

# 1N5283UR-1 thru 1N5314UR-1 & 1N7048UR-1 thru 1N7055UR-1



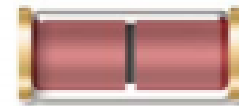
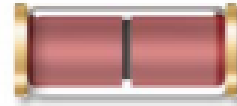
## 0.5 W Current Regulators

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-PRFUR-19500/463 Available
- Hermetically Sealed Glass, DO-213AB
- Flexible Axial-lead Mounting Terminals
- RoHS\* Compliant
- Non Sensitive to ESD

### Hermetically Sealed Glass, DO-213AB



### Description

The popular 1N5283UR-1 thru 1N5314UR-1 and 1N7041UR-1 thru 1N7055UR-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.

### Absolute Maximum Ratings<sup>1,2</sup>

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	$25^\circ\text{C/W}$
Thermal Resistance (junction to lead @ $L = 0.375$ in.)	$100^\circ\text{C/W}$
Junction & Storage Temperature	$-65^\circ\text{C}$ 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 @ 10 mW/ $^\circ\text{C}$  above  $+125^\circ\text{C}$ .

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

# 1N5283UR-1 thru 1N5314UR-1 & 1N7048UR-1 thru 1N7055UR-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) @ $V_S = 25\text{ V}$			Dynamic Impedance <sup>4</sup> $V_S = 25\text{ V}$ $Z_S$ (M)	Knee Impedance <sup>5</sup> $V_K = 6\text{ V}$ $Z_K$ (M $\Omega$ )	Limiting Voltage $I_L = 0.8 I_S$ $V_L$ (V)	Peak Operating Voltage (V)
	Nom.	Min.	Max.	Min.	Min.	Max.	
1N5283UR-1	0.22	0.198	0.242	25	2.75	1.00	100
1N5284UR-1	0.24	0.216	0.264	19	2.35		
1N5285UR-1	0.27	0.243	0.297	14	1.95		
1N5286UR-1	0.30	0.270	0.330	9	1.60		
1N5287UR-1	0.33	0.297	0.363	8	1.35		
1N5288UR-1	0.39	0.351	0.429	4.10	1.000	1.05	100
1N5289UR-1	0.43	0.387	0.473	3.30	0.870		
1N5290UR-1	0.47	0.423	0.517	2.70	0.750		
1N5291UR-1	0.56	0.504	0.616	1.90	0.560		
1N5292UR-1	0.62	0.558	0.682	1.55	0.470		
1N5293UR-1	0.68	0.612	0.748	1.35	0.400	1.15	100
1N5294UR-1	0.75	0.675	0.825	1.15	0.335		
1N5295UR-1	0.82	0.738	0.902	1.00	0.290		
1N5296UR-1	0.91	0.819	1.001	0.88	0.240		
1N5297UR-1	1.00	0.900	1.100	0.80	0.205		
1N5298UR-1	1.10	0.99	1.21	0.70	0.180	1.40	100
1N5299UR-1	1.20	1.08	1.32	0.64	0.155		
1N5300UR-1	1.30	1.17	1.43	0.58	0.135		
1N5301UR-1	1.40	1.26	1.54	0.54	0.115		
1N5302UR-1	1.50	1.35	1.65	0.51	0.105		
1N5303UR-1	1.60	1.44	1.76	0.475	0.092	1.65	100
1N5304UR-1	1.80	1.62	1.98	0.420	0.074		
1N5305UR-1	2.00	1.80	2.20	0.395	0.061		
1N5306UR-1	2.20	1.98	2.42	0.370	0.052		
1N5307UR-1	2.40	2.16	2.54	0.345	0.044		
1N5308UR-1	2.70	2.43	2.97	0.320	0.035	2.15	100
1N5309UR-1	3.00	2.70	3.30	0.300	0.029		
1N5310UR-1	3.30	2.97	3.63	0.280	0.024		
1N5311UR-1	3.60	3.24	3.96	0.265	0.020		
1N5312UR-1	3.90	3.51	4.29	0.255	0.017		
1N5313UR-1	4.30	3.87	4.73	0.245	0.014	2.75	100
1N5314UR-1	4.70	4.23	5.17	0.235	0.012		
1N7048UR-1	5.10	4.59	5.61	100	4.0	3.67	80
1N7049UR-1	5.60	5.04	6.16	90	4.0	4.03	80
1N7050UR-1	6.20	5.58	6.82	80	3.0	4.46	70
1N7051UR-1	6.80	6.12	7.48	70	2.0	4.90	70
1N7052UR-1	7.50	6.75	8.25	50	1.5	5.40	60
1N7053UR-1	8.20	7.38	9.02	30	1.5	5.90	60
1N7054UR-1	9.10	8.19	10.01	20	1.0	6.55	50
1N7055UR-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](http://www.macom.com) for additional data sheets and product information.

