# HSMP-3892
## PIN switch diode

### Description

Lead (PB) Free
RoHS 6 fully compliant

**Lifecycle status:** Active


### Features

The HSMP-389x family of PIN diodes have been optimized for switching applications where low resistance at low bias current, combined with low capacitance are required CT=0.3 pF, Rs@5 mA=2.5Ohms, Tau=200 nsec

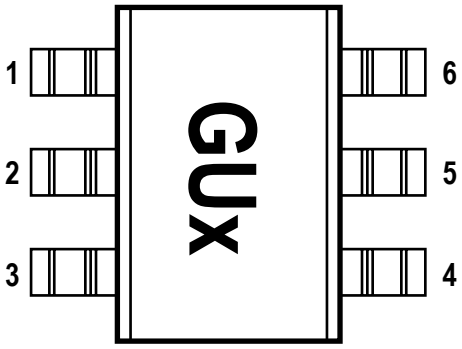
# HSMP-389x Series, HSMP-489x Series
Surface Mount RF PIN Switch Diodes

## Data Sheet

### Description/Applications

The HSMP-389x series is optimized for switching applications where low resistance at low current and low capacitance are required. The HSMP-489x series products feature ultra low parasitic inductance. These products are specifically designed for use at frequencies which are much higher than the upper limit for conventional PIN diodes.

### Pin Connections and Package Marking



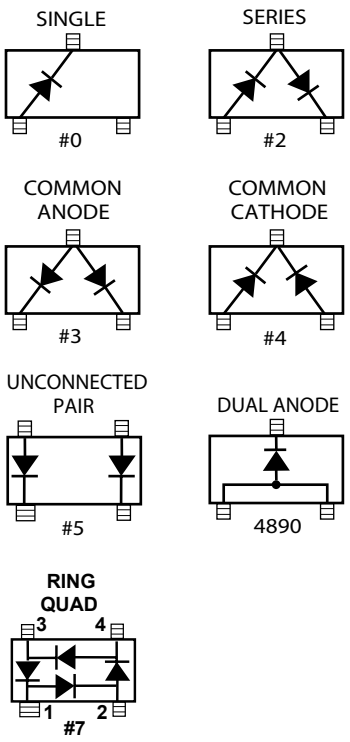

**Notes:**
1. Package marking provides orientation, identification, and date code.
2. See "Electrical Specifications" for appropriate package marking.

### Features

- Unique Configurations in Surface Mount Packages
  - Add Flexibility
  - Save Board Space
  - Reduce Cost
- Switching
  - Low Capacitance
  - Low Resistance at Low Current
- Low Failure in Time (FIT) Rate[1]
- Matched Diodes for Consistent Performance
- Better Thermal Conductivity for Higher Power Dissipation
- Lead-free Option Available

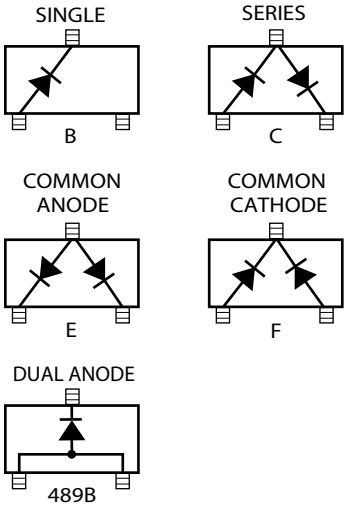
Note:
1. For more information see the Surface Mount PIN Reliability Data Sheet.

