



Quartz Crystal SPK-HC-49/US-SMD

- Typical applications:
motherboard of computers, consumer electronics, CD-ROM, VTR, data communication, automotive electronics, modem, TV games
- Features:
low profile, bulk, offer fitted insulator, large range of frequencies, resistance weld
- Electrical specifications:

| | |
|---------------------------------------|--|
| Frequency range, fundamental mode | 3.2 MHz ~ 30 MHz |
| Frequency range, 3rd overtone mode | 27 MHz ~ 70 MHz |
| Crystal cut | AT-CUT or 3rd AT-CUT |
| Load capacitance | Series or 8 to 50 PF |
| Calibration tolerance (at 25°C) | +/-10ppm ~ +/-50ppm |
| Frequency stability | +/-10ppm ~ +/-50ppm |
| Operating temperature range | 0~50°C, -10~60°C, -20~70°C, -30~80°C, -40~85°C. |
| Shunt capacitance (Co) | 7 pF maximum |
| Equivalent series resistance (E.S.R.) | See table 1 |
| Aging (per year at +25°C) | +/-3 ppm |
| Drive level | 0.05, 0.1, 0.2, 0.5, 1.0mW (to be specified by customer) |
| Insulation resistance | >500M Ω min/DC100V |

Please consult for other specifications.

- **Table 1: Equivalent series resistance (ESR Ω)**

| Frequency | E.S.R. max. | Frequency | E.S.R. max. |
|---------------|-------------|-----------------------|-------------|
| 3.2 ~ 3.4 MHz | 300 | 13.0 ~ 30.0MHz | 40 |
| 3.5 ~ 4.0 MHz | 150 | 24.0 ~ 40.0MHz | 40 |
| 4.1 ~ 4.9 MHz | 120 | 40.1 ~ 48.0MHz | 30 |
| 5.0 ~ 5.9 MHz | 100 | 27.0 ~ 30.0 MHz (3rd) | 150 |
| 6.0 ~ 8.9 MHz | 80 | 30.1 ~ 50.0 MHz (3rd) | 100 |
| 9.0 ~ 9.9 MHz | 60 | 50.1 ~ 70.0 MHz (3rd) | 80 |
| 10.0~12.9 MHz | 50 | | |