TYPE	MATERIAL	REPLACEMENT	PAGE NUMBER	IDENTIFICATION	RECTIFIERS: V_R (volts) / SIGNAL DIODES: PRV (volts)	RECTIFIERS: V_F (volts) / SIGNAL DIODES: V_F (volts)	RECTIFIERS: I_O (Amps) / SIGNAL DIODES: @ I_F	RECTIFIERS: I_R (mA) / SIGNAL DIODES: I_R	RECTIFIERS: I_{surge} (Amps) / SIGNAL DIODES: t_{rr} (μs)	ZENER DIODES: V_Z (min) / REFERENCE DIODES: TC %/°C	ZENER DIODES: V_Z (nom) * / V_Z (max) / REFERENCE DIODES: V_Z	ZENER DIODES: Tol V_Z % / REFERENCE DIODES: T (min) °C	ZENER DIODES: P_D / REFERENCE DIODES: T (max) °C
1N5262	S		2-32	ZD							51*	10	500M
1N5262A	S		2-32	ZD							51*	10	500M
1N5262B	S		2-32	ZD							51*	5.0	500M
1N5263	S		2-32	ZD							56*	10	500M
1N5263A	S		2-32	ZD							56*	10	500M
1N5263B	S		2-32	ZD							56*	5.0	500M
1N5264	S		2-32	ZD							60*	10	500M
1N5264A	S		2-32	ZD							60*	10	500M
1N5264B	S		2-32	ZD							60*	5.0	500M
1N5265	S		2-32	ZD							62*	10	500M
1N5265A	S		2-32	ZD							62*	10	500M
1N5265B	S		2-32	ZD							62*	5.0	500M
1N5266	S		2-32	ZD							68*	10	500M
1N5266A	S		2-32	ZD							68*	10	500M
1N5266B	S		2-32	ZD							68*	5.0	500M
1N5267	S		2-32	ZD							75*	10	500M
1N5267A	S		2-32	ZD							75*	10	500M
1N5267B	S		2-32	ZD							75*	5.0	500M
1N5268	S		2-32	ZD							82*	10	500M
1N5268A	S		2-32	ZD							82*	10	500M
1N5268B	S		2-32	ZD							82*	5.0	500M
1N5269	S		2-32	ZD							87*	10	500M
1N5269A	S		2-32	ZD							87*	10	500M
1N5269B	S		2-32	ZD							87*	5.0	500M
1N5270	S		2-32	ZD							91*	10	500M
1N5270A	S		2-32	ZD							91*	10	500M
1N5270B	S		2-32	ZD							91*	5.0	500M
1N5271	S		2-32	ZD							100*	10	500M
1N5271A	S		2-32	ZD							100*	10	500M
1N5271B	S		2-32	ZD							100*	5.0	500M
1N5272	S		2-32	ZD							110*	10	500M
1N5272A	S		2-32	ZD							110*	10	500M
1N5272B	S		2-32	ZD							110*	5.0	500M
1N5273	S		2-32	ZD							120*	10	500M
1N5273A	S		2-32	ZD							120*	10	500M
1N5273B	S		2-32	ZD							120*	5.0	500M
1N5274	S		2-32	ZD							130*	10	500M
1N5274A	S		2-32	ZD							130*	10	500M
1N5274B	S		2-32	ZD							130*	5.0	500M
1N5275	S		2-32	ZD							140*	10	500M
1N5275A	S		2-32	ZD							140*	10	500M
1N5275B	S		2-32	ZD							140*	5.0	500M
1N5276	S		2-32	ZD							150*	10	500M
1N5276A	S		2-32	ZD							150*	10	500M
1N5276B	S		2-32	ZD							150*	5.0	500M
1N5277	S		2-32	ZD							160*	10	500M
1N5277A	S		2-32	ZD							160*	10	500M
1N5277B	S		2-32	ZD							160*	5.0	500M
1N5278	S		2-32	ZD							170*	10	500M
1N5278A	S		2-32	ZD							170*	10	500M
1N5278B	S		2-32	ZD							170*	5.0	500M
1N5279	S		2-32	ZD							180*	10	500M
1N5279A	S		2-32	ZD							180*	10	500M
1N5279B	S		2-32	ZD							180*	5.0	500M
1N5280	S		2-32	ZD							190*	10	500M
1N5280A	S		2-32	ZD							190*	10	500M
1N5280B	S		2-32	ZD							190*	5.0	500M
1N5281	S		2-32	ZD							200*	10	500M
1N5281A	S		2-32	ZD							200*	10	500M
1N5281B	S		2-32	ZD							200*	5.0	500M
1N5282	S			HS	55	1.3	500M	0.1*	0.004				
1N5283 thru 1N5314		Current Regulator Diodes, See Data Sheet on page 13-2											
1N5315	S			HS	75	0.49	0.1M	0.05*	0.004				
1N5316	S			HS	75	0.49	0.1M	0.05*	0.004				
1N5317	S			HS	55	1.17	500M	0.1*	0.004				
1N5318	S			HS	50	0.87	200M	0.1*	0.004				
1N5319	S			HS	25	1.0	100M	100*	0.004				

