






## ERJPC Super High Precision Thick Film Resistor

### Miniaturisation & Cost Optimisation

### Achieving Thin-Film-Level Precision with Thick Film Resistors

#### Key features:

|  |   |   |  |  |
|--|---|---|--|--|
|  <h4 style="text-align: center; margin-top: 10px;">High Precision</h4> <ul style="list-style-type: none"> <li>▪ Tight resistance tolerance: <math>\pm 0.1\%</math></li> <li>▪ Low TCR: <math>\pm 25</math> ppm/K</li> </ul> |  <h4 style="text-align: center; margin-top: 10px;">High Power Rating</h4> <ul style="list-style-type: none"> <li>▪ Up to 2x power rating vs. thin-film resistors of the same size</li> </ul> |  <h4 style="text-align: center; margin-top: 10px;">High Reliability</h4> <ul style="list-style-type: none"> <li>▪ Excellent resistance stability with <math>\Delta R</math> within <math>\pm 0.2\%</math></li> <li>▪ Inherent environmental robustness of thick film technology</li> </ul> |  <h4 style="text-align: center; margin-top: 10px;">Pb-free Construction</h4> <ul style="list-style-type: none"> <li>▪ Manufactured using lead-free materials</li> </ul> |  <h4 style="text-align: center; margin-top: 10px;">Compliance</h4> <ul style="list-style-type: none"> <li>▪ AEC-Q200 compliant</li> <li>▪ RoHS compliant</li> </ul> |
|--|---|---|--|--|

#### Line-up overview:

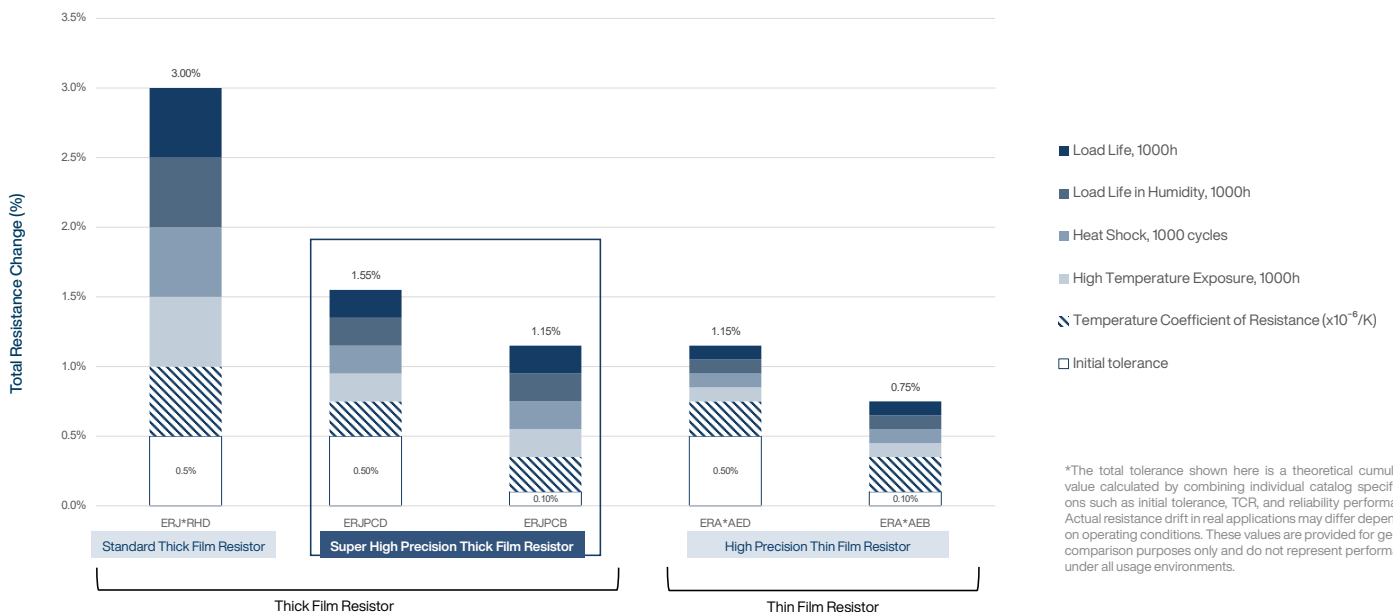
| Feature / Part No.             |             | ERJPC3                           | ERJPC6                        |
|--------------------------------|-------------|----------------------------------|-------------------------------|
| Size (inch)                    |             | 0603                             | 0805                          |
| Resistance range               | $\pm 0.1\%$ | 300 $\Omega$ ~ 1M $\Omega$       | 300 $\Omega$ ~ 1M $\Omega$    |
|                                | $\pm 0.5\%$ | 300 $\Omega$ ~ 1M $\Omega$       | 300 $\Omega$ ~ 5.11M $\Omega$ |
| T.C.R. ( $\times 10^{-6}/K$ )* |             | $\pm 25$ ppm/K                   |                               |
| Power rating @ 85°C            |             | 0.20 W                           | 0.25 W                        |
| Limiting element voltage       |             | 100V                             | 150V                          |
| Max. overload voltage          |             | 150V                             | 300V                          |
| Category temp. range           |             | $-55^{\circ}C$ ~ $+155^{\circ}C$ |                               |

