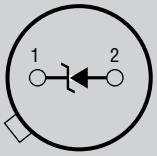
## ABSOLUTE MAXIMUM RATINGS

Operating Temperature Range
- LM185-1.2**(OBSOLETE)** ..... –55°C to 125°C
- LM285-1.2 ..... –40°C to 85°C
- LM385-1.2 ..... 0°C to 70°C

Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec)..... 300°C
Reverse Breakdown Current ..... 30mA
Forward Current ..... 10mA

## PACKAGE/ORDER INFORMATION

BOTTOM VIEW

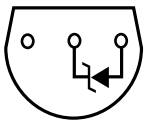



H PACKAGE
2-LEAD TO-46 METAL CAN
$T_{JMAX}$ = 150°C,
$\theta_{JA}$ = 440°C/W, $\theta_{JC}$ = 80°C/W
(NOTE 3)

| ORDER PART NUMBER |
|---|
| LM185H-1.2 |
| LM285H-1.2 |
| LM385H-1.2 |
| LM385BH-1.2 |

**OBSOLETE PACKAGE**
Consider the S8 or Z Packages for Alternate Source

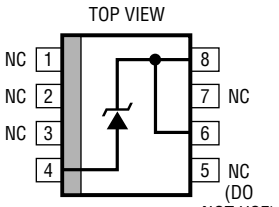
BOTTOM VIEW



Z PACKAGE
3-LEAD PLASTIC TO-92
$T_{JMAX}$ = 150°C, $\theta_{JA}$ = 160°C/W
(NOTE 3)

| ORDER PART NUMBER |
|---|
| LM285Z-1.2 |
| LM385Z-1.2 |
| LM385BZ-1.2 |

TOP VIEW




S8 PACKAGE
8-LEAD PLASTIC SO
$T_{JMAX}$ = 150°C, $\theta_{JA}$ = 190°C/W

| ORDER PART NUMBER |
|---|
| LM385BS8-1.2 |
| LM385S8-1.2 |
| **S8 PART MARKING** |
| 3851 |
| 3851B |

Consult LTC Marketing for parts specified with wider operating temperature ranges.

## ELECTRICAL CHARACTERISTICS

**The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A$ = 25°C. For the LM185-1.2 $T_{MIN}$ = –55°C and $T_{MAX}$ = 125°C. For LM285-1.2 $T_{MIN}$ = –40°C and $T_{MAX}$ = 85°C. For LM385-1.2 $T_{MIN}$ = 0°C and $T_{MAX}$ = 70°C. For MIL-STD components, please refer to LTC883C data sheet for test listing and parameters.**

| SYMBOL | PARAMETER | CONDITIONS | | LM185-1.2/LM285-1.2 MIN | LM185-1.2/LM285-1.2 TYP | LM185-1.2/LM285-1.2 MAX | LM385-1.2/LM385B-1.2 MIN | LM385-1.2/LM385B-1.2 TYP | LM385-1.2/LM385B-1.2 MAX | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| $V_Z$ | Reverse Breakdown Voltage | $T_A$ = 25°C, $I_{MIN} \le I_R \le$ 20mA | | | | | | | | |
| | | LM185-1.2 | | 1.223 | 1.235 | 1.247 | | | | V |
| | | LM385-1.2 | | | | | 1.205 | 1.235 | 1.260 | V |
| | | LM385B-1.2 (Note 3) | | | | | 1.223 | 1.235 | 1.247 | V |
| $\frac{\Delta V_Z}{\Delta Temp}$ | Average Temperature Coefficient | $I_{MIN} \le I_R \le$ 20mA (Notes 2, 3) | | | 20 | | | 20 | | ppm/°C |
| $I_{MIN}$ | Minimum Operating Current | $T_{MIN} \le T_A \le T_{MAX}$ | ● | | 8 | 10 | | 8 | 15 | µA |
| $\frac{\Delta V_Z}{\Delta I_R}$ | Reverse Breakdown Voltage Change with Current | $I_{MIN} \le I_R \le$ 1mA | | | | | | | | |
| | | $T_A$ = 25°C | | | | 1 | | | 1 | mV |
| | | $T_{MIN} \le T_A \le T_{MAX}$ | ● | | | 1.5 | | | 1.5 | mV |
| | | 1mA $\le I_R \le$ 20mA | | | | | | | | |
| | | $T_A$ = 25°C | | | | 10 | | | 10 | mV |
| | | $T_{MIN} \le T_A \le T_{MAX}$ | ● | | | 20 | | | 25 | mV |
| $r_Z$ | Reverse Dynamic Impedance | $I_R$ = 100µA | | | | | | | | |
| | | $T_A$ =25°C | | | 0.2 | 0.6 | | 0.4 | 1.0 | Ω |
| | | $T_{MIN} \le T_A \le T_{MAX}$ | ● | | | 1.5 | | | 1.5 | Ω |
| $e_n$ | Wideband Noise (RMS) | $I_R$ = 100µA, 10Hz ≤ f ≤ 10kHz | | | 60 | | | 60 | | µV |
| $\frac{\Delta V_Z}{\Delta Time}$ | Long Term Stability | $I_R$ = 100µA, $T_A$ = 25°C ± 0.1°C | | | 20 | | | 20 | | ppm/kHr |

