Current Regulator Diode Series

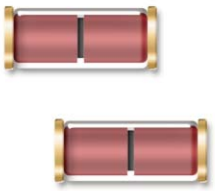
NEW

1N5283UR-1 thru 1N5314UR-1 & 1N7041UR-1 thru 1N7055UR-1

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 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. The D0-213AB package offers a double plug internal bond connection with a large 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 @ EC = 0.375 in	$R_{\Theta JL}$	100	°C/W
Therrnal Impedance	$Z_{\Theta JX}$	25	°C/W
Steady-State Power Dissipation @ T_{EC} = +120 °C, L = 3/8[1]	P_D	500	mW
Solder Pad Temperature @ 10 sec maximum	T_{SP}	260	°C

NOTE 1: Derate at 10mW/°C above 125 °C

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METELICS

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				
1N5283UR	0.22	0.198	0.242	25.0	2.75	1.00	100
1N5284UR	0.24	0.216	0.264	19.0	2.35	1.00	100
1N5285UR	0.27	0.243	0.297	14.0	1.95	1.00	100
1N5286UR	0.30	0.270	0.330	9.0	1.60	1.00	100
1N5287UR	0.33	0.297	0.363	8.0	1.35	1.00	100
1N5288UR	0.39	0.351	0.429	4.10	1.000	1.05	100
1N5289UR	0.43	0.387	0.473	3.30	0.870	1.05	100
1N5290UR	0.47	0.423	0.517	2.70	0.750	1.05	100
1N5291UR	0.56	0.504	0.616	1.90	0.560	1.10	100
1N5292UR	0.62	0.558	0.682	1.55	0.470	1.13	100
1N5293UR	0.68	0.612	0.748	1.35	0.400	1.15	100
1N5294UR	0.75	0.675	0.825	1.15	0.335	1.20	100
1N5295UR	0.82	0.738	0.902	1.00	0.290	1.25	100
1N5296UR	0.91	0.819	1.001	0.88	0240	1.29	100
1N5297UR	1.00	0.900	1.100	0.80	0.205	1.35	100
1N5298UR	1.10	0.99	1.21	0.70	0.180	1.40	100
1N5299UR	1.20	1.08	1.32	0.64	0.155	1.45	100
1N5300UR	1.30	1.17	1.43	0.58	0.135	1.50	100
1N5301UR	1.40	1.26	1.54	0.54	0.115	1.55	100
1N5302UR	1.50	1.35	1.65	0.51	0.105	1.60	100
1N5303UR	1.60	1.44	1.76	0.475	0.092	1.65	100
1N5304UR	1.80	1.62	1.98	0.420	0.074	1.75	100
1N5305UR	2.00	1.80	2.20	0.395	0.061	1.85	100
1N5306UR	2.20	1.98	2.42	0.370	0.052	1.95	100
1N5307UR	2.40	2.16	2.54	0.345	0.044	2.00	100
1N5308UR	2.70	2.43	2.97	0.320	0.035	2.15	100
1N5309UR	3.00	2.70	3.30	0.300	0.029	2.25	100
1N5310UR	3.30	2.97	3.63	0.280	0.024	2.35	100
1N5311UR	3.60	3.24	3.96	0.265	0.020	2.50	100
1N5312UR	3.90	3.51	4.29	0.255	0.017	2.60	100
1N5313UR	4.30	3.87	4.73	0.245	0.014	2.75	100
1N5314UR	4.70	4.23	5.17	0.235	0.012	2.90	100
1N7048UR	5.10	4.59	5.61	100	4.0	3.67	80
1N7049UR	5.60	5.04	6.16	90	4.0	4.03	80
1N7050UR	6.20	5.58	6.82	80	3.0	4.46	70
1N7051UR	6.80	6.12	7.48	70	2.0	4.90	70
1N7052UR	7.50	6.75	8.25	50	1,5	5.40	60
1N7053UR	8.20	7.38	9.02	30	1.5	5.90	60
1N7054UR	9.10	8.19	10.01	20	1.0	6.55	50
1N7055UR	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