\*Cold T.C.R. ( $-55^{\circ}C$  to  $+25^{\circ}C$ ) is  $-50$  to  $+25 \times 10^{-6}/K$

### ERJPC Positioning in High Precision Portfolio

### Bridging the gap: Thick film resistors with thin-film-like precision

Total Tolerance Breakdown and Comparison by Resistor Series\*



# Panasonic VAVE Proposal: Space-Saving Through Downsizing

## Panasonic's ERJPC thick film vs. General high precision thin film resistors

Tol: 0.1% TCR: 25ppm/K

| Power / Size | 0402      | 0603               | 0805               | 1206    |
|--------------|-----------|--------------------|--------------------|---------|
| 0.4W         |           |                    |                    | ERJPC8* |
| 0.25W        |           |                    | ERJPC6 ← Thin film |         |
| 0.2W         |           | ERJPC3 ← Thin film |                    |         |
| 0.125W       | ERJPC2*   |                    | Thin film          |         |
| 0.1W         |           | Thin film          |                    |         |
| 0.063W       | Thin film |                    |                    |         |

Up to ~ 50% Space-saving\*:

0805 Thin film → 0603 Thick film

1206 Thin film → 0805 Thick film

\*Chip size comparison

\*0402 size (ERJPC2 series) & 1206 size (ERJPC8 series) are under development

### Application examples:



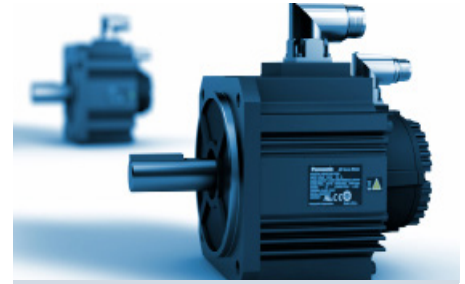
#### Automotive

- ADAS and body electronics
- Powertrain and control units
- BMS & sensing circuits



#### Industrial & Automation

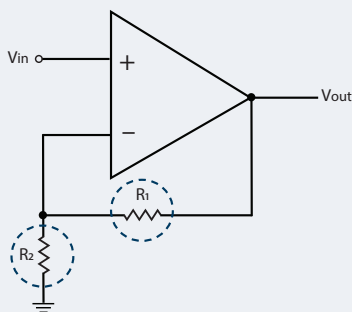
- Industrial power supplies
- PLC and I/O modules
- Factory automation controllers



#### Appliances

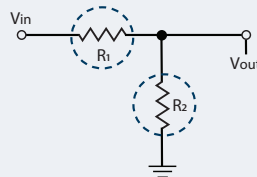
- Motor drive and power control circuits
- Control units
- Inverters

#### Op-Amp Amplifier



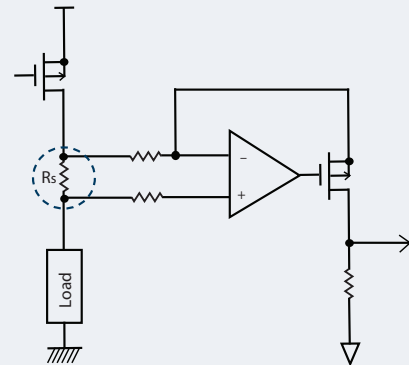
Ideal for precise gain setting with low initial tolerance and low TCR

#### Voltage Divider



Ensures accurate voltage sensing with tight tolerance

#### Current/Voltage Sensing



Stable resistance under stress for reliable sensing

