

SANTA ANA, CA

SCOTTSDALE, AZ  
For more information call:  
(602) 941-6300

# M\*5283 thru M\*5314 and C†5283 thru C†5314

## HIGH RELIABILITY CURRENT REGULATOR DIODES

### Features

(\*) • Available as screened equivalents using prefixes noted below:

- MX as JTX equivalent
- MV as JTXV equivalent
- MS as JANS equivalent

(†) • Available in chip form using prefixes noted below:

- CH as Aluminum on top, gold on back
- CNS as Titanium Nickel Silver on top and bottom

- Provides essentially constant current over a wide voltage range.
- High Source Impedance

### Maximum Ratings

**Operating Temperature:** -55° C to +175° C

**Storage Temperature:** -55° C to +175° C

**DC Power Dissipation:** 475 mW @  $T_L \leq 75^\circ\text{C}$

**Power Derating:** 3.1 mW/° C @  $T_L > 75^\circ\text{C}$

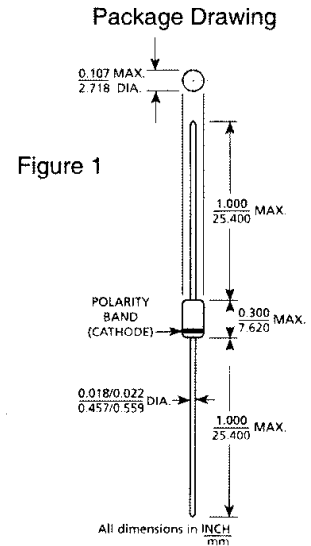
**Peak Operating Voltage:** 100 Volts

### Electrical Characteristics @ 25° C unless otherwise specified.

| TYPE NUMBER | REGULATOR CURRENT<br>$I_p$ (mA) @ $V_S = 25\text{V}$ |       |       | MINIMUM DYNAMIC IMPEDANCE<br>@ $V_S = 25\text{V}$<br>$Z_S$ (M $\Omega$ )<br>(Note 1) | MINIMUM KNEE IMPEDANCE<br>@ $V_K = 6.0\text{V}$<br>$Z_K$ (M $\Omega$ )<br>(Note 2) | MAXIMUM LIMITING VOLTAGE<br>@ $I_L = 0.8\text{Ip}$ (min)<br>$V_L$ (VOLTS) |
|-------------|--|-------|-------|--|--|---|
|             | NOM  | MIN   | MAX   |  |  |   |
| 1N5283      | 0.22   | 0.198 | 0.242 | 25.0   | 2.75   | 1.00  |
| 1N5284      | 0.24   | 0.216 | 0.264 | 19.0   | 2.35   | 1.00  |
| 1N5285      | 0.27   | 0.243 | 0.297 | 14.0   | 1.95   | 1.00  |
| 1N5286      | 0.30   | 0.270 | 0.330 | 9.0  | 1.60   | 1.00  |
| 1N5287      | 0.33   | 0.297 | 0.363 | 6.6  | 1.35   | 1.00  |
| 1N5288      | 0.39   | 0.351 | 0.429 | 4.10   | 1.00   | 1.05  |
| 1N5289      | 0.43   | 0.387 | 0.473 | 3.30   | 0.870  | 1.05  |
| 1N5290      | 0.47   | 0.423 | 0.517 | 2.70   | 0.750  | 1.05  |
| 1N5291      | 0.56   | 0.504 | 0.616 | 1.90   | 0.560  | 1.10  |
| 1N5292      | 0.62   | 0.558 | 0.682 | 1.55   | 0.470  | 1.13  |
| 1N5293      | 0.68   | 0.612 | 0.748 | 1.35   | 0.400  | 1.15  |
| 1N5294      | 0.75   | 0.675 | 0.825 | 1.15   | 0.335  | 1.20  |
| 1N5295      | 0.82   | 0.738 | 0.902 | 1.00   | 0.290  | 1.25  |
| 1N5296      | 0.91   | 0.819 | 1.001 | 0.880  | 0.240  | 1.29  |
| 1N5297      | 1.00   | 0.900 | 1.100 | 0.800  | 0.205  | 1.35  |
| 1N5298      | 1.10   | 0.990 | 1.210 | 0.700  | 0.180  | 1.40  |
| 1N5299      | 1.20   | 1.06  | 1.32  | 0.640  | 0.155  | 1.45  |
| 1N5300      | 1.30   | 1.17  | 1.43  | 0.580  | 0.135  | 1.50  |
| 1N5301      | 1.40   | 1.26  | 1.54  | 0.540  | 0.115  | 1.55  |
| 1N5302      | 1.50   | 1.35  | 1.65  | 0.510  | 0.105  | 1.60  |
| 1N5303      | 1.60   | 1.44  | 1.76  | 0.475  | 0.092  | 1.65  |
| 1N5304      | 1.80   | 1.62  | 1.98  | 0.420  | 0.074  | 1.75  |
| 1N5305      | 2.00   | 1.80  | 2.20  | 0.395  | 0.061  | 1.85  |
| 1N5306      | 2.20   | 1.98  | 2.42  | 0.370  | 0.052  | 1.95  |
| 1N5307      | 2.40   | 2.16  | 2.64  | 0.345  | 0.044  | 2.00  |
| 1N5308      | 2.70   | 2.43  | 2.97  | 0.320  | 0.035  | 2.15  |
| 1N5309      | 3.00   | 2.70  | 3.30  | 0.300  | 0.029  | 2.25  |
| 1N5310      | 3.30   | 2.97  | 3.63  | 0.280  | 0.024  | 2.35  |
| 1N5311      | 3.60   | 3.24  | 3.96  | 0.265  | 0.020  | 2.50  |
| 1N5312      | 3.90   | 3.51  | 4.29  | 0.255  | 0.017  | 2.60  |
| 1N5313      | 4.30   | 3.87  | 4.73  | 0.245  | 0.014  | 2.75  |
| 1N5314      | 4.70   | 4.23  | 5.17  | 0.235  | 0.012  | 2.90  |