## Package Lead Code Identification, SOT-23/143 (Top View)

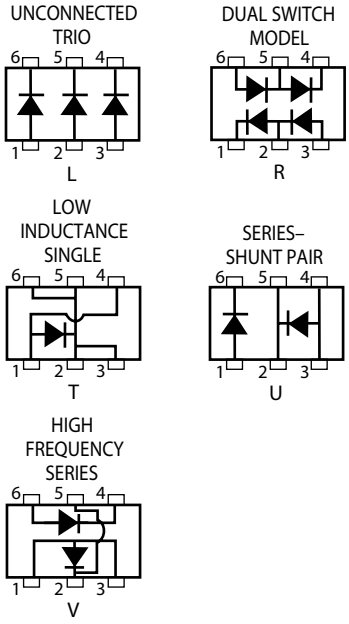



UNDER DEVELOPMENT

## Package Lead Code Identification, SOT-323 (Top View)




## Package Lead Code Identification, SOT-363 (Top View)




**Absolute Maximum Ratings[1] $T_C$ = +25°C**

| Symbol | Parameter | Unit | SOT-23/143 | SOT-323/363 |
|---|---|---|---|---|
| $I_f$ | Forward Current (1 µs Pulse) | Amp | 1 | 1 |
| $P_{IV}$ | Peak Inverse Voltage | V | 100 | 100 |
| $T_j$ | Junction Temperature | °C | 150 | 150 |
| $T_{stg}$ | Storage Temperature | °C | -65 to 150 | -65 to 150 |
| $\theta_{jc}$ | Thermal Resistance[2] | °C/W | 500 | 150 |

**Notes:**
1. Operation in excess of any one of these conditions may result in permanent damage to the device.
2. $T_C$ = +25°C, where $T_C$ is defined to be the temperature at the package pins where contact is made to the circuit board.

***ESD WARNING:***
**Handling Precautions Should Be Taken To Avoid Static Discharge.**

## Electrical Specifications, $T_C$ = 25°C, each diode

| Part Number HSMP- | Package Marking Code | Lead Code | Configuration | Minimum Breakdown Voltage $V_{BR}$ (V) | Maximum Series Resistance $R_S$ (ý) | Maximum Total Capacitance $C_T$ (pF) |
|---|---|---|---|---|---|---|
| 3890 | G0[1] | 0 | Single | 100 | 2.5 | 0.30 |
| 3892 | G2[1] | 2 | Series | | | |
| 3893 | G3[1] | 3 | Common Anode | | | |
| 3894 | G4[1] | 4 | Common Cathode | | | |
| 3895 | G5[1] | 5 | Unconnected Pair | | | |
| 389B | G0[2] | B | Single | | | |
| 389C | G2[2] | C | Series | | | |
| 389E | G3[2] | E | Common Anode | | | |
| 389F | G4[2] | F | Common Cathode | | | |
| 389L | GL[2] | L | Unconnected Trio | | | |
| 389R | S[2] | R | Dual Switch Mode | | | |
| 389T | Z[2] | T | Low Inductance Single | | | |
| 389U | GU[2] | U | Series-Shunt Pair | | | |
| 389V | GV[2] | V | High Frequency Series Pair | | | |
| Test Conditions | | | | $V_R = V_{BR}$ Measure $I_R$ 10 µA | $I_F$ = 5 mA f = 100 MHz | $V_R$ = 5 V f = 1 MHz |

**Notes:**
1. Package marking code is white.
2. Package is laser marked.

## High Frequency (Low Inductance, 500 MHz – 3 GHz) PIN Diodes

| Part Number HSMP- | Package Marking Code[1] | Configuration | Minimum Breakdown Voltage $V_{BR}$ (V) | Maximum Series Resistance $R_S$ (ý) | Typical Total Capacitance $C_T$ (pF) | Maximum Total Capacitance $C_T$ (pF) | Typical Total Inductance $L_T$ (nH) |
|---|---|---|---|---|---|---|---|
| 489x | GA | Dual Anode | 100 | 2.5 | 0.33 | 0.375 | 1.0 |
| Test Conditions | | | $V_R = V_{BR}$ Measure $I_R$ 10 µA | $I_F$ = 5 mA | f = 1 MHz $V_R$ = 5 V | $V_R$ = 5 V f = 1 MHz | f=500 MHz– 3 GHz |