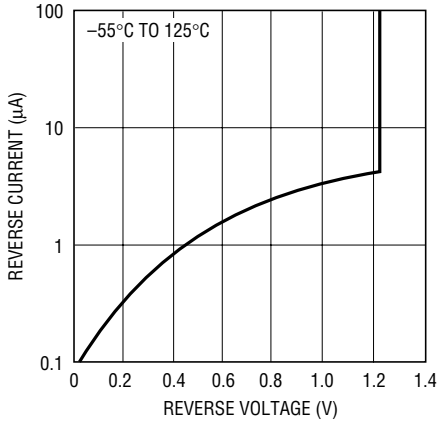
**Note 1:** Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

**Note 2:** Selected devices with guaranteed maximum temperature coefficient are available upon request.

**Note 3:** For applications requiring low initial tolerance guaranteed over temperature consult the LT1004 data sheet.

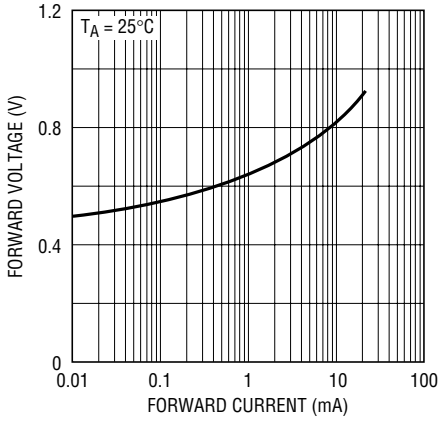
## TYPICAL PERFORMANCE CHARACTERISTICS

### Reverse Characteristics



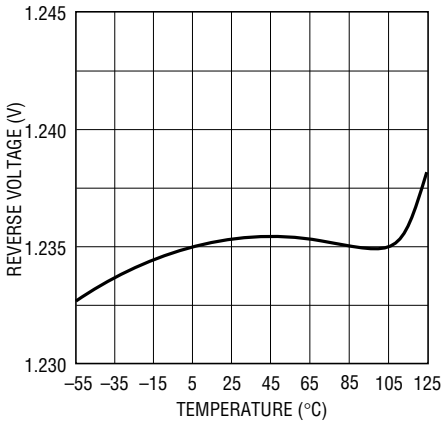

185/285/385 G01

### Foward Characteristics



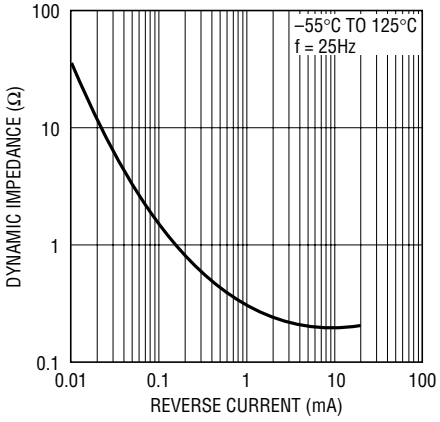

185/285/385 G02

### Temperature Drift



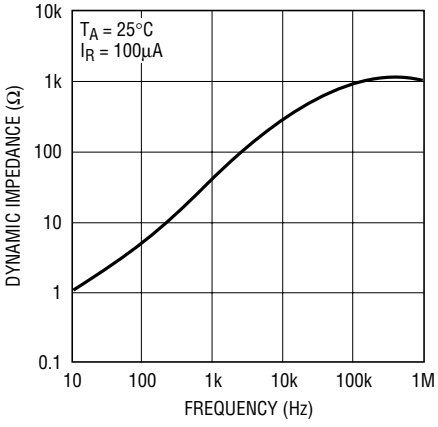

