Current Regulator Diode Series

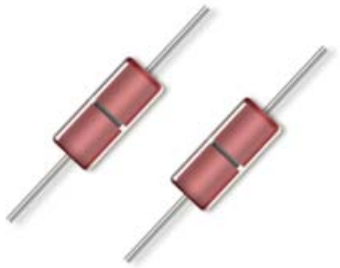
1N5283-1 thru 1N5314-1 & 1N7048-1 thru 1N7055-1

NEW

AEROFLEX
A passion for performance.

Features

- High source impedance.
- Internal metallurgical bond.
- JAN, JANTX, JANTXV and JANS qualification per MIL-PRF-19500/463 available.



Description

The popular 1N5283-1 thru 1N5314-1 and 1N7041-1 thru 1N7055-1 series of 0.5 watt current regulators provides a selection from 0.22 mA to 10 mA in standard 10% tolerances. These devices regulate current over a broad voltage range as a counter part offering to Zeners (that regulate voltage over a broad current range. The somewhat larger D0-7 packaging option offers a double-plug internal bond connection with a larger active die element for its unique function as a current limiter.

Applications

- Double-plug construction.
- Regulates current over a broad operating wltage and temperature range.
- Extensive selection from 0.22 mA to 10 mA.
- Standard current tolerances are plus/minus 10%.
- Flexible axial-lead mounting terminals.
- Nonsensitive to ESD.

Maximum Ratings

Parameters / Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J and T_{STG}	-65 to +175	°C
Thermal Resistance Junction-to-Lead @ L = 0.375 in	$R_{\Theta JL}$	250	°C/W
Therrnal Impedance	$Z_{\Theta JX}$	25	°C/W
Steady-State Power Dissipation @ T_L = +50 °C,. L = 3/8[1]	Po	500	mW
Working Peak Voltage	V_{WM}	100	V
Solder Pad Temperature @ 10 s maximum	T_{SP}	260	°C

NOTE 1: Derate at 4 mW/°C above +50 °C.

AEROFLEX
METELICS

Revision Date: 10/7/2013
New Product

Electrical Specifications @ +25 ºC (Unless Otherwise Specified)

Type Number	Regulator Current I_P (mA)@ V_S = 25 V			Minimum Dynamic Impedance @ V_S = 25 V Z_S (M) (Note 1)	Minimum Knee Inpedance @ V_K = 6.0 V Z_K (MΩ) (Note 2)	Maximum Limiting Voltage @ I_L = 0.8 I_S (min) V_L (volts)	Peak Operating Voltage Volts
	Nominal	Minimum	Maximum				
1N5283-1	0.22	0.198	0.242	25.0	2.75	1.00	100
1N5284-1	0.24	0.216	0.264	19.0	2.35	1.00	100
1N5285-1	0.27	0.243	0.297	14.0	1.95	1.00	100
1N5286-1	0.30	0.270	0.330	9.0	1.60	1.00	100
1N5287-1	0.33	0.297	0.363	8.0	1.35	1.00	100
1N5288-1	0.39	0.351	0.429	4.10	1.000	1.05	100
1N5289-1	0.43	0.387	0.473	3.30	0.870	1.05	100
1N5290-1	0.47	0.423	0.517	2.70	0.750	1.05	100
1N5291-1	0.56	0.504	0.616	1.90	0.560	1.10	100
1N5292-1	0.62	0.558	0.682	1.55	0.470	1.13	100
1N5293-1	0.68	0.612	0.748	1.35	0.400	1.15	100
1N5294-1	0.75	0.675	0.825	1.15	0.335	1.20	100
1N5295-1	0.82	0.738	0.902	1.00	0.290	1.25	100
1N5296-1	0.91	0.819	1.001	0.88	0240	1.29	100
1N5297-1	1.00	0.900	1.100	0.80	0.205	1.35	100
1N5298-1	1.10	0.99	1.21	0.70	0.180	1.40	100
1N5299-1	1.20	1.08	1.32	0.64	0.155	1.45	100
1N5300-1	1.30	1.17	1.43	0.58	0.135	1.50	100
1N5301-1	1.40	1.26	1.54	0.54	0.115	1.55	100
1N5302-1	1.50	1.35	1.65	0.51	0.105	1.60	100
1N5303-1	1.60	1.44	1.76	0.475	0.092	1.65	100
1N5304-1	1.80	1.62	1.98	0.420	0.074	1.75	100
1N5305-1	2.00	1.80	2.20	0.395	0.061	1.85	100
1N5306-1	2.20	1.98	2.42	0.370	0.052	1.95	100
1N5307-1	2.40	2.16	2.54	0.345	0.044	2.00	100
1N5308-1	2.70	2.43	2.97	0.320	0.035	2.15	100
1N5309-1	3.00	2.70	3.30	0.300	0.029	2.25	100
1N5310-1	3.30	2.97	3.63	0.280	0.024	2.35	100
1N5311-1	3.60	3.24	3.96	0.265	0.020	2.50	100
1N5312-1	3.90	3.51	4.29	0.255	0.017	2.60	100
1N5313-1	4.30	3.87	4.73	0.245	0.014	2.75	100
1N5314-1	4.70	4.23	5.17	0.235	0.012	2.90	100
1N7048-1	5.10	4.59	5.61	100	4.0	3.67	80
1N7049-1	5.60	5.04	6.16	90	4.0	4.03	80
1N7050-1	6.20	5.58	6.82	80	3.0	4.46	70
1N7051-1	6.80	6.12	7.48	70	2.0	4.90	70
1N7052-1	7.50	6.75	8.25	50	1,5	5.40	60
1N7053-1	8.20	7.38	9.02	30	1.5	5.90	60
1N7054-1	9.10	8.19	10.01	20	1.0	6.55	50
1N7055-1	10.00	9.00	11.10	10	1.0	7.20	50