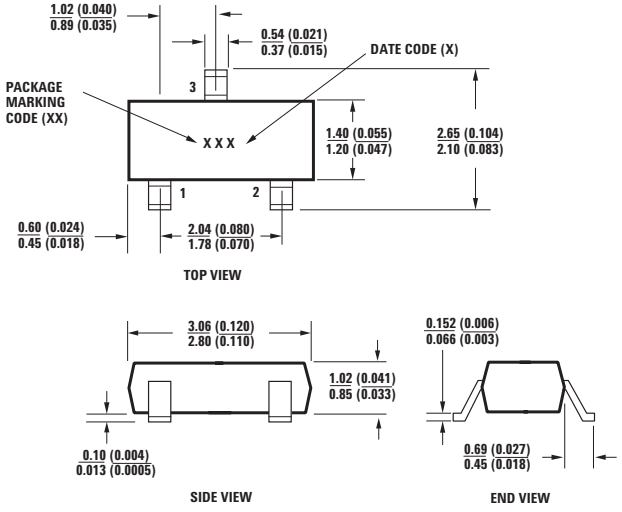
**Note:**
1. SOT-23 package marking code is white; SOT-323 is laser marked.

## Typical Parameters at $T_C$ = 25°C

| Part Number HSMP- | Series Resistance $R_S$ (ý) | Carrier Lifetime τ (ns) | Total Capacitance $C_T$ (pF) |
|---|---|---|---|
| 389x | 3.8 | 200 | 0.20 @ 5V |
| Test Conditions | $I_F$ = 1 mA f = 100 MHz | $I_F$ = 10 mA $I_R$ = 6 mA | |

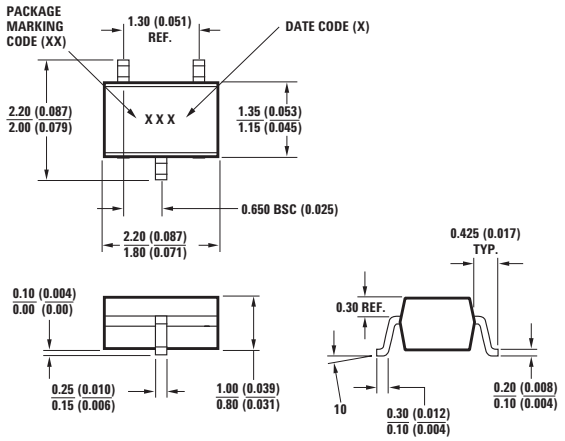
## Package Dimensions

### Outline 23 (SOT-23)



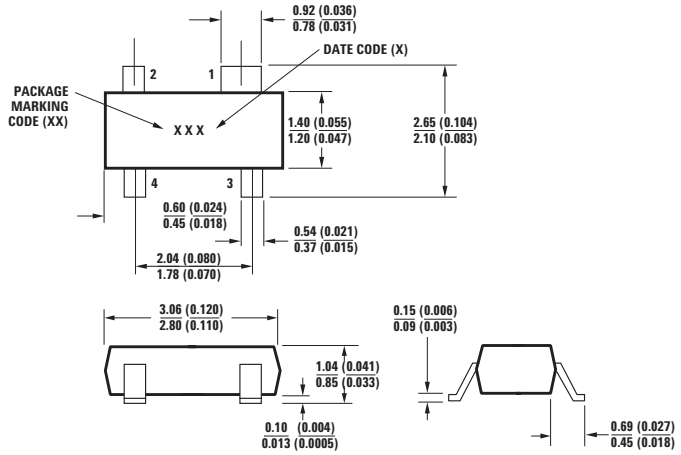

DIMENSIONS ARE IN MILLIMETERS (INCHES)

