# MS Cloud Managed Gigabit Switch Series


## Overview

The Meraki MS is the world's first cloud-managed switch bringing the benefits of the cloud: simplified management, reduced complexity, network wide visibility and control, and lower cost for branch and campus deployments.

## A Fresh Approach

Meraki switches are built from the ground up to be easy to manage without compromising any of the power and flexibility traditionally found in enterprise-class switches.

Meraki switches are managed through an elegant, intuitive cloud interface, rather than a cryptic command line. To bring up a Meraki switch, just plug it in; there's no need for complicated configuration files — or pre-staging.

In addition, Meraki's centralized management system gives administrators deep visibility into the network and how it's used. See which switches are near capacity across hundreds of sites. Find all configuration changes made by a certain person with instant search.

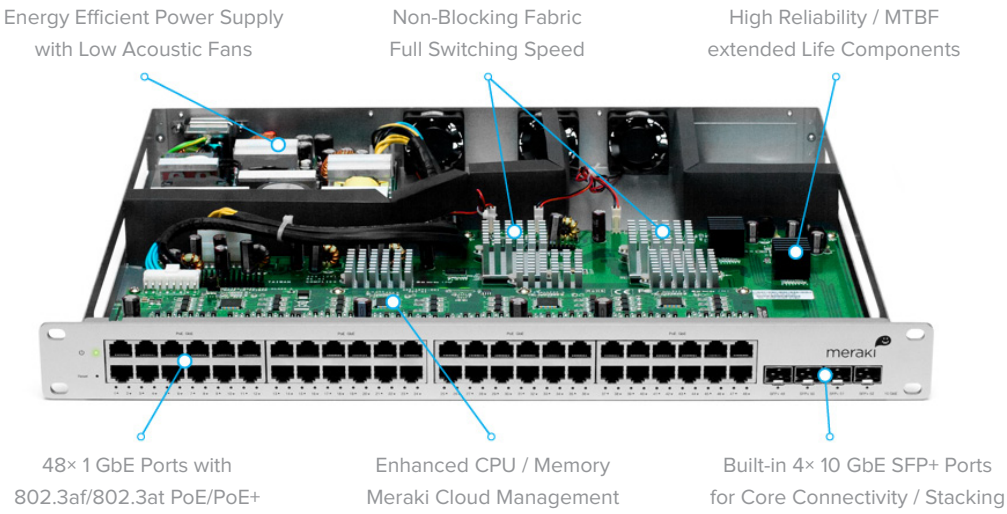
## Industry-Leading Cloud Management

Cloud management has a number of benefits that make it easier to build networks large and small:

- Single pane of glass management of distributed switch deployments, wireless APs, and firewalls across multiple sites through the browser.
- Virtual stacking: manage up to tens of thousands of ports from a single pane of glass.
- Layer 7 OS, client, and hostname fingerprinting.
- Powerful Live Tools such as cable test to isolate physical layer issues.
- E-mail and SMS (text) alerts upon power loss, downtime, or configuration changes.[1]
- Role-based administration and automatic, scheduled firmware upgrades over the web.
- Regular feature updates and enhancements delivered on demand from the Meraki cloud.
- No staging deployments

## Inside the Meraki MS

MS42P shown, features vary by model




### Enterprise-Class Hardware

Meraki switches feature high-end hardware without the high-end price, including:

- Four built-in small form-factor pluggable transceivers (SFP / SFP+), two transceivers for MS220-8/P
- GbE and 10 GbE uplink ports for high-speed connectivity to aggregation layer switches or other upstream devices
- Wire-speed switch fabric (up to 176 Gbps) and QoS queues per port for converged voice, video, and data deployments
- Low power consumption, quiet acoustic designs, and shallow rack depth, which enable flexible deployment in wiring closets as well as offices and classrooms
- Fanless design on MS220-8/P and MS22 models
- 380 watt PoE budget with PoE+ support for powering APs, phones, cameras, and other PoE enabled devices (124W for MS220-8/P)
- Lifetime hardware warranty and advanced replacement at no additional cost

### Full Enterprise Feature Set

Meraki switches include all of the traditional Ethernet features found on the highest end products, including:

