LINEAR SYSTEMS

# J502
Current Regulator Diode

micross

## Linear Systems replaces discontinued Siliconix J502

### The Linear Systems J502 is a ± 20% range current regulator

The J502 is a ±20% range current regulator designed for demanding applications in test equipment and instrumentation. The J502 utilizes JFET techniques to produce a single two-leaded device which is extremely simple to operate.

- Two-Lead Plastic Package
- Guaranteed ±20% Tolerance
- Operation up to 50V
- Excellent Temperature Stability
- Simple Series Circuitry, No Separate Voltage Source
- Tight Guaranteed Circuit Performance
- Excellent Performance in Low-Voltage/Battery Circuits and High-Voltage Spike Protection
- High Circuit Stability vs. Temperature

**J502 Applications:**

- Constant-Current Supply
- Current-Limiting
- Timing Circuits

| **FEATURES** | |
|---|---|
| REPLACEMENT SOURCE FOR SILICONIX J502 | |
| WIDE CURRENT RANGE | 0.43mA ± 20% |
| BIASING NOT REQUIRED | $V_{GS}$ = 0V |
| **ABSOLUTE MAXIMUM RATINGS**[1] @ 25 °C (unless otherwise stated) | |
| **Maximum Temperatures** | |
| Storage Temperature | -55 to 150°C |
| Junction Operating Temperature | -55 to 135°C |
| **Maximum Power Dissipation** | |
| Continuous Power Dissipation @125°C | 360mW |
| **Maximum Currents** | |
| Forward Current | 20mA |
| Reverse Current | 50mA |
| **Maximum Voltages** | |
| Peak Operating Voltage | $P_{OV}$ = 50V |



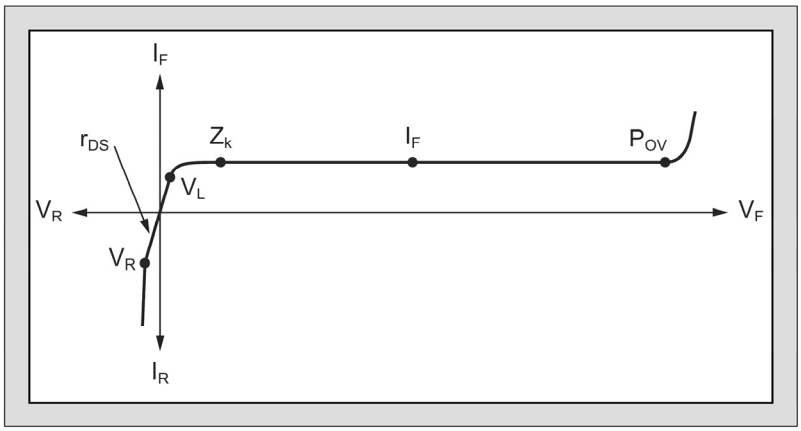
**ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated)**

| SYMBOL | CHARACTERISTIC | MIN | TYP | MAX | UNITS | CONDITIONS |
|---|---|---|---|---|---|---|
| $P_{OV}$ | Peak Operating Voltage[2] | 50 | | | V | $I_F = 1.1I_{F(max)}$ |
| $V_R$ | Reverse Voltage | | 0.8 | | V | $I_R$ = 1mA |
| $C_F$ | Forward Capacitance | | 2.2 | | pF | $V_F$ = 25V, $f$ = 1MHz |

**SPECIFIC ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated)**

| PART | Forward Current[3] $I_F$ | | | Dynamic Impedance[4] $Z_d$ | | Knee Impedance $Z_k$ | Limiting Voltage[5] $V_L$ | |
|---|---|---|---|---|---|---|---|---|
| | $V_F$ = 25V | | | $V_F$ = 25V | | $V_F$ = 6V | $I_F = 0.8I_{F(min)}$ | |
| | MIN | NOM | MAX | MIN | TYP | TYP | TYP | MAX |
| J502 | 0.344 | 0.43 | 0.516 | 1.50 | 7 | 1.10 | 1.5 | 0.6 |

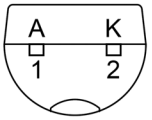
V-I CHARACTERISTICS CURRENT REGULATING DIODE

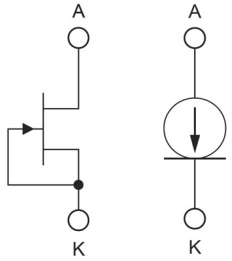



Available Packages:

TO-92 Bare Die.

TO-92
BOTTOM VIEW




Please contact Micross for full package and die dimensions

Notes:
1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulsed, t = 2ms. Maximum $V_F$ where IF < $1.1_{IF}$(max).
3. Pulsed, t = 2ms. Continuous currents may vary.
4. Pulsed, t = 2ms. Continuous impedances may vary.
5. Min $V_F$ required to ensure $I_F = 0.8_{IF}$(min).

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