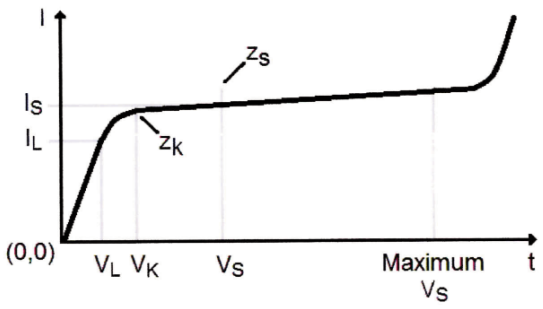


FIGURE 1 – CURRENT-REGULATOR CHARACTERISTICS

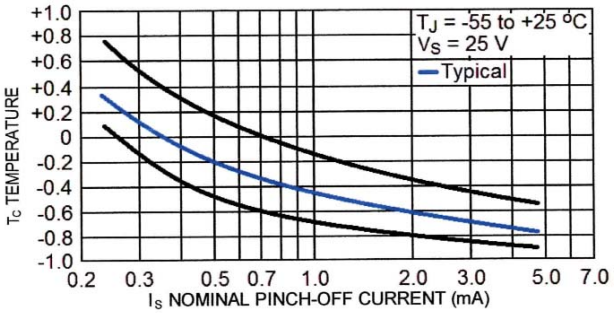


FIGURE 3 – TEMPERATURE COEFFICIENT

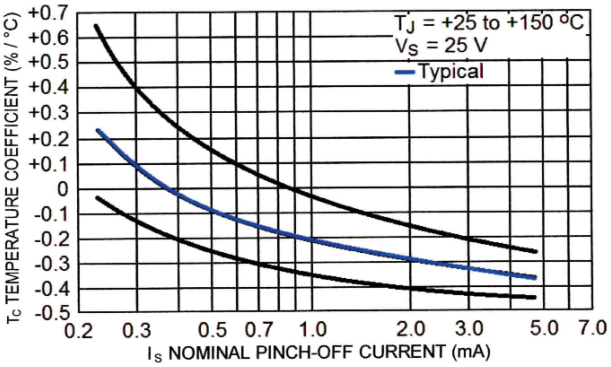


FIGURE 2 – TEMPERATURE COEFFICIENT

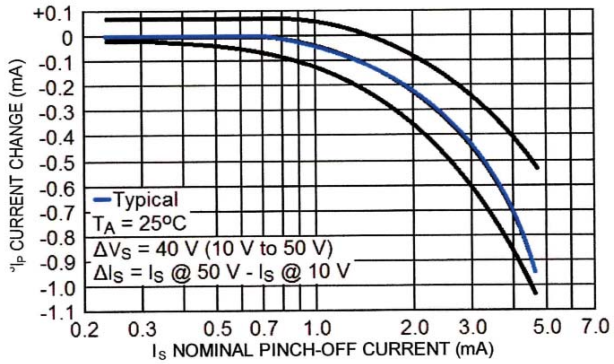
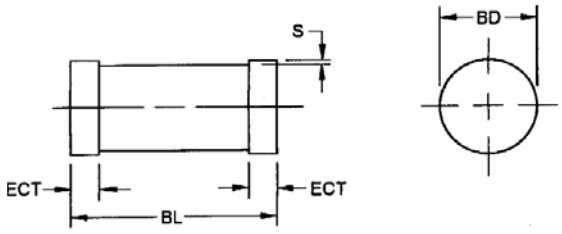


FIGURE 4 – CURRENT REGULATION FACTOR

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_{EC}	End Cap 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 IL 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 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.

Outline Drawing



Symbol	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
BD	0.94	.105	2.39	2.67
BL	.189	.205	4.80	5.21
ECT	.016	.022	0.41	0.55
S	.001 min		0.03 min	

SURFACE MOUNT DESIGN DATA

CASE: DO-213AB, Hermetically sealed glass case. (MELF, LL41)

LEAD FINISH: Tin / Lead finished copper clad steel

MARKING: Cathode band.

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

WEIGHT: 0.2 grams.

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to ϕx Symbology.

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