NOTE 1:  $Z_S$  is derived by superimposing a 90Hz 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  $V_K$ .



### Mechanical Characteristics

**CASE:** Hermetically sealed glass case. DO-7 outline.

**LEAD MATERIAL:** Dumet.

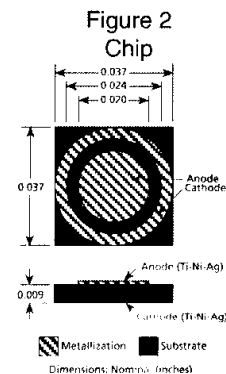
**LEAD FINISH:** Tin plate.

**THERMAL RESISTANCE:** 300° C/W (Typical) junction to ambient.

**POLARITY:** Cathode end is banded.

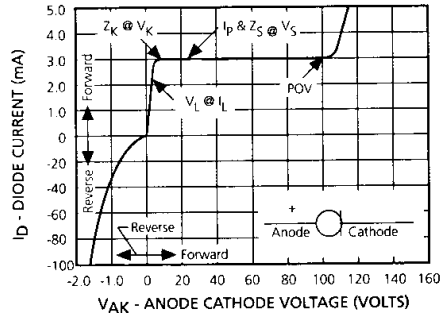
**WEIGHT:** 0.2 grams

**MOUNTING POSITION:** Any.

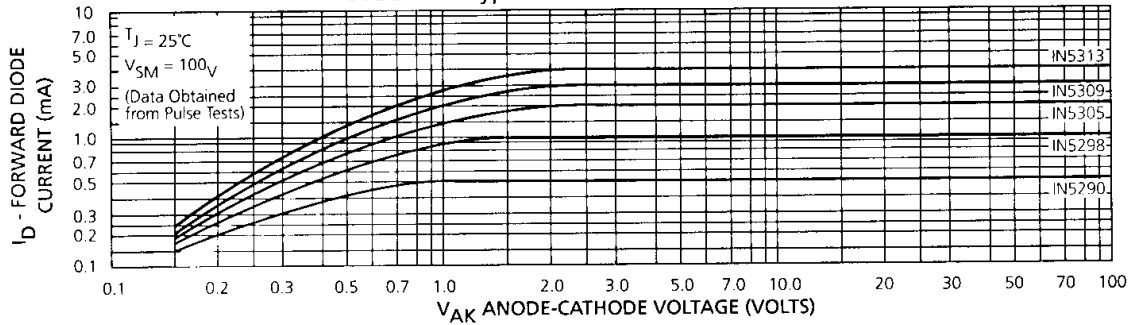


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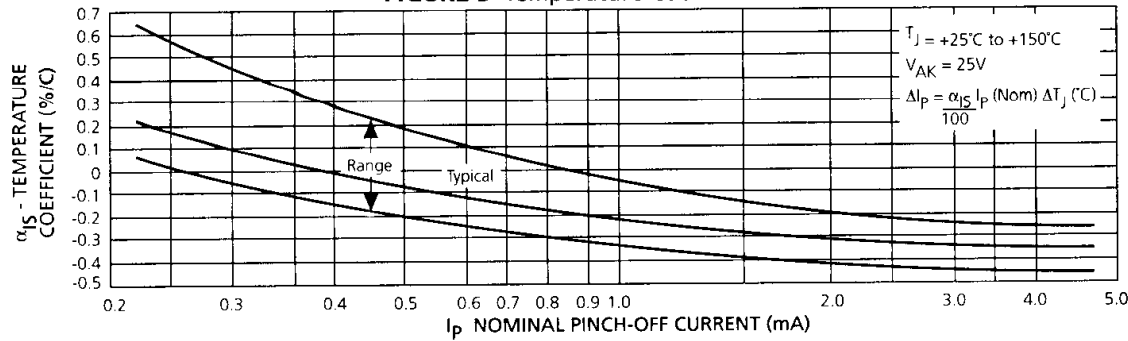
**FIGURE 3**  
Typical Current Regulator Characteristics



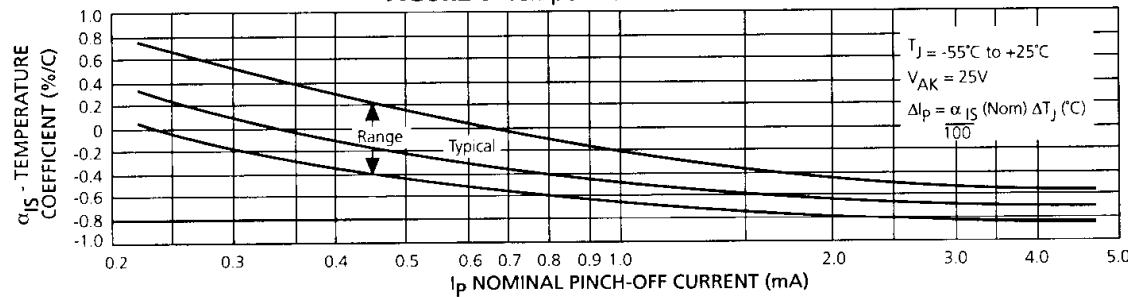
**FIGURE 4** Typical Forward Characteristics



**FIGURE 5** Temperature Coefficient



**FIGURE 6** Temperature Coefficient



## SYMBOLS AND DEFINITIONS

- $I_D$  - Diode Current
- $I_P$  - Pinch-off Current: Regulator current at specified Test Voltage,  $V_S$ .  $I_P$  is sometimes also identified as  $I_S$ .
