

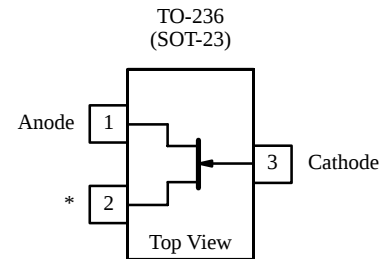
# SST502 Series

## Current Regulator Diodes— $P_{OV(min)}$ 45 V

|        |        |        |        |        |
|--------|--------|--------|--------|--------|
| SST502 | SST504 | SST506 | SST508 | SST510 |
| SST503 | SST505 | SST507 | SST509 | SST511 |

### Product Summary

| Part Number | Typ $I_F$ (mA) | Marking | Part Number | Typ $I_F$ (mA) | Marking |
|-------------|----------------|---------|-------------|----------------|---------|
| SST502      | 0.43           | L2      | SST507      | 1.80           | L7      |
| SST503      | 0.56           | L3      | SST508      | 2.40           | L8      |
| SST504      | 0.75           | L4      | SST509      | 3.00           | L9      |
| SST505      | 1.00           | L5      | SST510      | 3.60           | L0      |
| SST506      | 1.40           | L6      | SST511      | 4.70           | L1      |



\*Short lead #2 to Cathode (lead #3) via circuit board trace.

### Features

- Surface-Mount Package
- Guaranteed  $\pm 20\%$  Tolerance
- Operation from 1 V (SST502, 3) to 45 V
- Good Temperature Stability

### Benefits

- 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

### Applications

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

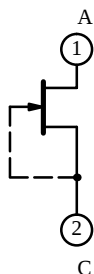
### Description

The SST502 series is a family of  $\pm 20\%$  range current regulators designed for demanding applications in test equipment and instrumentation. These devices utilize the JFET techniques to produce a device which is extremely simple to operate.

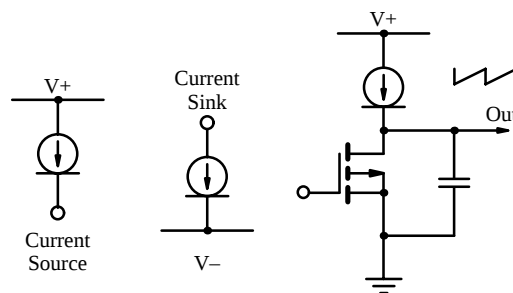
With nominal current ranges from 0.43 mA to 4.7 mA, the SST502 series will meet a wide array of design requirements.

The low-cost TO-236 surface-mount package ensures a cost-effective design solution.

### Schematic Diagram



### Applications



Linear Ramp Generator

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70711.

# SST502 Series

## Absolute Maximum Ratings

|                              |              |                                      |        |
|------------------------------|--------------|--------------------------------------|--------|
| Peak Operating Voltage ..... | 45 V         | Power Dissipation <sup>a</sup> ..... | 350 mW |
| Reverse Current .....        | 50 mA        | Notes:                               |        |
| Storage Temperature .....    | –55 to 150°C | a. Derate 2.8 mW/°C above 25°C       |        |

## Specifications<sup>a</sup>

| Parameter              | Symbol          | Test Conditions                                       | Limits |                  |     | Unit |
|------------------------|-----------------|-------------------------------------------------------|--------|------------------|-----|------|
|                        |                 |                                                       | Min    | Typ <sup>b</sup> | Max |      |
| Peak Operating Voltage | P <sub>OV</sub> | I <sub>F</sub> = 1.1 I <sub>F(max)</sub> <sup>c</sup> | 45     | 55               |     | V    |
| Reverse Voltage        | V <sub>R</sub>  | I <sub>R</sub> = 1 mA                                 |        | 0.8              |     |      |
| Capacitance            | C <sub>F</sub>  | V <sub>F</sub> = 25 V, f = 1 MHz                      |        | 1.5              |     | pF   |

