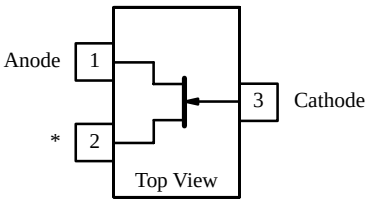
Current Regulator Diodes—$P_{OV(min)}$ 45 V

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

TO-236
(SOT-23)



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

Features

- Surface-Mount Package
- Guaranteed ±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

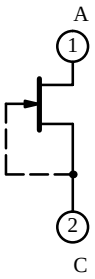
Description

The SST502 series is a family of ±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.

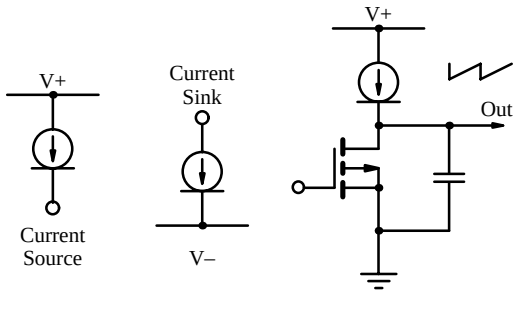
With nominal current ranges from 0.43 mA to 4.7 mA, the SST502 series will meet a wide array of design requirements.

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.

New Product

Absolute Maximum Ratings

Peak Operating Voltage . . . . . 45 V
Reverse Current . . . . . 50 mA
Storage Temperature . . . . . –55 to 150°C
Power Dissipation[a] . . . . . 350 mW

Notes:
a. Derate 2.8 mW/°C above 25°C

Specifications[a]

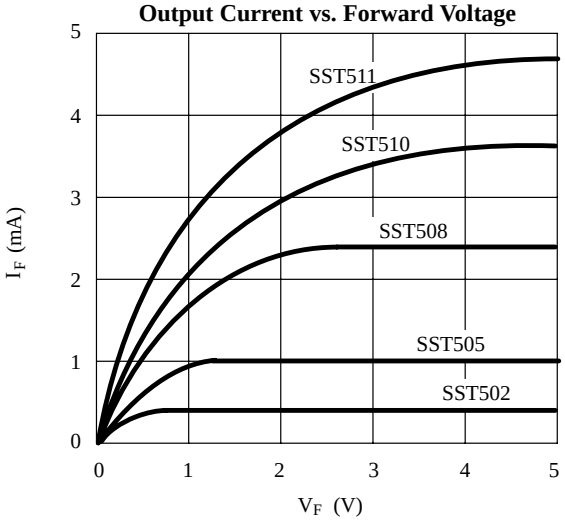
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ[b]	Max	
Peak Operating Voltage	P_{OV}	I_F = 1.1 $I_{F(max)}$[c]	45	55		V
Reverse Voltage	V_R	I_R = 1 mA		0.8		
Capacitance	C_F	V_F = 25 V, f = 1 MHz		1.5		pF

	Regulator Current[d] (I_F)			Dynamic Impedance[e] (Z_d)		Knee Impedance (Z_k)	Limiting Voltage[f] (V_L)		Temperature Coefficient (θ_1)
	V_F = 25 V			V_F = 25 V		V_F = 6 V	I_F = 0.8 $I_{F(min)}$		V_F = 25 V 0°C ≤ T_A ≤ 100°C
	mA			MΩ		MΩ	V		ppm/°C
Part Number	Min	Nom	Max	Min	Typ[b]	Typ[b]	Max	Typ[b]	Typ[b]
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

