

# SURGE PROTECTION DEVICES ZL70271/72/73/74/88

## PRODUCT PREVIEW

The ZL70271, ZL70272, ZL70273, ZL70274 and ZL70288 form a family of high-performance surge protection devices for implantable medical electronics. Optimized for fast turn-on and extremely low leakage current, the ICs ensure high performance and reliability, as well as an easy route to compliance with the EN-45502 and EN-50061 specifications. Zarlink's family of surge protection devices includes variants to support a range of application requirements for number of terminals and operating voltage:

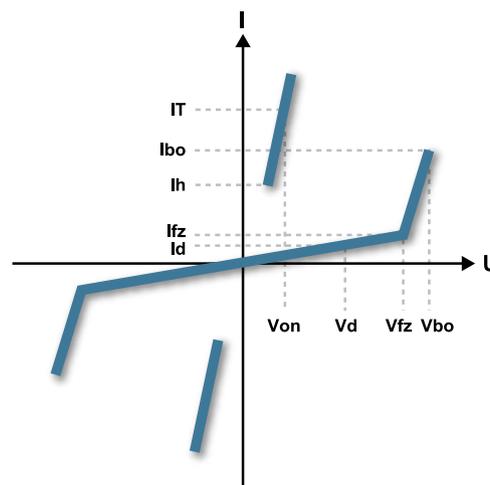
- ➔ The ZL70274 and ZL70288 are seven-terminal devices for triple-chamber pacemakers
- ➔ The ZL70271 is a five-terminal devices for dual-chamber pacemakers
- ➔ The ZL70273 is a six-terminal device optimized for size critical applications
- ➔ The ZL70272 is a five-terminal device for neurostimulators



### Performance Characteristics

|                            | ZL70271 | ZL70272 | ZL70273 | ZL70274/88 |
|----------------------------|---------|---------|---------|------------|
| Vfz*<br>min (V)            | 9.0     | 17.0    | 9.0     | 9.0        |
| Vbo*<br>max (V)            | 12.2    | 19.5    | 12.2    | 12.2       |
| Leakage<br>(nA)            | 150     | 150     | 100     | 100        |
| Size<br>(mm <sup>2</sup> ) | 10.2    | 10.2    | 7.5     | 8.7        |

\* See below, Ifz=10µA



### Enhanced Performance

- ➔ Extremely fast turn on (ZL70271 is <100ns)
- ➔ Low differential peak voltage
- ➔ Extremely low leakage allows terminals to be connected in parallel to the device it protects

### Eases Design

- ➔ Variants with 5, 6, or 7 terminals support range of applications requirements
- ➔ Very small size supports trend for miniaturization

### Applications

- ➔ Pacemakers
- ➔ Implantable cardioverter defibrillators (ICDs)
- ➔ Neurostimulators
- ➔ Bladder control devices

### Packaging and Availability

- ➔ Package: Solder bumped die
- ➔ Sample Availability: Now

### Superior Quality

- ➔ QA procedures based on MIL-PRF-38535
- ➔ Traceability for every chip to lot and wafer number
- ➔ 100% burn-in capability

### Standards Compliant

- ➔ EN-45502
- ➔ EN-50061

### Customer Support

Zarlink's surge protection devices are supported by a team of application design engineers with extensive medical system design experience.

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## APPLICATION

Implantable medical electronics, such as pacemakers, ICDs, neurostimulators and bladder control devices, are used to treat a wide range of illnesses including bradycardia, tachycardia, Parkinson's disease, chronic pain, muscle spasticity and incontinence. To maintain reliability, these implantable devices must be able to withstand electrical surges, such as those caused by medical treatments like defibrillation.

The diagram shown below of a dual-chamber pacemaker demonstrates how the ZL70271 device protects sensitive circuitry from transient currents. Designed with extremely low leakage current during normal pacing voltages, the terminals of the ZL70271 are connected in parallel with those of the protected pacemaker pins.

When the voltage between the terminals rises to a dangerous level, the device rapidly turns on and shunts the current.

Surge suppression occurs through a self-triggering thyristor-diode, coupled with a diode between each branch-input and common node. When a transient current is forced between two terminals, the positive terminal is clamped to the common node by the diode of one branch, and the negative terminal to the forward voltage of the thyristor-diode on the other branch. The low on-voltage of the thyristor ensures that voltage remains at a safe value during the transient.

Extremely fast turn-on and low leakage current eases compliance with regulations EN-45502 for active implantable medical devices, and EN-50061 for implantable cardiac pacemakers.