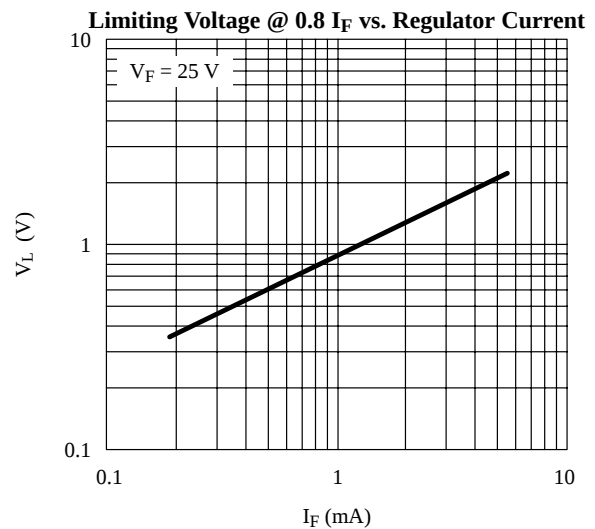
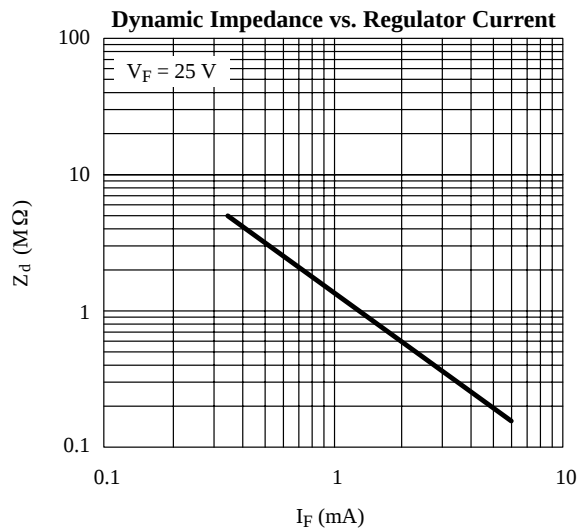
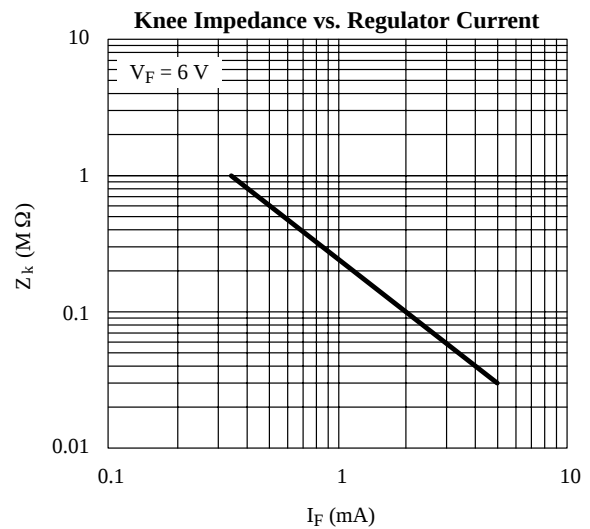
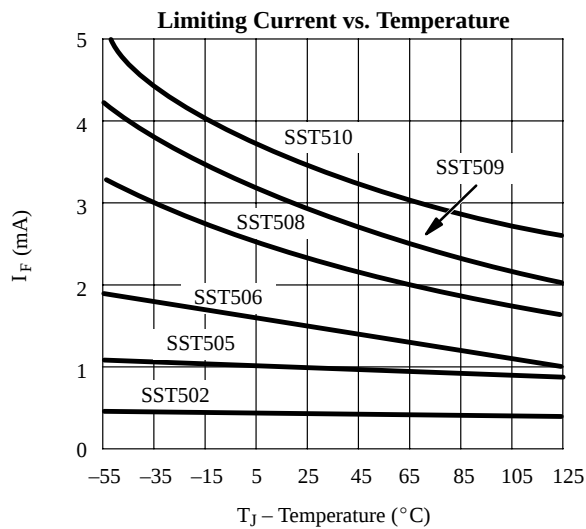
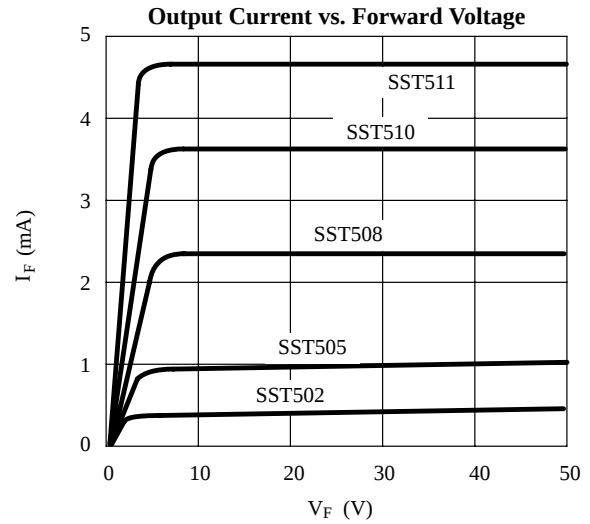
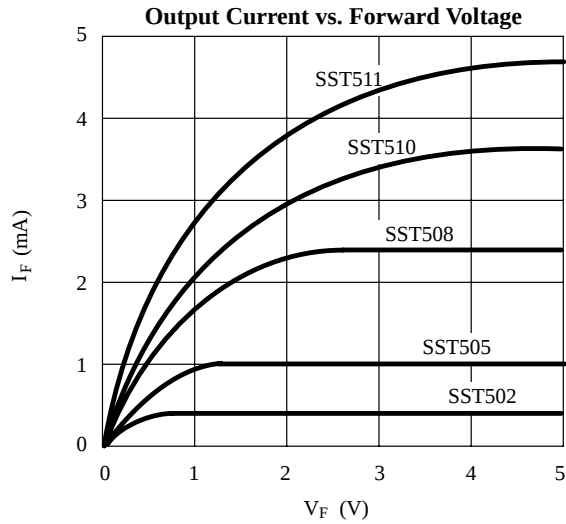
| Part Number | Regulator Current <sup>d</sup><br>(I <sub>F</sub> ) |      |       | Dynamic Impedance <sup>e</sup><br>(Z <sub>d</sub> ) |                  | Knee Impedance<br>(Z <sub>k</sub> ) | Limiting Voltage <sup>f</sup><br>(V <sub>L</sub> ) |                  | Temperature Coefficient<br>(θ <sub>I</sub> )          |
|-------------|-----------------------------------------------------|------|-------|-----------------------------------------------------|------------------|-------------------------------------|----------------------------------------------------|------------------|-------------------------------------------------------|
|             | V <sub>F</sub> = 25 V                               |      |       | V <sub>F</sub> = 25 V                               |                  | V <sub>F</sub> = 6 V                | I <sub>F</sub> = 0.8 I <sub>F(min)</sub>           |                  | V <sub>F</sub> = 25 V<br>0°C ≤ T <sub>A</sub> ≤ 100°C |
|             | mA                                                  |      |       | MΩ                                                  |                  | MΩ                                  | V                                                  |                  | ppm/°C                                                |
|             | Min                                                 | Nom  | Max   | Min                                                 | Typ <sup>b</sup> | Typ <sup>b</sup>                    | Max                                                | Typ <sup>b</sup> | Typ <sup>b</sup>                                      |
| SST502      | 0.344                                               | 0.43 | 0.516 | 1.0                                                 | 2.7              | 0.7                                 | 1.5                                                | 0.6              | +100                                                  |
| SST503      | 0.448                                               | 0.56 | 0.672 | 0.7                                                 | 2.0              | 0.5                                 | 1.7                                                | 0.7              | –100                                                  |