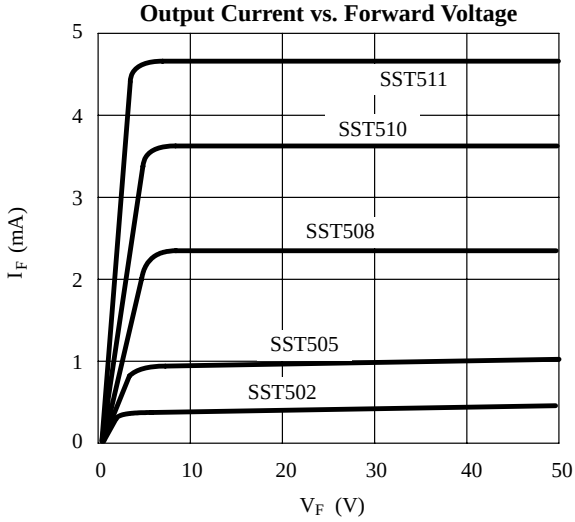
Notes: NPA
a. T_A = 25°C unless otherwise noted.
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
c. Max V_F where I_F = 1.1 $I_{F(max)}$ is guaranteed.
d. Pulse test—steady state currents may vary.
e. Pulse test—steady state impedances may vary.
f. Min V_F required to insure I_F = 0.8 $I_{F(min)}$.