### Outline SOT-323 (SC-70 3 Lead)



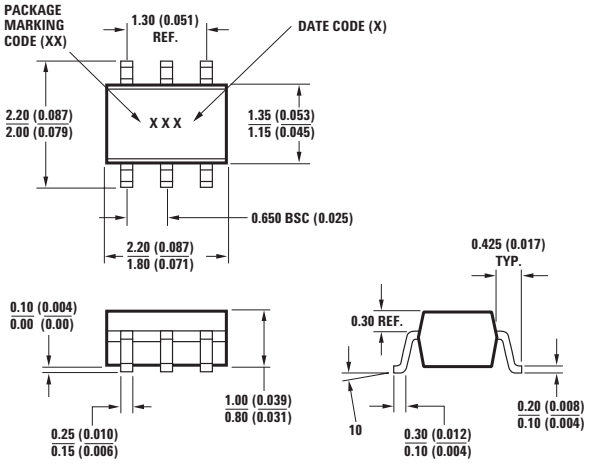

DIMENSIONS ARE IN MILLIMETERS (INCHES)

### Outline 143 (SOT-143)




DIMENSIONS ARE IN MILLIMETERS (INCHES)

### Outline SOT-363 (SC-70 6 Lead)




DIMENSIONS ARE IN MILLIMETERS (INCHES)

## Package Characteristics

| | |
|---|---|
| Lead Material | Copper (SOT-323/363); Alloy 42 (SOT-23/143) |
| Lead Finish | Tin 100% |
| Maximum Soldering Temperature | 260°C for 5 seconds |
| Minimum Lead Strength | 2 pounds pull |
| Typical Package Inductance | 2 nH |
| Typical Package Capacitance | 0.08 pF (opposite leads) |

## Ordering Information

Specify part number followed by option. For example:

HSMP - 389x - xxx

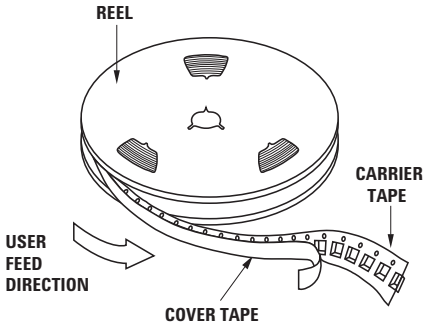
- xxx: Bulk or Tape and Reel Option
- 389x: Part Number; x = Lead Code
- HSMP: Surface Mount PIN

### Option Descriptions

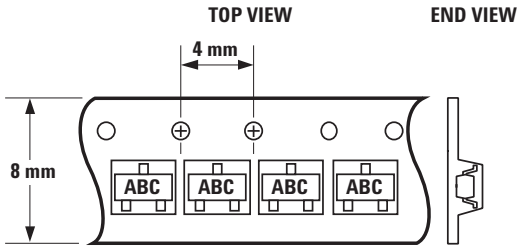
-BLKG = Bulk, 100 pcs. per antistatic bag
-TR1G = Tape and Reel, 3000 devices per 7" reel
-TR2G = Tape and Reel, 10,000 devices per 13" reel

Tape and Reeling conforms to Electronic Industries RS-481, "Taping of Surface Mounted Components for Automated Placement."

## Device Orientation

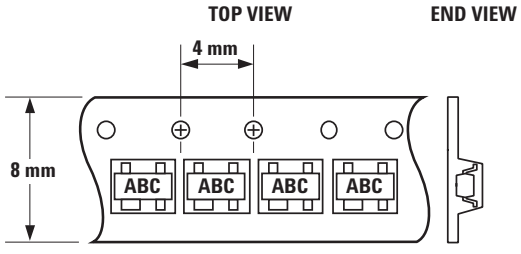



**For Outlines SOT-23, -323**



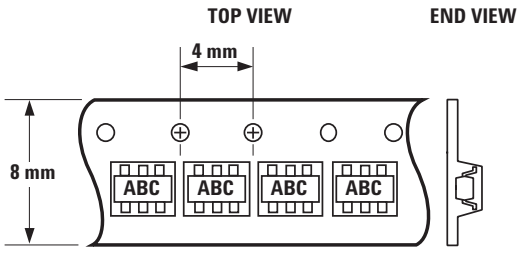

Note: "AB" represents package marking code.
"C" represents date code.

**For Outline SOT-143**




Note: "AB" represents package marking code.
"C" represents date code.

**For Outline SOT-363**




Note: "AB" represents package marking code.
"C" represents date code.