

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

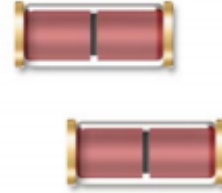


## 0.5 W Current Regulators

Rev. V2

### Features

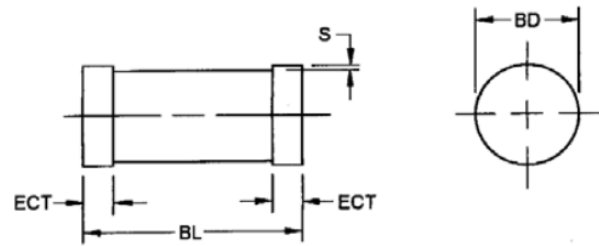
- High Source Impedance
- Internal Metallurgical Bond
- Double Plug Construction
- Regulates Current over Broad Operating Range
- JAN, JANTX, JANTXV and JANS Qualification per MIL-PRFUR-19500/463 Available
- Hermetically Sealed Glass, DO-213AB
- RoHS\* Compliant
- Non Sensitive to ESD



### Description

The popular 1N5283UR-1 thru 1N5314UR-1 and 1N7048UR-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.

### 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.

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

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### 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>1</sup> $V_S = 25\text{ V}$ $Z_S$ (M)	Knee Impedance <sup>2</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

1.  $Z_S$  is derived by superimposing a 90 Hz RMS signal equal to 10% of  $V_S$  on  $V_S$ .
2.  $Z_K$  is derived by superimposing a 90 HZ RMS signal equal to 10% of  $V_K$  on  $V_K$ .

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DC-0011070

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## 0.5 W Current Regulators

Rev. V2

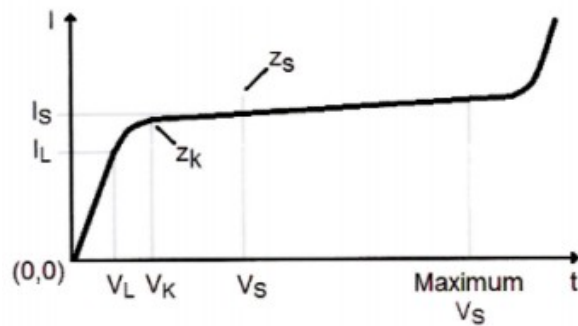
### Absolute Maximum Ratings<sup>3,4</sup>

Parameter	Absolute Maximum
Steady State Power Dissipation ( $T_L = +50^\circ\text{C}$ , $L = 3/8^5$ )	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	$+260^\circ\text{C}$

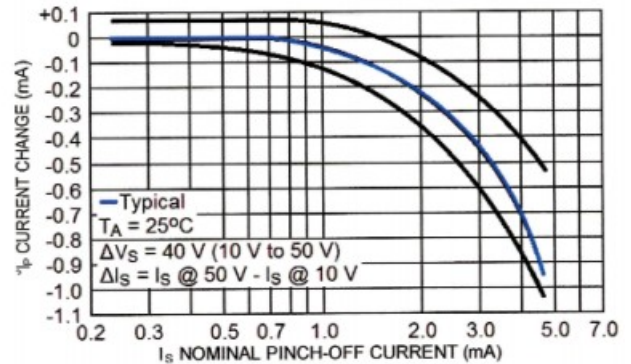
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.
- Derate @  $10 \text{ mW}/^\circ\text{C}$  above  $+125^\circ\text{C}$ .

### Typical Performance Curves

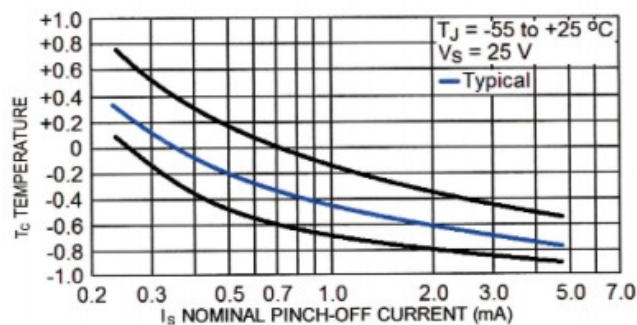
#### Current Regulator Characteristics



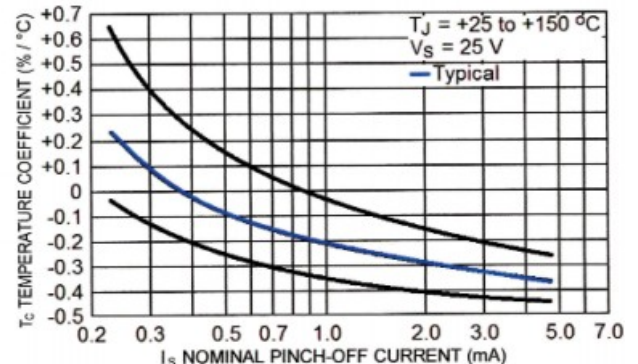
#### Current Regulator Factor



#### Temperature Coefficient



#### Output Return Loss



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Rev. V2

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