- Quality-of-Service (QoS) to prioritize mission critical traffic such as voice and video
- IEEE 802.1X support for port based network access control
- MAC-based RADIUS auth and MAC whitelisting
- Voice VLAN support for simplified VoIP deployments
- Port Mirroring to monitor network traffic
- DHCP snooping to prevent users from adding unauthorized DHCP servers on the network
- IGMP Snooping to optimize network performance with multicast traffic
- Link Aggregation Control Protocol (LACP) for high-capacity trunking, stacking, and increased availability
- Broadcast storm protection, spanning tree, BPDU guard, root guard, and other safeguards to guard against misconfigurations and reduce convergence time
- Per port VLAN configuration
- Multiple administrative roles with sophisticated security policy management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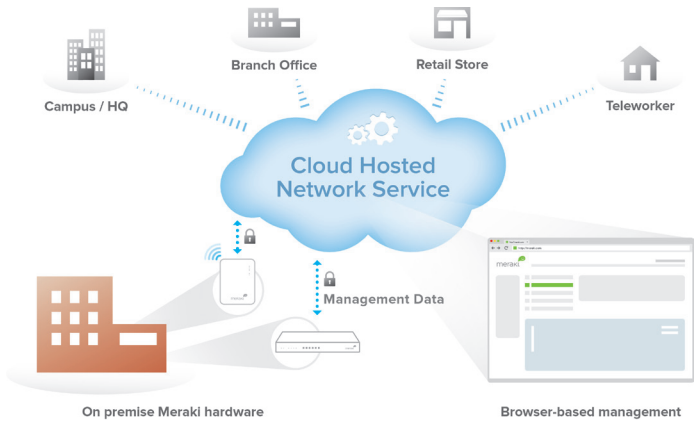
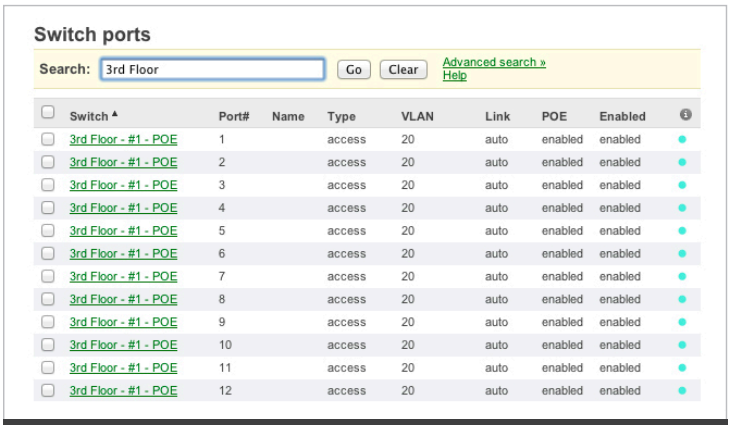
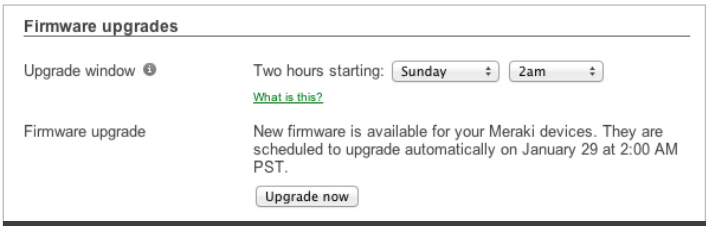


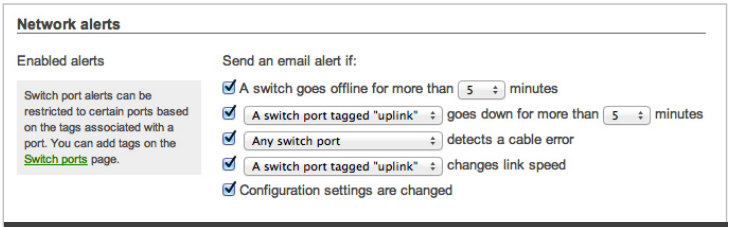

Meraki Cloud Management Architecture




Combined Views of Thousands of Ports




Scheduled Firmware Updates




Automatic E-mail Alerts

# Simplified Management and Operations

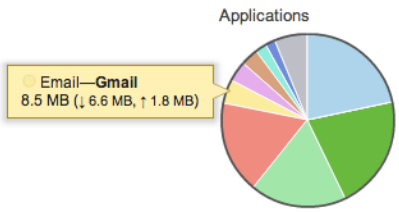
Meraki's cloud managed architecture makes it simpler than ever to quickly provision and reconfigure switch ports with security, QoS, and other parameters. The Meraki dashboard provides unified policies, event logs, and monitoring, which make it easy to manage and grow large network deployments.