- POV - Peak Operating Voltage: Maximum voltage to be applied to device.
- $\alpha_{I_S}$  - Current Temperature Coefficient.
- $V_K$  - Knee Impedance Test Voltage: Specified voltage used to establish Knee Impedance,  $Z_K$ .
- $V_L$  - Limiting voltage: Measured at  $I_L$ ,  $V_L$ , together with Knee ac Impedance,  $Z_K$ , indicates the Knee characteristics of the device.
- $V_S$  - Test Voltage: Voltage at which  $I_P$  and  $Z_S$  are specified.
- $Z_K$  - Knee AC Impedance at Test Voltage: To test for  $Z_K$ , a 90 Hz signal  $v_K$  with rms value equal to 10% of test voltage  $V_K$  is superimposed on  $V_K$ :  $Z_K = v_K / i_K$  where  $i_K$  is the resultant ac current due to  $v_K$ . To provide the most constant current from the diode,  $Z_K$  should be as high as possible; therefore, a minimum value of  $Z_K$  is specified.
- $Z_S$  - AC Impedance at Test Voltage: Specified as a minimum value. To test for  $Z_S$ , a 90 Hz signal  $v_S$  with rms value equal to 10% of test voltage,  $V_S$ , is superimposed on  $V_S$ :  $Z_S = v_S / i_S$  where  $i_S$  is the resultant ac current due to  $v_S$ .