

Chip Resistor Reliability Test Data

Definition of Failure Rates: MTTF (Mean time to failure)
 MTBF (Mean time before failure or Mean time between failure)

**Calculations of MTTF and MTBF failure rates:
 In House Testing:**

Test Samples 0201-1206 (300 pcs ea.)	In House Test Hours	Temperature At Test	Power Rating	Failure Pieces	Total Time (hrs)	Failure Rate (per hr)	MTTF
1,500 (pcs)	1,000	70°C	Tested at rated power for each component size	0	1.5 x 10 ⁶	6.11 x 10 ⁻⁷	1.636 x 10 ⁶
Note: In case failure rate is zero, calculation is based on coefficient of 0.917 per Japan Industry Standard C-5003.							

Field Data:

Confirmed operating hours in the field or market:

- CR0201-20W-XXXJT (5%) Series: 236 x 10⁹
- CR0402-16W-XXXJT (5%) Series: 1,105 x 10⁹
- CR0402-16W-XXXXFT (1%) Series: 385 x 10⁹
- CR0603-10W-XXXJT (5%) Series: 78,035 x 10⁹
- CR0603-10W-XXXXFT (1%) Series: 9,810 x 10⁹
- CR0805-8W-XXXJT (5%) Series: 96,538 x 10⁹
- CR0805-8W-XXXXFT (1%) Series: 38,132 x 10⁹
- CR1206-4W-XXXJT (5%) Series: 65,945 x 10⁹
- CR1206-4W-XXXXFT (1%) Series: 7,089 x 10⁹

Number of failures reported in the field on any series: 0

MTBF (60% confidence level):

- CR0201-20W-XXXJT (5%) Series: $0.917 / 236 \times 10^9 = 0.003886$ FIT
- CR0402-16W-XXXJT (5%) Series: $0.917 / 1,105 \times 10^9 = 0.0008299$ FIT
- CR0402-16W-XXXXFT (1%) Series: $0.917 / 385 \times 10^9 = 0.0023818$ FIT
- CR0603-10W-XXXJT (5%) Series: $0.917 / 78,035 \times 10^9 = 0.0000118$ FIT
- CR0603-10W-XXXXFT (1%) Series: $0.917 / 9,810 \times 10^9 = 0.0000935$ FIT
- CR0805-8W-XXXJT (5%) Series: $0.917 / 96,538 \times 10^9 = 0.0000095$ FIT
- CR0805-8W-XXXXFT (1%) Series: $0.917 / 38,132 \times 10^9 = 0.0000240$ FIT
- CR1206-4W-XXXJT (5%) Series: $0.917 / 65,945 \times 10^9 = 0.0000139$ FIT
- CR1206-4W-XXXXFT (1%) Series: $0.917 / 7,089 \times 10^9 = 0.0001294$ FIT

All components tested were RoHS compliant according to the definitions and restrictions given by The European Parliament (Directive 2002/95/EC) and The Council of January 27, 2003.