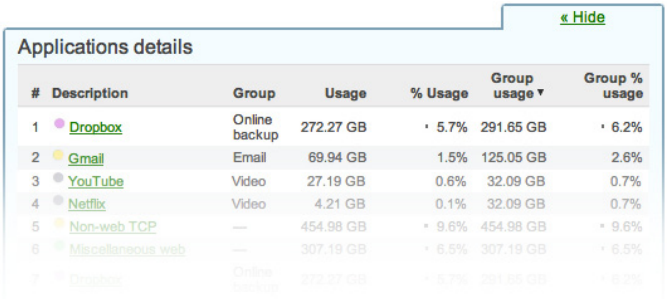
By providing a complete, powerful set of management functions over the web, Meraki's cloud-based management eliminates the need for proprietary command line configuration interfaces which require expensive and time consuming certifications. Meraki MS switches can be fully deployed and provisioned in minutes, without requiring any local configuration or staging. Additional or replacement switches can be sent to remote offices and installed by non-technical staff, saving thousands of dollars in time and travel expenses.

The Meraki MS family also includes several remote diagnostic features, from network connectivity and cable integrity tests to latency measurement tools. For deep client troubleshooting, administrators can even perform per-port remote pcap packet captures without any additional probes or hardware on site.

## Layer 7 Visibility

Meraki is the only switch to include Layer 7 fingerprinting. Identify hundreds of applications from business apps to BitTorrent and YouTube. User fingerprinting with Google-like search allows administrators to easily identify and control individual users, PCs, iMacs, iPads, Androids, and other devices. This unprecedented visibility allows you to optimize network resources and maintain optimal network performance.





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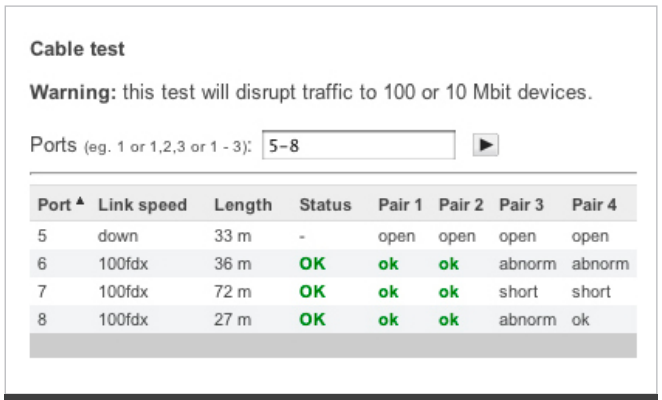
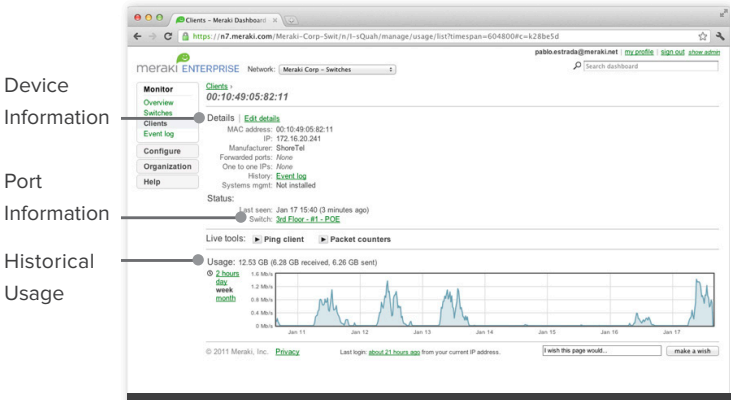



Integrated Remote, Live Tools




Detailed Views of Individual Devices

## Converged Voice, Video and Data Environments

The Meraki switch family is designed to unify data, voice, and video onto a single IP backbone. All Meraki switches support rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support eight class-of-service (CoS) queues on every port, enabling them to maintain end-to-end traffic prioritization.