R—Rectifier, **RD**—Reference Diode, **ZD**—Zener Diode, **GP**—General Purpose, **HC**—High Conductance (≧ 20 mA @ ≦ 1 V), **HS**—High Speed Switch (Max t_{rr} < 0.3 μs), **CS**—High Conductance, High Speed Switch, **MS**—Medium Speed Switch, **PA**—Parametric Amplifier, **SP**—Special Purpose.

1N5283 thru 1N5314

I_P = 0.22-4.7 mA min
P_D = 600 mW

CASE 51
(DO-7)

Field-effect current regulator diodes are circuit elements that provide a current essentially independent of voltage. These diodes are especially designed for maximum impedance over the operating range.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Operating Voltage (T_J = -55°C to +200°C)	POV	100	Volts
Steady State Power Dissipation @T_L = 75°C Derate above T_L = 75°C Lead Length = 3/8" (Forward or Reverse Bias)	P_D	600 4.8	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200	°C

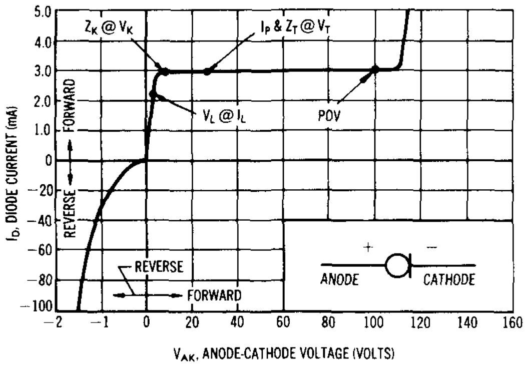
1N5283 thru 1N5314 (continued)

ELECTRICAL CHARACTERISTICS ($T_A = 25°C$ unless otherwise noted)

Type No.	Regulator Current I_P (mA) @ V_T = 25 V nom	min	max	Minimum Dynamic Impedance @V_T = 25 V Z_T (MΩ)	Minimum Knee Impedance @V_K = 6.0 V Z_K (MΩ)	Maximum Limiting Voltage @I_L = 0.8 I_P (min) V_L (Volts)
1N5283	0.22	0.198	0.242	25.0	2.75	1.00
1N5284	0.24	0.216	0.264	19.0	2.35	1.00
1N5285	0.27	0.243	0.297	14.0	1.95	1.00
1N5286	0.30	0.270	0.330	9.0	1.60	1.00
1N5287	0.33	0.297	0.363	6.6	1.35	1.00
1N5288	0.39	0.351	0.429	4.10	1.00	1.05
1N5289	0.43	0.387	0.473	3.30	0.870	1.05
1N5290	0.47	0.423	0.517	2.70	0.750	1.05
1N5291	0.56	0.504	0.616	1.90	0.560	1.10
1N5292	0.62	0.558	0.682	1.55	0.470	1.13
1N5293	0.68	0.612	0.748	1.35	0.400	1.15
1N5294	0.75	0.675	0.825	1.15	0.335	1.20
1N5295	0.82	0.738	0.902	1.00	0.290	1.25
1N5296	0.91	0.819	1.001	0.880	0.240	1.29
1N5297	1.00	0.900	1.100	0.800	0.205	1.35
1N5298	1.10	0.990	1.210	0.700	0.180	1.40
1N5299	1.20	1.08	1.32	0.640	0.155	1.45
1N5300	1.30	1.17	1.43	0.580	0.135	1.50
1N5301	1.40	1.26	1.54	0.540	0.115	1.55
1N5302	1.50	1.35	1.65	0.510	0.105	1.60
1N5303	1.60	1.44	1.76	0.475	0.092	1.65
1N5304	1.80	1.62	1.98	0.420	0.074	1.75
1N5305	2.00	1.80	2.20	0.395	0.061	1.85
1N5306	2.20	1.98	2.42	0.370	0.052	1.95
1N5307	2.40	2.16	2.64	0.345	0.044	2.00
1N5308	2.70	2.43	2.97	0.320	0.035	2.15
1N5309	3.00	2.70	3.30	0.300	0.029	2.25
1N5310	3.30	2.97	3.63	0.280	0.024	2.35
1N5311	3.60	3.24	3.96	0.265	0.020	2.50
1N5312	3.90	3.51	4.29	0.255	0.017	2.60
1N5313	4.30	3.87	4.73	0.245	0.014	2.75
1N5314	4.70	4.23	5.17	0.235	0.012	2.90

1N5283 thru 1N5314 (continued)

FIGURE 1 — TYPICAL CURRENT REGULATOR CHARACTERISTICS



SYMBOLS AND DEFINITIONS

I_D — Diode Current.

