



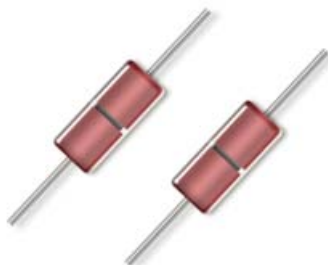
Current Regulator Diode Series

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



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 DO-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 voltage 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
Thermal Impedance	$Z_{\theta JX}$	25	°C/W
Steady-State Power Dissipation @ $T_L = +50$ °C, $L = 3/8^{(1)}$	P_o	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.



Electrical Specifications @ +25 °C (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 Impedance @ $V_K = 6.0$ V Z_K (M Ω) (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	0.240	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

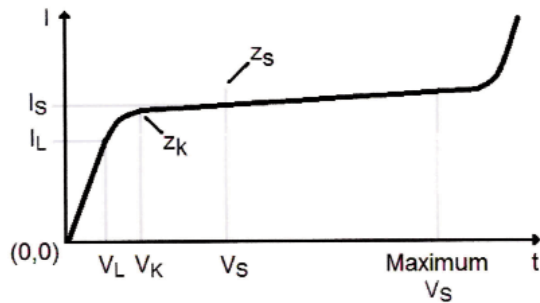


FIGURE 1 – CURRENT-REGULATOR CHARACTERISTICS

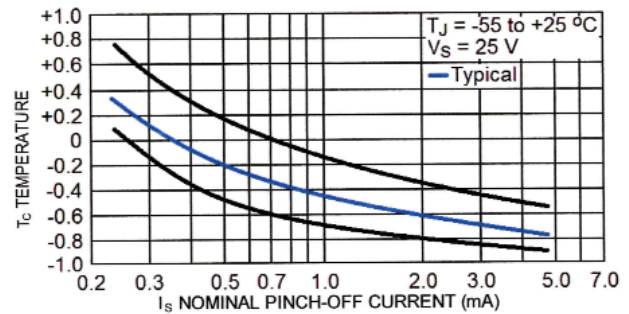


FIGURE 3 – TEMPERATURE COEFFICIENT

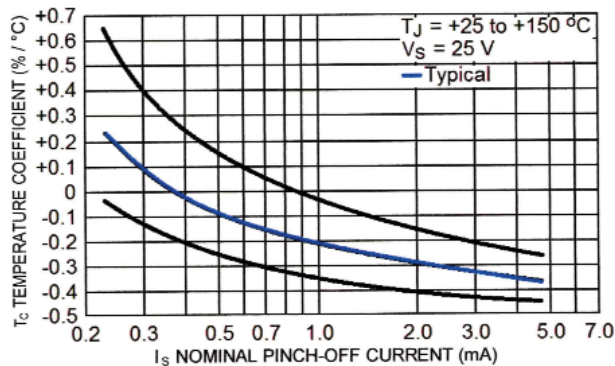


FIGURE 2 – TEMPERATURE COEFFICIENT

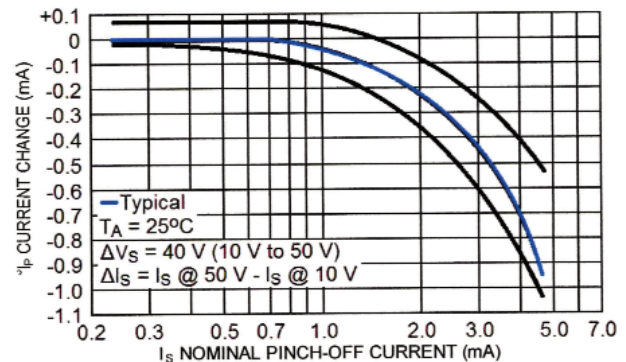
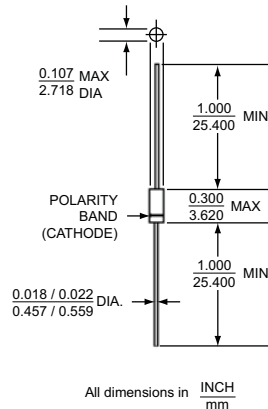


FIGURE 4 – CURRENT REGULATION FACTOR

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 semiconductor 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 voltage near the lower knee of the current-regulating characteristic.
V_L	Limiting Voltage: The voltage at point I_L on the current-voltage 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 V_K on the current-voltage characteristic.
Z_S	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.

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.

975 Stewart Drive,
Sunnyvale, CA 94085
Tel: (408) 737-8181
Fax: (408) 733-7645

Sales: 888-641-SEMI (7364)

Hi-Rel Components

9 Hampshire Street,
Lawrence, MA 01840
Tel: (603) 641-3800
Fax: (978) 683-3264

www.aeroflex.com/metelics-hirelcomponents

54 Grenier Field Road,
Londonderry, NH 03053
Tel: (603) 641-3800
Fax: (603)-641-3500

ISO 9001: 2008 certified companies

www.aeroflex.com/metelics

metelics-sales@aeroflex.com

Aeroflex / Metelics, Inc. reserves the right to make changes to any products and services herein at any time without notice. Consult Aeroflex or an authorized sales representative to verify that the information in this data sheet is current before using this product. Aeroflex does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by Aeroflex; nor does the purchase, lease, or use of a product or service from Aeroflex convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual rights of Aeroflex or of third parties.

Copyright 2012 Aeroflex / Metelics. All rights reserved.



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.