

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



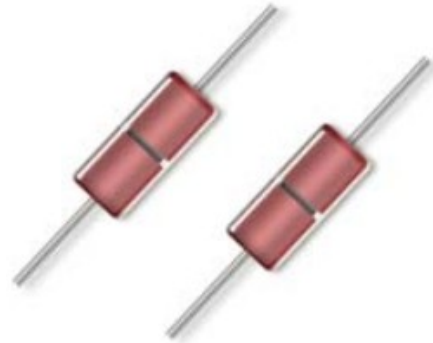
0.5 W Current Regulators

Rev. V1

Features

- High Source Impedance
- Internal Metallurgical Bond
- Double Plug Construction
- Regulates Current over Broad Operating Range
- JAN, JANTX, JANTXV and JANS Qualification per MIL-PRF-19500/463 Available
- Hermetically Sealed Glass, DO-7
- Flexible Axial-lead Mounting Terminals
- RoHS* Compliant
- Non sensitive to ESD

Hermetically Sealed Glass, DO-7



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.

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Steady State Power Dissipation ($T_L = +50^\circ\text{C}$, $L = 3/8^3$)	500 mW
Working Peak Voltage	100 V
Thermal Impedance	25°C/W
Thermal Resistance (junction to lead @ $L = 0.375$ in.)	250°C/W
Junction & Storage Temperature	-65°C to $+175^\circ\text{C}$
Solder Pad Temperature @ 10 s	$+260^\circ\text{C}$

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.
3. Derate @ 4 mW/ $^\circ\text{C}$ above $+50^\circ\text{C}$.

* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

1

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit www.macom.com for additional data sheets and product information.

For further information and support please visit:
<https://www.macom.com/support>

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



0.5 W Current Regulators

Rev. V1

Electrical Specifications: $T_A = +25^\circ\text{C}$ (unless otherwise specified)

Part #	Regulator Current I_P (mA) @ $V_S = 25$ V			Dynamic Impedance ⁴ $V_S = 25$ V Z_S (M)	Knee Impedance ⁵ $V_K = 6$ V Z_K (M Ω)	Limiting Voltage $I_L = 0.8 I_S$ V_L (V)	Peak Operating Voltage (V)
	Nom.	Min.	Max.	Min.	Min.	Max.	
1N5283-1	0.22	0.198	0.242	25	2.75	1.00	100
1N5284-1	0.24	0.216	0.264	19	2.35		
1N5285-1	0.27	0.243	0.297	14	1.95		
1N5286-1	0.30	0.270	0.330	9	1.60		
1N5287-1	0.33	0.297	0.363	8	1.35		
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		
1N5290-1	0.47	0.423	0.517	2.70	0.750		
1N5291-1	0.56	0.504	0.616	1.90	0.560		
1N5292-1	0.62	0.558	0.682	1.55	0.470		
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		
1N5295-1	0.82	0.738	0.902	1.00	0.290		
1N5296-1	0.91	0.819	1.001	0.88	0.240		
1N5297-1	1.00	0.900	1.100	0.80	0.205		
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		
1N5300-1	1.30	1.17	1.43	0.58	0.135		
1N5301-1	1.40	1.26	1.54	0.54	0.115		
1N5302-1	1.50	1.35	1.65	0.51	0.105		
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		
1N5305-1	2.00	1.80	2.20	0.395	0.061		
1N5306-1	2.20	1.98	2.42	0.370	0.052		
1N5307-1	2.40	2.16	2.54	0.345	0.044		
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		
1N5310-1	3.30	2.97	3.63	0.280	0.024		
1N5311-1	3.60	3.24	3.96	0.265	0.020		
1N5312-1	3.90	3.51	4.29	0.255	0.017		
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		
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

4. Z_S is derived by superimposing a 90 Hz RMS signal equal to 10% of V_S on V_S .

5. Z_K is derived by superimposing a 90 HZ RMS signal equal to 10% of V_K on V_K .

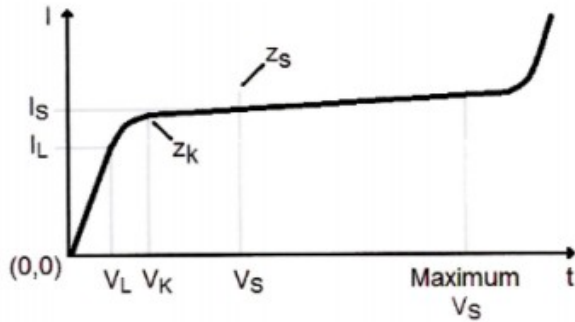
2

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit www.macom.com for additional data sheets and product information.