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

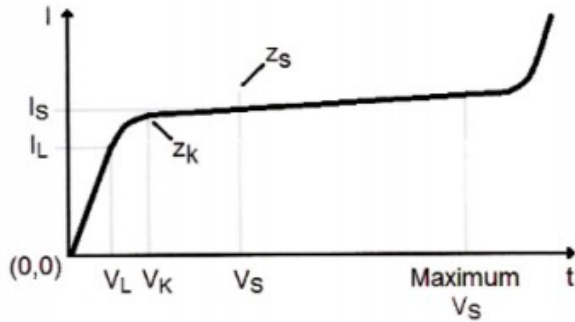
# 1N5283UR-1 thru 1N5314UR-1 & 1N7048UR-1 thru 1N7055UR-1

## 0.5 W Current Regulators

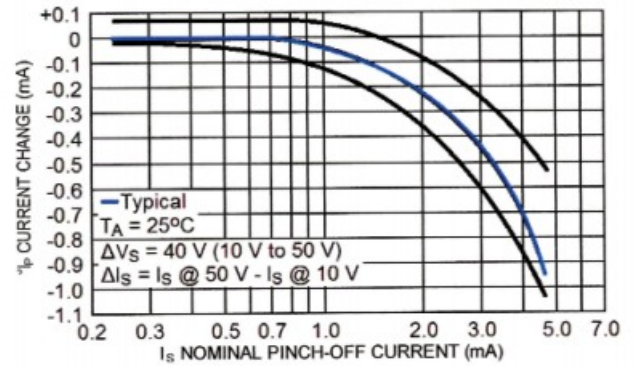
Rev. V1

### Typical Performance Curves

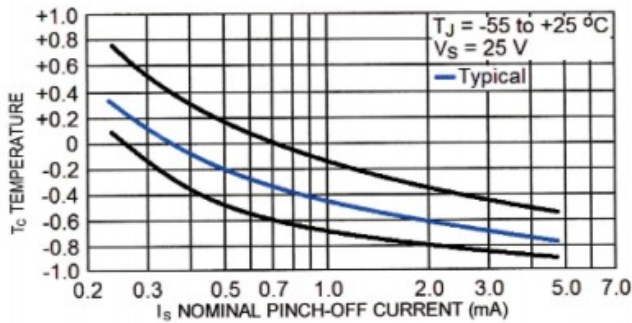
Current Regulator Characteristics



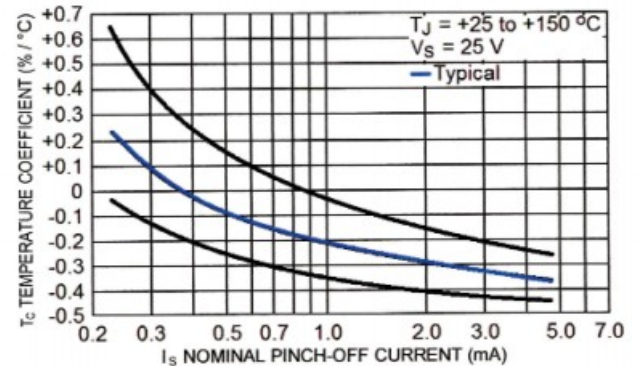
Current Regulator Factor



Temperature Coefficient



Output Return Loss



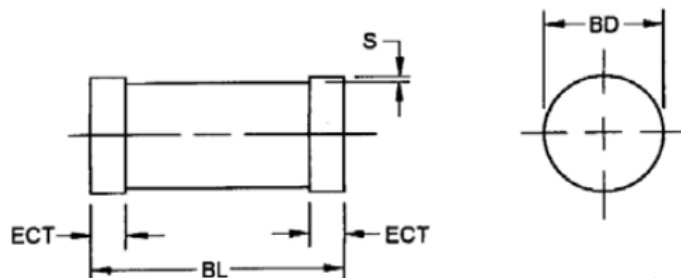
# 1N5283UR-1 thru 1N5314UR-1 & 1N7048UR-1 thru 1N7055UR-1



## 0.5 W Current Regulators

Rev. V1

### Hermetically Sealed Glass, DO-213AB (MELF, LL41)



### Dimensions

Dim.	Inches		Millimeters	
	Min.	Max.	Min.	Max.
BD	0.94	0.105	2.39	2.67
BL	0.189	0.205	4.80	5.21
ECT	0.016	0.022	0.41	0.55
S	0.001 min.		0.03 min.	

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 Surface Selection: the Axial Coefficient of Expansion (COE) of this device is approximately +6 PPM/°C. The COE of the Mounting Surface System should be selected to provide a suitable match with this device.

# 1N5283UR-1 thru 1N5314UR-1 & 1N7048UR-1 thru 1N7055UR-1



## 0.5 W Current Regulators

Rev. V1

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.