NOTE 1: Z_S is derived by superimposing A 90 Hz RMS signal equal to 10% of V_S on V_S

NOTE 2: Z_K is derived by superimposing A 90Hz RMS signal equal to 10% of V_K on V_K

Graphs

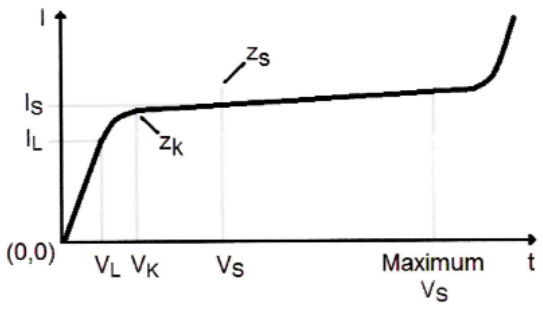


FIGURE 1 – CURRENT-REGULATOR CHARACTERISTICS

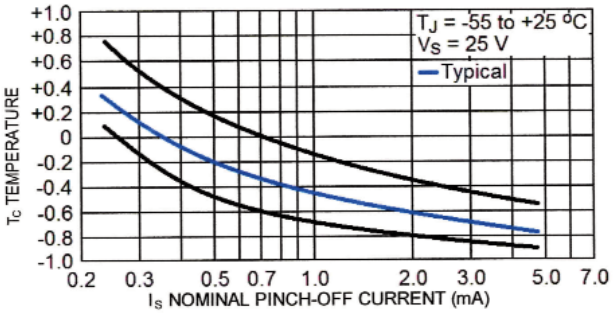


FIGURE 3 – TEMPERATURE COEFFICIENT

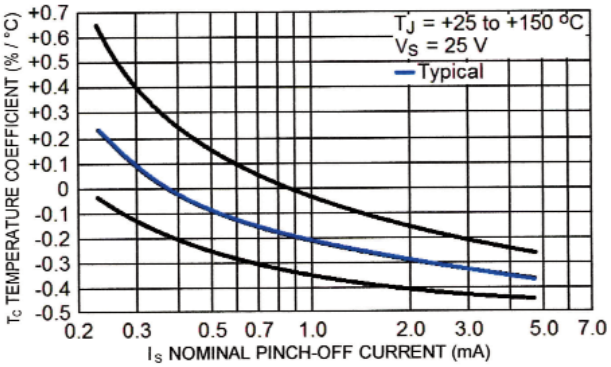


FIGURE 2 – TEMPERATURE COEFFICIENT

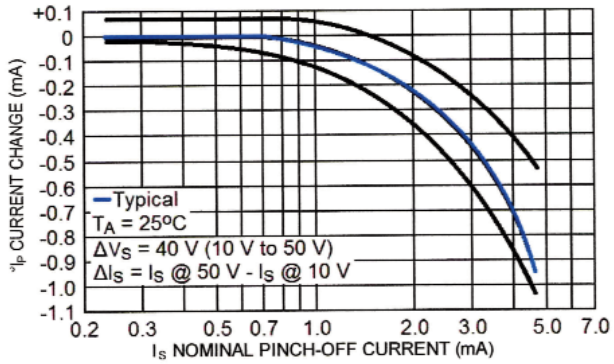


FIGURE 4 – CURRENT REGULATION FACTOR

Symbols & Definitions

Symbol	Definition
I_L	Limiting Current: A specified current below the lower knee of the current-regulating characteristic.
I_P	Regulator current: A current within the regulating range of a current-regulator diode.
P_D	Power Dissipation: The power dissipation, DC.
$R_{\Theta JL}$	Thermal Resistance Junction-to-Lead: The thermal resistance from the virtual junction(s) of a semiconducter device to the lead.
T_L	Lead Temperature: The temperature of a lead terminal.
T_{SP}	Temperature Solder Pad: The maximum solder temperature that can be safely applied to the terminal.
V_K	Knee Voltage: A specified regulator YOitage near the lower knee of the current-regulating characteristic.
V_L	Limiting Voltage: The voltage at point IL on the current-YOitage characteristic.
V_S	Regulator Voltage: A voltage within the regulating range of a current-regulating diode.
Z_K	Knee Impedance: The small-signal impedance at operating point VK on the current-volttage characteristic.
ZS	Regulator Impedance: The small-signal impedance within the regulating range of a current-regulator diode.
$Z_{\Theta JL}$	Thermal Impedance: The thermal impedance junction to reference point.

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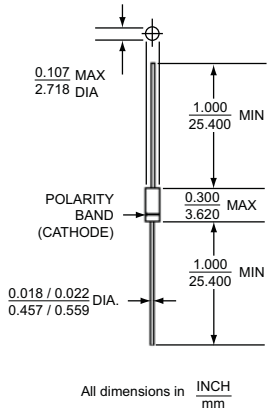
Outline Drawing



LEADED DESIGN DATA

CASE: Hermetically sealed glass, DO – 7

LEAD MATERIAL: Copper clad steel

LEAD FINISH: Tin / Lead

Marking: Part number and cathode band

Weight: 0.2 grams

POLARITY: Diode to be operated with the banded (cathode) end negative

MOUNTING POSITION: Any

Aeroflex / Metelics, Inc.

ISO 9001: 2008 certified companies

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Revision Date: 8/29/2012