

Capacitors for Implantable Medical Applications

Challenges

Capacitors must work reliably within size constraints for implantable applications.



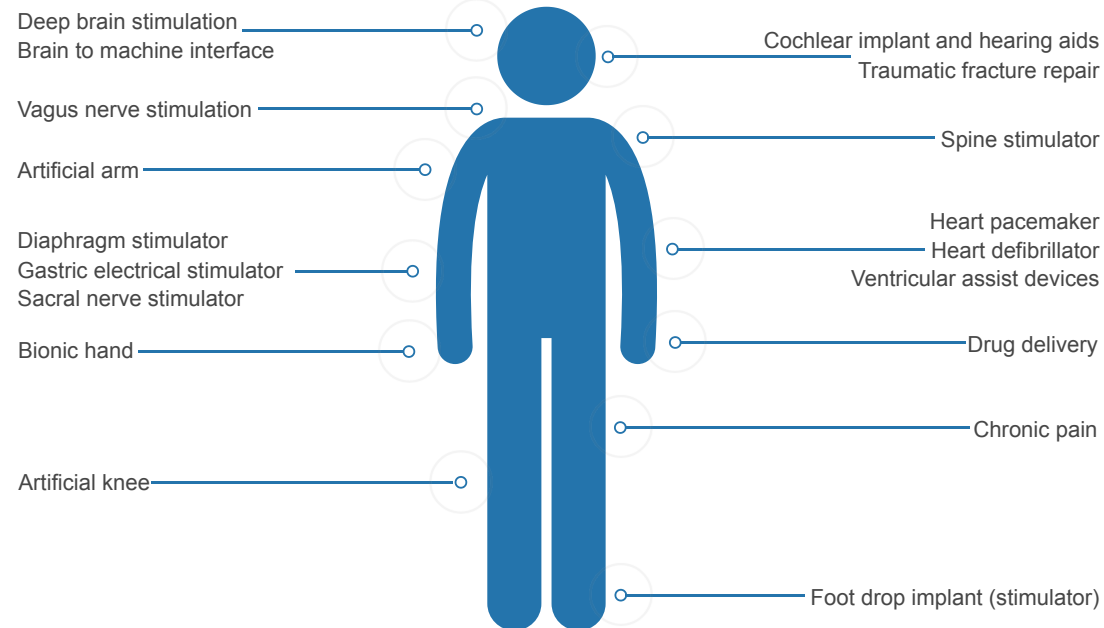
Tantalum



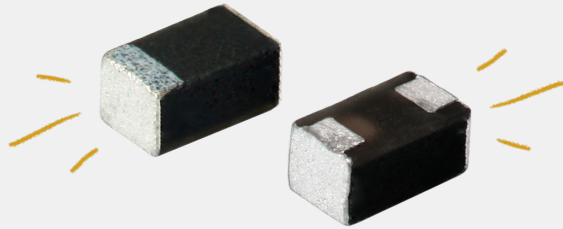
MLCC



Manufactured in medical-qualified ISO 13485 locations for FDA Class II & III devices



Implantable Tantalum Specifications



TM8 Series

0.33 μF to 47 μF
Capacitance range

2 V_{DC} to 40 V_{DC}
Voltage range

-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
Operating temperature

Compact

As small as 0402 footprint

Reliable

Failure rate levels available
Surge current tests

Custom Solutions

Electrical, testing, statistical
parametric screening, data

DCL

50 % lower than commercial
20 % lower than polymer

Implantable MLCC Specifications



VJ Hi-Rel Series

1 pF to 1 μF
Capacitance range

Up to 1500 V_{DC}
Voltage range

-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
Operating temperature

Compact

As small as 0402 footprint

Reliable

Based on high-rel military
products

Custom Solutions

Testing protocols
Data reporting
Manufacturing processes

High Frequency

Tight tolerance MLCCs for
communication circuits