I_L — Limiting Current: 80% of I_P minimum used to determine Limiting voltage, V_L.

I_P — Pinch-off Current: Regulator current at specified Test Voltage, V_T.

POV — Peak Operating Voltage: Maximum voltage to be applied to device.

θ_I — Current Temperature Coefficient.

V_{AK} — Anode-to-cathode Voltage.

V_K — Knee Impedance Test Voltage: Specified voltage used to establish Knee Impedance, Z_K.

V_L — Limiting Voltage: Measured at I_L. V_L, together with Knee AC Impedance, Z_K, indicates the Knee characteristics of the device.

V_T — Test Voltage: Voltage at which I_P and Z_T are specified.

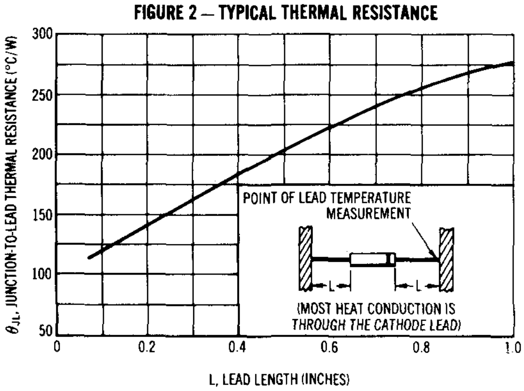
Z_K — Knee AC Impedance at Test Voltage: To test for Z_K, a 90 Hz signal v_K with RMS value equal to 10% of test voltage, V_K, is superimposed on V_K:

$$Z_K = v_K / i_K$$

where i_K is the resultant ac current due to v_K.
To provide the most constant current from the diode, Z_K should be as high as possible; therefore, a minimum value of Z_K is specified.

Z_T — AC Impedance at Test Voltage: Specified as a minimum value. To test for Z_T, a 90 Hz signal with RMS value equal to 10% of Test Voltage, V_T, is superimposed on V_T.

FIGURE 2 — TYPICAL THERMAL RESISTANCE



APPLICATION NOTE

As the current available from the diode is temperature dependent, it is necessary to determine junction temperature, T_J, under specific operating conditions to calculate the value of the diode current. The following procedure is recommended:

Lead Temperature, T_L, shall be determined from:

$$T_L = \theta_{LA} P_D$$

where θ_{LA} is lead-to-ambient thermal resistance
and P_D is power dissipation.

θ_{LA} is generally 30-40°C/W for the various clips and tie points in common use, and for printed circuit-board wiring.

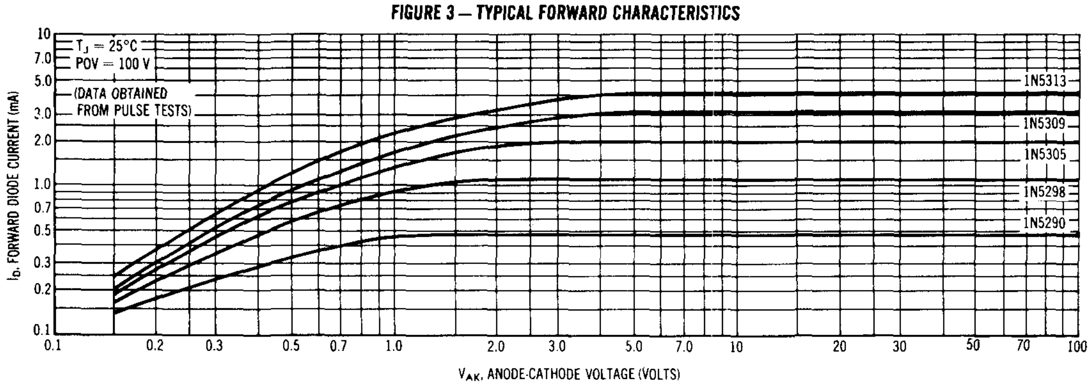
Junction Temperature, T_J, shall be calculated from:

$$T_J = T_L + \theta_{JL} P_D$$

where θ_{JL} is taken from Figure 2.