PoE models provide 15.4 watts of power per port for VoIP telephones, IP security cameras, wireless access points (APs), and other IP devices. The Meraki MS switches also support standards-based 25.5 watt (30 watt max per port) IEEE 802.3at for powering networked devices like multiple radio IEEE 802.11n APs and video phones that may require more power than available with IEEE 802.3af. In addition, using LLDP, PoE power is intelligently budgeted to maximize the number of PoE clients supported.

To ease deployment, Meraki switches support the industry-standard Link Layer Discovery Protocol (LLDP), enabling switches to automatically discover Ethernet-enabled devices, determine their power requirements and join the correct virtual LAN (VLAN).

## Meraki's Unified Software Architecture

Meraki switches run the same Meraki operating system used by Meraki's firewalls and wireless LAN products. The use of a common operating system allows Meraki to deliver a consistent experience across all product lines.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# Designed for Reliability & Environmental Efficiency

The Meraki switch family was designed for reliable, long-lived operation in wiring closet environments, which may be prone to high temperatures and limited ventilation. By minimizing total component count and only using proven switching silicon, Meraki is able to deliver mean time between failure (MTBF) ratings of over 750,000 hours on products such as the Meraki MS220-8.

Each Meraki switch also operates with a split-plane architecture, where silicon-based switching and data forwarding are separated from software-based control and management. By decoupling the underlying switching logic from control, each unit is able to deliver wire-speed switching even when advanced software features such as Layer 7 host and OS fingerprinting are enabled.

Finally, the highly integrated designs of Meraki switches result in power and cooling savings in large deployment environments of 30-60% when compared with similar managed Gigabit switches.

### Distributed Branches & Remote Sites

Meraki's cloud-based system makes it easy to manage a single switch, or thousands of distributed switches, from a single interface.

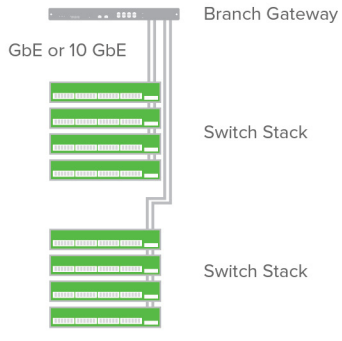
- Troubleshoot problems remotely, e.g., find which port has a bad cable attached.
- Add or replace switches without having to send a technician onsite. Switches automatically download their current configuration as soon as they are connected to the network.
- Receive email alerts or SMS messages whenever there's a problem at a remote site.[1]

### Campus Edge

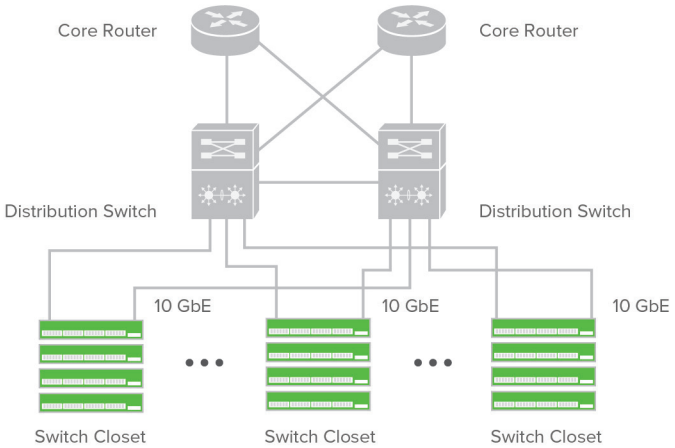
MS switches are ideal for small and large scale campus deployments, where reliability, scalability, and managability are top priorities.

- Virtual Stacking lets administators manage up to tens of thousands of ports in a single interface without having to physically connect stack members.
- 10 GbE cable SFP+ ports with link aggregation provide high speed connectivity to distribution or core switches.
- Get alerts when any switch fails or goes offline, before users complain.

**Branch Office**




**Large Campus**





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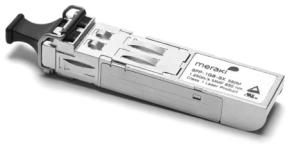

### Lifetime Warranty with Next-day Advanced Replacement

Meraki MS switches include a limited lifetime hardware warranty that provides next-day advance hardware switch replacement as long as the original purchaser owns the product. Meraki's simplified software and support licensing model also combines all software upgrades, centralized systems management and phone support under a single, easy-to-understand model.