| SST504      | 0.600                                               | 0.75 | 0.900 | 0.5                                                 | 1.5              | 0.4                                 | 1.9                                                | 0.8              | –1000                                                 |
| SST505      | 0.800                                               | 1.00 | 1.200 | 0.4                                                 | 1.0              | 0.3                                 | 2.1                                                | 0.9              | –1700                                                 |
| SST506      | 1.120                                               | 1.40 | 1.680 | 0.3                                                 | 0.8              | 0.2                                 | 2.5                                                | 1.1              | –2500                                                 |
| SST507      | 1.440                                               | 1.80 | 2.160 | 0.2                                                 | 0.6              | 0.12                                | 2.8                                                | 1.3              | –3000                                                 |
| SST508      | 1.900                                               | 2.40 | 2.900 | 0.1                                                 | 0.4              | 0.08                                | 3.1                                                | 1.5              | –3500                                                 |
| SST509      | 2.400                                               | 3.00 | 3.600 | 0.09                                                | 0.3              | 0.06                                | 3.5                                                | 1.7              | –4000                                                 |
| SST510      | 2.900                                               | 3.60 | 4.300 | 0.08                                                | 0.3              | 0.04                                | 3.9                                                | 1.9              | –4500                                                 |
| SST511      | 3.800                                               | 4.70 | 5.600 | 0.07                                                | 0.2              | 0.03                                | 4.2                                                | 2.1              | –5200                                                 |