For circuit design limits of V_{AK}, limits of P_D may be estimated and extremes of T_J may be computed. Using the information on Figures 4 and 5, changes in current may be found. To improve current regulation, keep V_{AK} low to reduce P_D and keep the leads short, especially the cathode lead, to reduce θ_{JL}.

FIGURE 3 — TYPICAL FORWARD CHARACTERISTICS



1N5283 thru 1N5314 (continued)

FIGURE 4 — TEMPERATURE COEFFICIENT

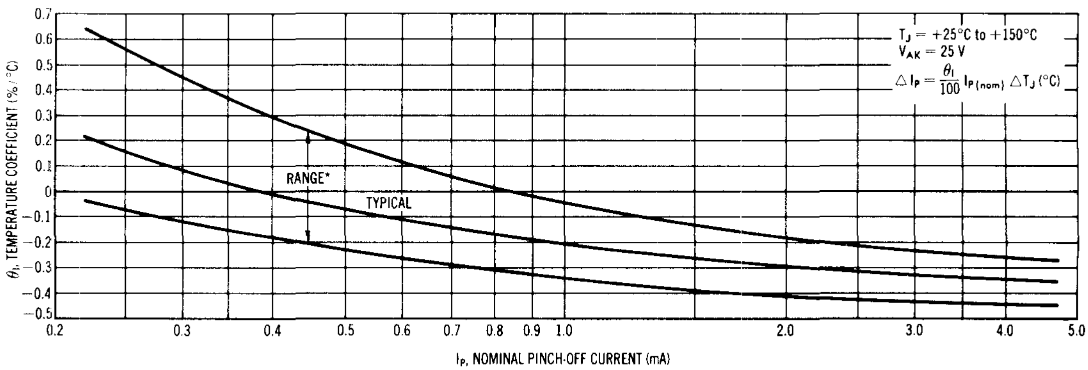


FIGURE 5 — TEMPERATURE COEFFICIENT

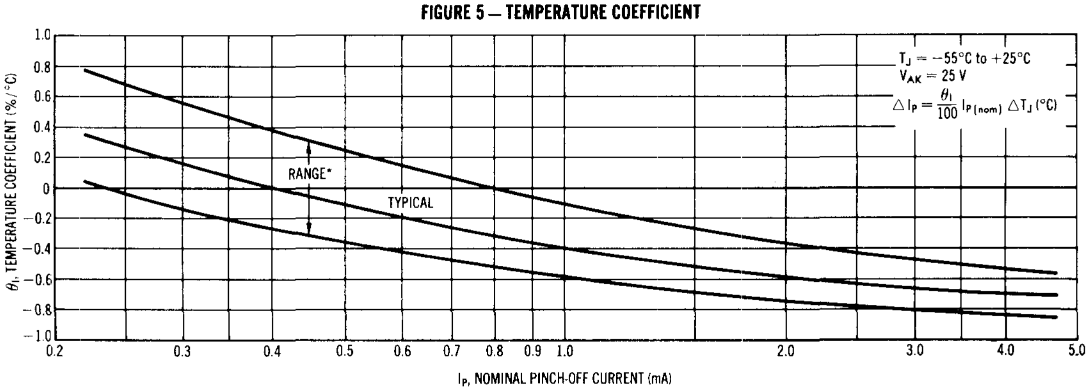
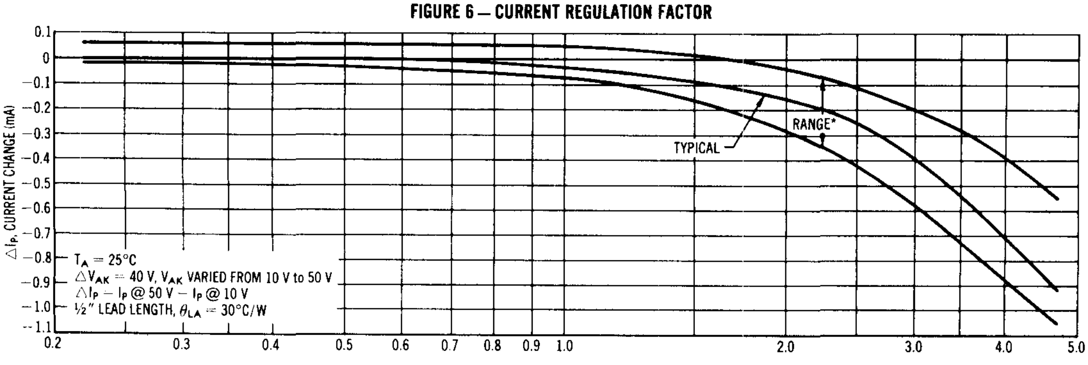


FIGURE 6 — CURRENT REGULATION FACTOR



*90% of the units will be in the ranges shown.