For complete details, please visit www.meraki.com/support

### Accessories

The Meraki MS support pluggable optics for high-speed stacking and core connectivity. Meraki offers several standards-based Gigabit and 10 Gigabit pluggable modules. Each appliance has also been tested for compatibility with several third-party modules.

## Accessories / Optics

Supported Meraki accessory modules for MS Switches (no lock-out of third-party optics):

| Model | Description | Standard | Range | Compatibility |
|---|---|---|---|---|
| SFP-1GB-SX | Meraki 1 GbE SFP SX Multi-Mode Fiber Module | 1000BASE-SX | 550m | MS220-8/P / MS22/P / MS42/P |
| SFP-10GB-SR | Meraki 10 GbE SFP+ SR Multi-Mode Fiber Module | 10GBASE-SR | 400m | MS42 / MS42P |
| CBL-TA-1M | Meraki 10 GbE Twinax Cable with SFP+ Connectors | 10GSFP+Cu | 1m | MS42 / MS42P |
| SFP-1GB-LX10 | Meraki 1 GbE SFP LX10 Single-Mode Fiber Module | 1000BASE-LX10 | 10km | MS220-8/P / MS22/P / MS42/P |
| SFP-10GB-LR | Meraki 10 GbE SFP+ LR Single-Mode Fiber Module | 10GBASE-LR | 10km | MS42 / MS42P |

Note: Meraki SFP-1GB-SX, SFP-10GB-SR, SFP-1GB-LX10, and SFP-10GB-LR use LC connectors. Meraki does not guarantee third-party optic compatibility and support.

## Product Options

Switch models available (see Specifications for additional details):

| Model | Description | PoE Power | Idle Power | Full Load Power |
|---|---|---|---|---|
| MS220-8-HW | Cloud-Managed 8 Port Gigabit Switch | – | 5W | 10W |
| MS220-8P-HW | Cloud-Managed 8 Port Gigabit PoE Switch | 124W | 13W | 159W |
| MS22-HW | Cloud-Managed 24 Port Gigabit Switch | – | 12W | 22W |
| MS22P-HW | Cloud-Managed 24 Port Gigabit PoE Switch | 380W | 32W | 465W |
| MS42-HW | Cloud-Managed 48 Port Gigabit Switch with 10G uplink | – | 37W | 58W |
| MS42P-HW | Cloud-Managed 48 Port Gigabit PoE Switch with 10G uplink | 380W | 53W | 491W |

# Ordering Information: Software Licenses and Support

| Model | 1 Year | 3 Years | 5 Years | 7 Years | 10 Years |
|---|---|---|---|---|---|
| MS220-8 | LIC-MS220-8-1YR | LIC-MS220-8-3YR | LIC-MS220-8-5YR | LIC-MS220-8-7YR | LIC-MS220-8-10YR |
| MS220-8P | LIC-MS220-8P-1YR | LIC-MS220-8P-3YR | LIC-MS220-8P-5YR | LIC-MS220-8P-7YR | LIC-MS220-8P-10YR |
| All Other MS Models | LIC-MS-ENT-1YR | LIC-MS-ENT-3YR | LIC-MS-ENT-5YR | LIC-MS-ENT-7YR | LIC-MS-ENT-10YR |

# Specifications

| **Management** |
|---|
| Managed via the Web via the Meraki cloud management platform |
| Integrated with Meraki wireless, security appliance, and device management |
| Zero-touch remote deployment (no staging needed) |
| Detailed historical per-port and per-client usage statistics |
| DHCP, client, and hostname fingerprinting |
| SNMPD allows integration with third party network management solutions |
| Automatic firmware upgrades |

| **Remote Diagnostics** |
|---|
| Email and SMS (text) alerts [1] |
| Cable testing |
| Live remote packet capture |
| Aggregated event and configuration change logs with instant search |

| **Scalable Stacking** |
|---|
| Unified configuration and monitoring of all switches |
| Virtually Stacking supports thousands of switch ports in a single logical stack for unified management, monitoring, and configuration |