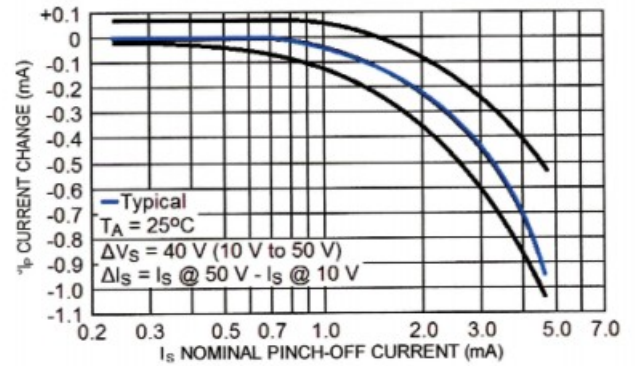
For further information and support please visit:
<https://www.macom.com/support>

Typical Performance Curves

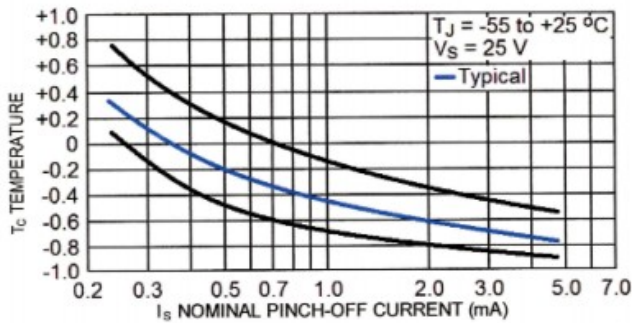
Current Regulator Characteristics



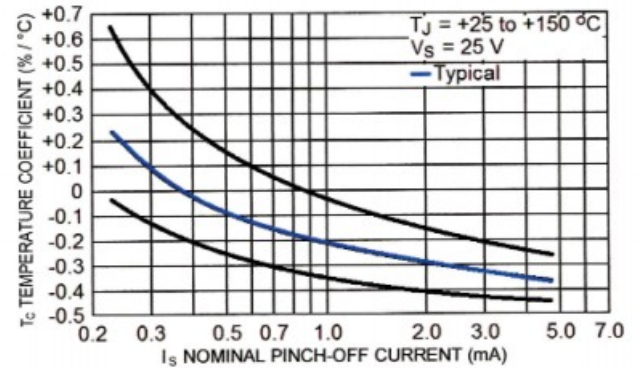
Current Regulator Factor



Temperature Coefficient



Output Return Loss



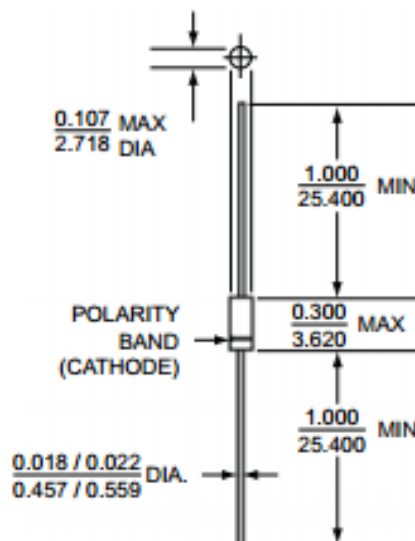
1N5283-1 thru 1N5314-1 & 1N7048-1 thru 1N7055-1



0.5 W Current Regulators

Rev. V1

Hermetically Sealed Glass, DO-7



All dimensions in $\frac{\text{INCH}}{\text{mm}}$

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 cathode band end negative

Mounting Position: any

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.