n-channel JFETs current regulator diodes

designed for . . .

- **Current Regulation**
- **Current Limiting**
- **Biasing**
- **Linear Ramp and Staircase Generator**

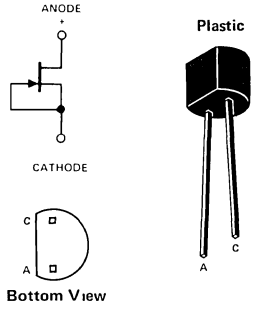
Siliconix

Performance Curves NCL See Section 4

BENEFITS

- Low Cost
- Simple Two Lead Current Source
- Simplifies Floating Current Sources No Power Supplies Required
- Good Operating Current Tolerance ±20%

TO-92 (MODIFIED)
See Section 6



ABSOLUTE MAXIMUM RATINGS (25°C)

Peak Operating Voltage . . . . . 50 V
Forward Current . . . . . 20 mA
Reverse Current . . . . . 50 mA
Total Device Dissipation at 25°C Ambient
(Derate 3.27 mW/°C) . . . . . 360 mW
Operating Temperature Range . . . . . –55 to 135°C
Storage Temperature Range . . . . . –55 to 150°C
Lead Temperature Range
(1/16" from case for 10 seconds) . . . . . 300°C

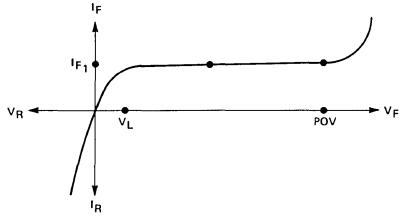
ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

			Characteristic		J506	J507	J508	J509	J510	J511	Unit	Test Conditions
1	STATIC	I_{FI}	Forward Current (Note 1)	Min	1 120	1.440	1.9	2 4	2 9	3.8	mA	V_F = 25 V
2				Nominal	1.400	1.800	2 4	3.0	3.6	4.7		
3				Max	1.680	2.160	2 9	3.6	4 3	5.6		
4		POV	Peak Operating Voltage (Notes 1 and 2)	Min	50	50	50	50	50	50	V	I_F = 1 1 I_{FI} (Max)
5		V_L	Limiting Voltage (Note 3)	Max	2.5	2.8	3 1	3.5	3 9	4.2		I_F = 0 9 I_{FI} (Min)
6				Typ	1.8	2 0	2.2	2.5	2 8	3.0		
7	DYN	Z_{FI}	Small-Signal Dynamic Impedance (Note 1)	Min	0 33	0 2	0 2	0.15	0 15	0 12	MΩ	V_F = 25 V, f = 1 kHz
8				Typ	1.4	1.0	0.70	0 60	0.50	0.30		
9		C_F	Anode-Cathode Capacitance	Typ	2	2	2	2	2	2	pF	V_F = 25 V, f = 1 MHz

NOTES
1 Pulse test duration = 2 ms
2 Maximum V_F where $I_F < 1\ 1\ I_{FI(Max)}$ is guaranteed
3. Minimum V_F required to insure $I_F > 0\ 9\ I_{FI(Min)}$

NCL

Current-Limiter Diode
V-I Characteristic



3