| **Ethernet Switching Capabilities** |
|---|
| 802.1p Quality of Service prioritization |
| 802.1Q VLAN tagging for up to 4,095 VLANs |
| 802.1D Spanning Tree Protocol (STP) and 802.1w Rapid Spanning Tree |
| Broadcast storm control |
| 802.1ab Link Layer Discovery Protocol (LLDP) |
| 802.3ad Link aggregation with up to 8 ports per aggregate |
| Port mirroring |
| IGMP snooping for multicast filtering |
| MAC forwarding entries: MS220-8/MS220-8P/MS22/MS22P: 8,000; MS42/MS42P: 32,000 |

| **Security** |
|---|
| Integrated two-factor authentication |
| Role-based administration |
| Corporate wide password policy enforcement |
| IEEE 802.1X port-based security |
| MAC-based RADIUS authentication |
| MAC whitelisting |
| BPDU guard |
| Root guard |

| **Performance** |
|---|
| Non-blocking fabric |
| 176 Gbps switching capacity on MS42 models; 48 Gbps on MS22; 20 Gbps on MS220-8/P |
| 2.5 microsecond latency |
| Jumbo frame support (9600 byte Ethernet frame) |

| **Interfaces on MS42/42P** |
|---|
| 48 x 10/100/1000BASE-T Ethernet RJ45 |
| 4 x SFP+ for Gigabit or 10 Gigabit uplink |
| Auto negotiation and crossover detection (auto-MDIX crossover) |

| **Interfaces on MS22/22P** |
|---|
| 24 x 10/100/1000BASE-T Ethernet RJ45 (4 shared with SFP) |
| 4 x SFP for Gigabit uplink |
| Auto negotiation and crossover detection (auto-MDIX crossover) |

| **Interfaces on MS220-8/P** |
|---|
| 8x 10/100/1000BASE-T Ethernet RJ45 |
| 2x SFP for Gigabit uplink |
| Auto negotiation and crossover detection (auto-MDIX crossover) |

[1] Requires carrier-supported email to SMS gateway. For more information visit: http://bit.ly/LIkOSQ.

| Power over Ethernet (PoE Models): |
| --- |
| 802.3af (PoE) 15.4W per port and 802.3at (PoE+) 25.5W per port (30W max per port) |
| Maximum PoE output on MS22P and MS42P: 380W; all ports PoE capable |
| Maximum PoE output on MS220-8P 124W; all ports PoE capable |
| Pre-standard PoE: supports pre-standard PoE devices |

| Power |
| --- |
| Power input: 100 - 240 VAC, 47-63 Hz |
| Power consumption: 5 - 500W |

| Mounting |
| --- |
| Rack-mountable with included rack mount hardware (except MS220-8/P) |
| Desktop-mountable with included feet |
| Wall-mountable on MS220-8/P |
| Kensington lock on MS220-8/P |

| Environment |
| --- |
| Operating temperature: 32 °F to 104 °F (0 °C to 40 °C) |
| Humidity: 5 to 95% non-condensing |
| Low acoustic noise for office environments; fanless for MS220-8/P and MS22 |

| Physical Dimensions |
| --- |
| Weight: 2.4/3.0/6.1/9/7.5/10.6 lb. (1.1/1.3/2.8/4.2/3.4/4.8 kg) for MS220-8/P/ MS22/22P/42/42P |
| Size: 17.4” (w) x 11.7” (l) x 1.8” (h) (44.1 x 29.9 x 4.4 cm) for MS22/MS42 |
| Size: 17.4” (w) x 15.0” (l) x 1.8” (h) (44.1 x 38.1 x 4.4 cm) for MS22P/MS42P |
| Size: 9.1” (W) x 8.7” (l) x 1.8” (h) (23.0 x 22.0 x 4.4 cm) for MS220-8/P |

| Regulatory |
| --- |
| CSA (US) |
| IC (Canada) |
| CE (Europe) |
| C-Tick (Australia/New Zealand) |
| RoHS |

| Warranty |
| --- |
| Full lifetime hardware warranty with next-day advanced replacement included |
| MTBF: 756,000 hours (MS220-8), 421,000 hours (MS220-8P), 475,000/310,000 hours (MS22/MS22P), 172,000/200,000 hours (MS42/MS42P) |