185/285/385 G03

### Reverse Dynamic Impedance



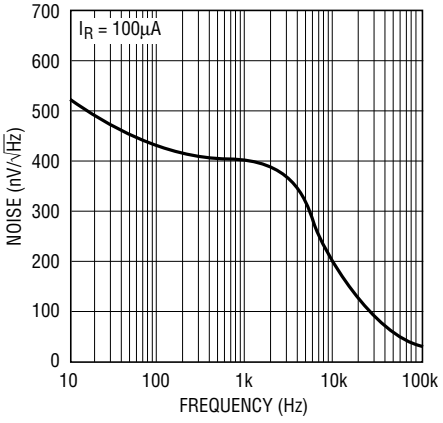

185/285/385 G04

### Reverse Dynamic Impedance



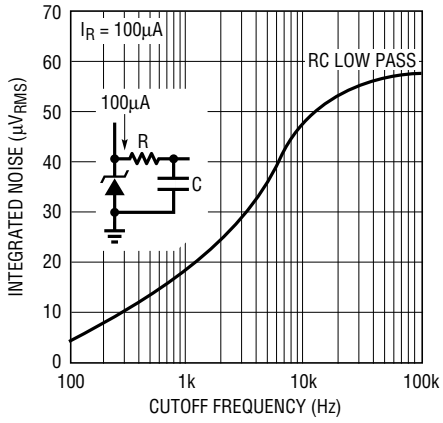

185/285/385 G05

### Noise Voltage



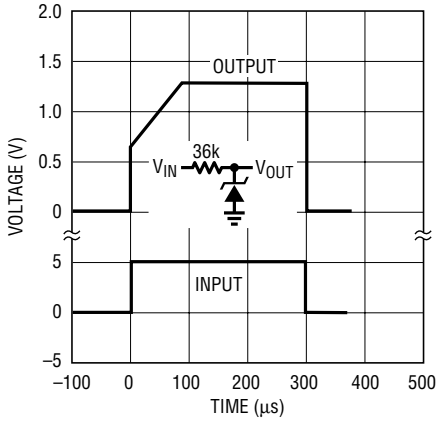

185/285/385 G06

### Filtered Output Noise



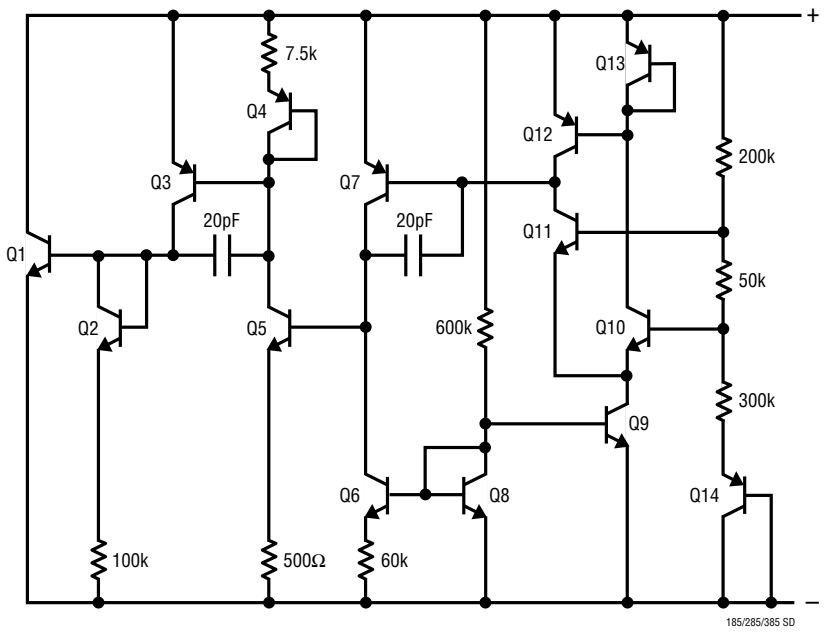

185/285/385 G07

### Response Time



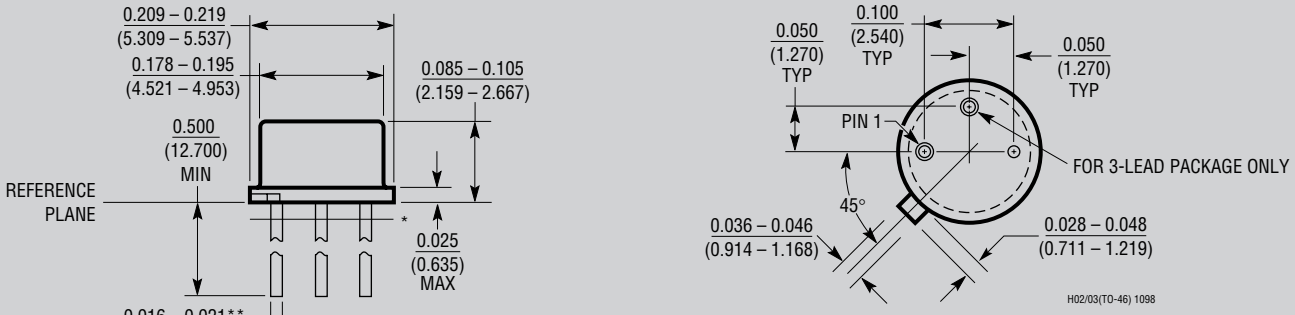

185/285/385 G08

## SCHEMATIC DIAGRAM



# PACKAGE DESCRIPTION

**H Package**
**2-Lead and 3-Lead TO-46 Metal Can**
(Reference LTC DWG # 05-08-1340)

