  |
|           | PCD                         | Unshielded SMD Power Inductor               | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PD                          | Unshielded SMD Power Inductor               | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PDH                         | Unshielded SMD Power Inductor               | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | MPE                         | Unshielded SMD Mini Power Inductor          | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | MPI                         | Unshielded SMD Mini Power Inductor          | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | DRGH                        | Unshielded DIP Power Inductor               | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PCDR                        | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PCDS                        | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PCS                         | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PDRH                        | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PS                          | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | PSDB                        | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
| SCDS      | Shielded SMD Power Inductor | YES   | -   | - | 100% Matte Sn | Aug-05  | 05/31  |        |
| SFM       | Shielded SMD Power Inductor | YES   | -   | - | 100% Matte Sn | Aug-05  | 05/31  |        |
| DRGR      | Shielded DIP Power Inductor | YES   | -   | - | 100% Matte Sn | Aug-05  | 05/31  |        |
|           | CB                          | Multi-Layer Ferrite Surface Mount Chip Bead | YES | - | -             | 100% Matte Sn   | Aug-05 | 05/31  |
|           | MPC                         | Unshielded Mini SMD Power Inductor          | YES | - | -             | 100% Matte Sn   | Always | Always |
|           | PTS                         | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Always | Always |
|           | PCF                         | Shielded SMD Power Inductor                 | YES | - | -             | 100% Matte Sn   | Always | Always |

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