Notes:

NPA

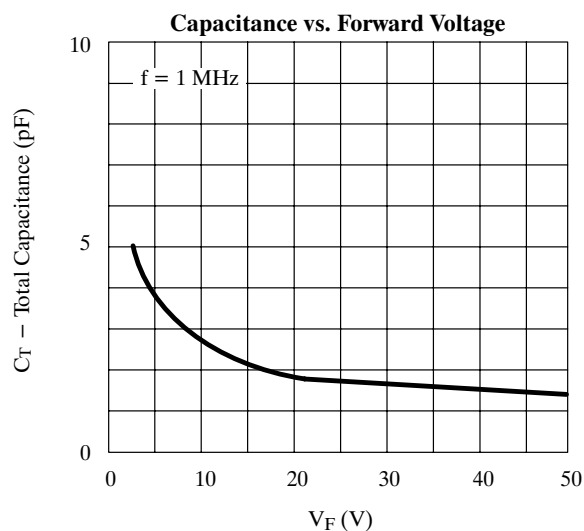
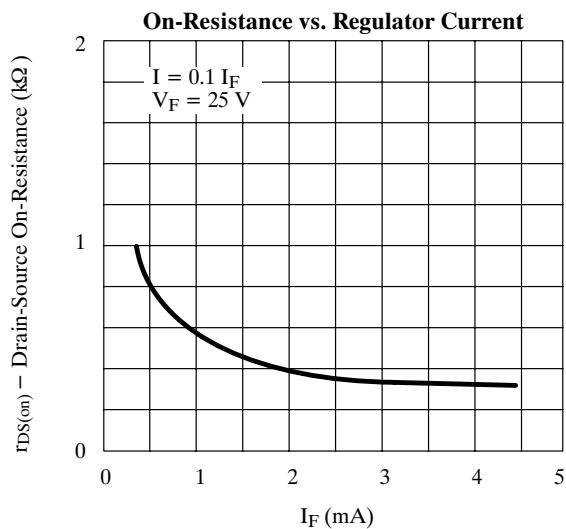
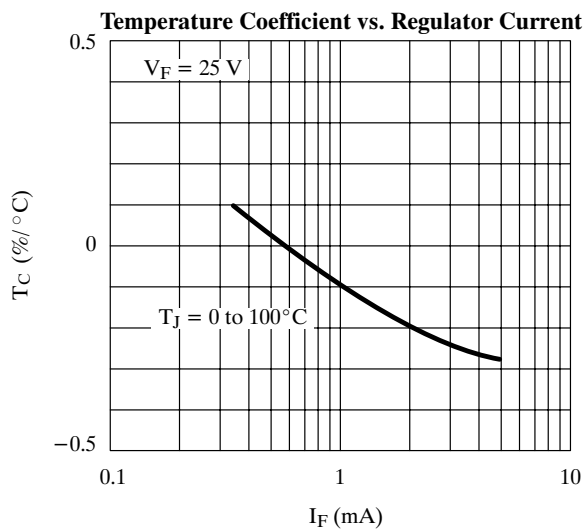
- T<sub>A</sub> = 25°C unless otherwise noted.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- Max V<sub>F</sub> where I<sub>F</sub> = 1.1 I<sub>F(max)</sub> is guaranteed.
- Pulse test—steady state currents may vary.
- Pulse test—steady state impedances may vary.
- Min V<sub>F</sub> required to insure I<sub>F</sub> = 0.8 I<sub>F(min)</sub>.

## Typical Characteristics



# SST502 Series

## Typical Characteristics (Cont'd)



## Current Regulator Diode V-I Characteristic