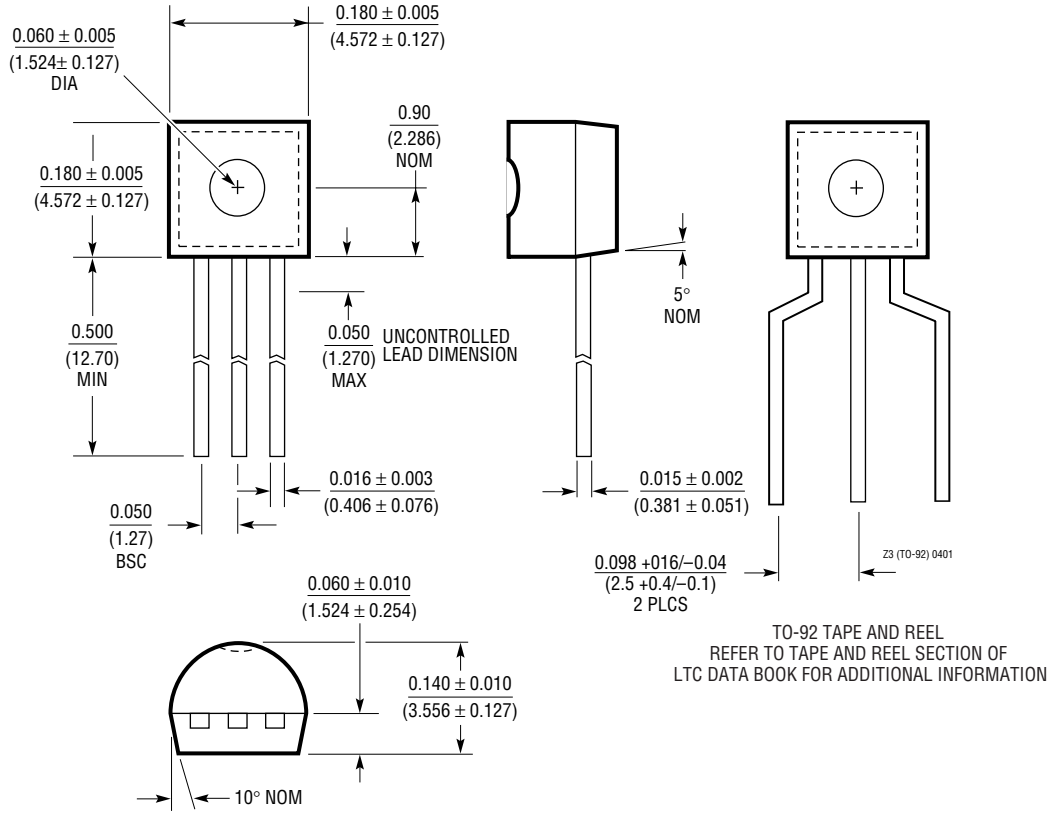



*LEAD DIAMETER IS UNCONTROLLED BETWEEN THE REFERENCE PLANE AND 0.045" BELOW THE REFERENCE PLANE

**FOR SOLDER DIP LEAD FINISH, LEAD DIAMETER IS 0.016 – 0.024 (0.406 – 0.610)

**OBSOLETE PACKAGE**

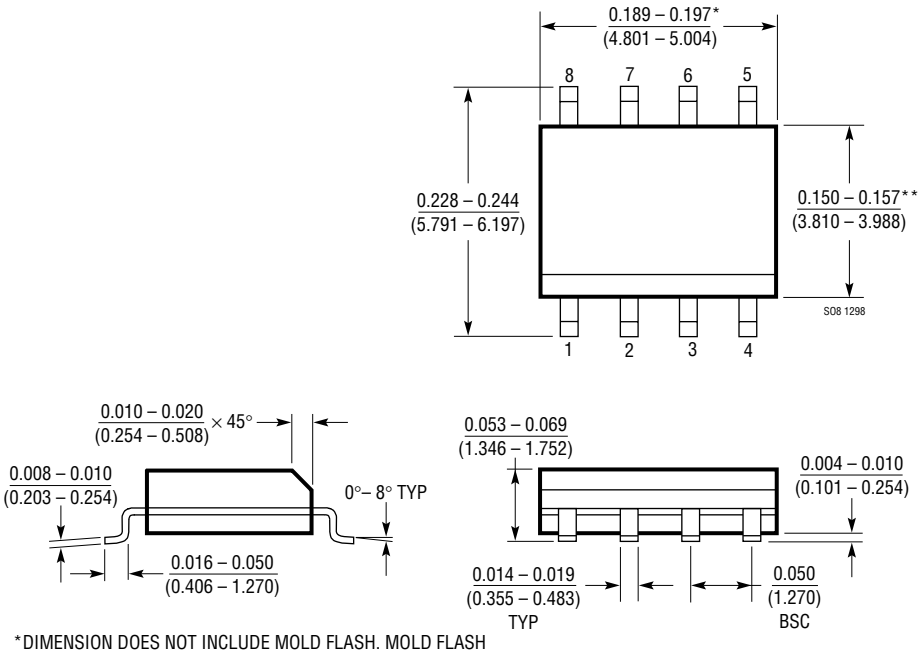
**Z Package**
**3-Lead Plastic TO-92 (Similar to TO-226)**
(Reference LTC DWG # 05-08-1410)




TO-92 TAPE AND REEL
REFER TO TAPE AND REEL SECTION OF
LTC DATA BOOK FOR ADDITIONAL INFORMATION

# PACKAGE DESCRIPTION

**S8 Package**
**8-Lead Plastic Small Outline (Narrow .150 Inch)**
(Reference LTC DWG # 05-08-1610)

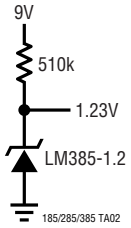



*DIMENSION DOES NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.006" (0.152mm) PER SIDE

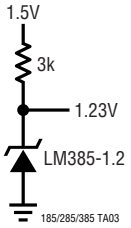
**DIMENSION DOES NOT INCLUDE INTERLEAD FLASH. INTERLEAD FLASH SHALL NOT EXCEED 0.010" (0.254mm) PER SIDE

## TYPICAL APPLICATIONS

**Micropower Reference for 9V Battery**




**1.2V Reference from 1.5V Battery**




## RELATED PARTS

| PART NUMBER | DESCRIPTION | COMMENTS |
|---|---|---|
| LT1004-1.2 | Micropower Shunt Reference | 0.3% Initial Accuracy |
| LT1034 | 1.2V Micropower Shunt Reference | 40ppm/°C Max Temperature Coefficient |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