Typical Characteristics

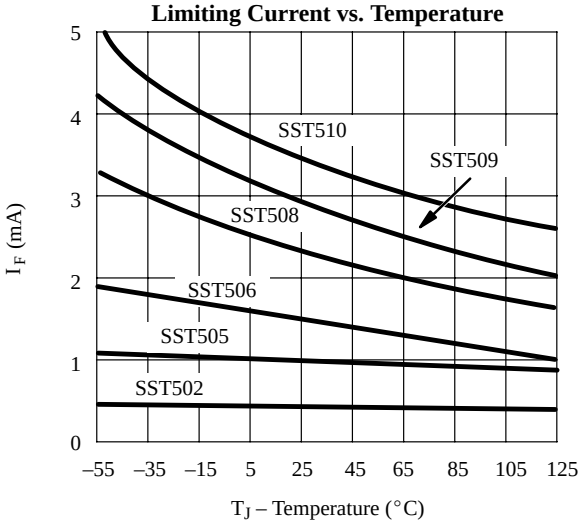
Output Current vs. Forward Voltage



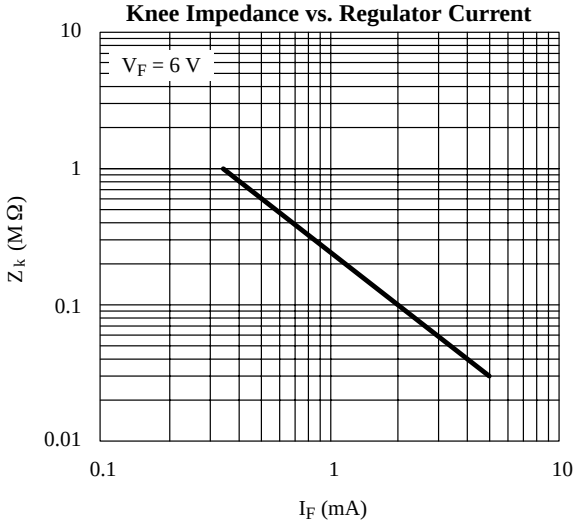
Output Current vs. Forward Voltage



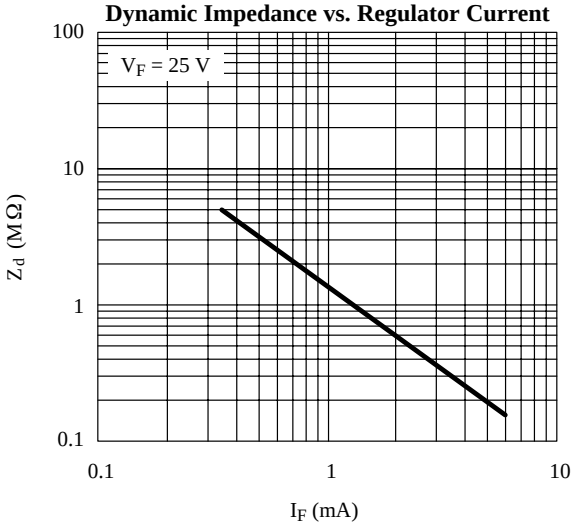
Limiting Current vs. Temperature



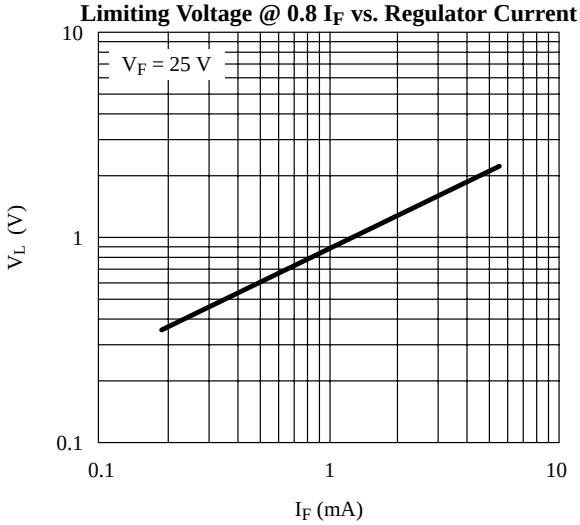
Knee Impedance vs. Regulator Current



Dynamic Impedance vs. Regulator Current

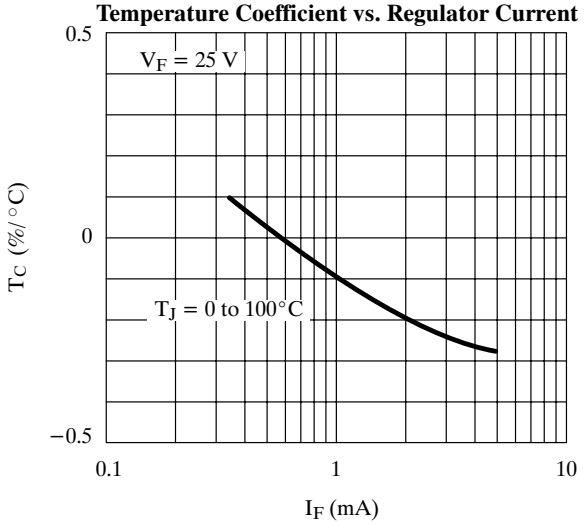


Limiting Voltage @ 0.8 I_F vs. Regulator Current

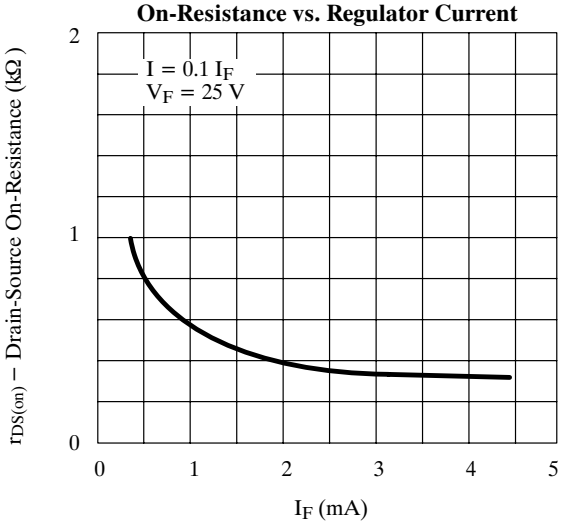


Typical Characteristics (Cont'd)

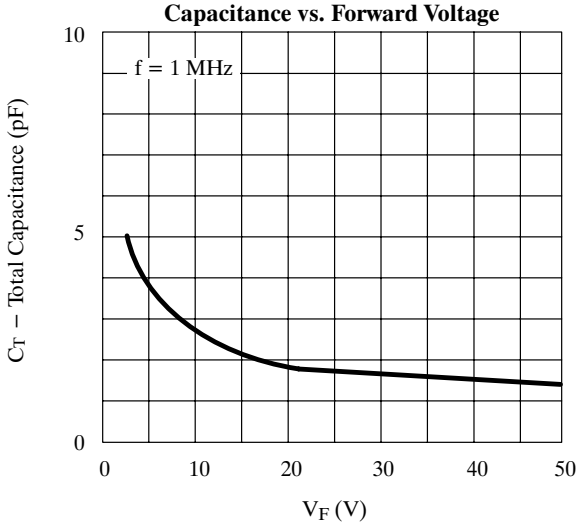
Temperature Coefficient vs. Regulator Current



On-Resistance vs. Regulator Current



Capacitance vs. Forward Voltage



Current Regulator Diode V-I Characteristic

