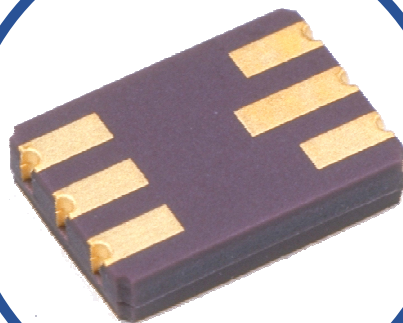


# DUAL NPN SWITCHING TRANSISTORS

## 2N2369ADCSM

- Dual Silicon Planer Epitaxial NPN Transistors
- Hermetic Ceramic Surface Mount Package
- Designed For High Speed Switching Applications
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise stated)

|                  |                                                    | Each Side     | Total Device |
|------------------|----------------------------------------------------|---------------|--------------|
| V <sub>CBO</sub> | Collector – Base Voltage                           | 40V           |              |
| V <sub>CEO</sub> | Collector – Emitter Voltage                        | 15V           |              |
| V <sub>CES</sub> | Collector – Emitter Voltage                        | 40V           |              |
| V <sub>EBO</sub> | Emitter – Base Voltage                             | 4.5V          |              |
| I <sub>C</sub>   | Continuous Collector Current                       | 200mA         |              |
| P <sub>D</sub>   | Total Power Dissipation at T <sub>A</sub> = 25°C   | 360mW         | 500mW        |
|                  | Derate Above 25°C                                  | 2.06mW/°C     | 2.86mW/°C    |
| P <sub>D</sub>   | Total Power Dissipation at T <sub>sp</sub> = 125°C | 360mW         | 500mW        |
|                  | Derate Above 125°C                                 | 4.80mW/°C     | 6.67mW/°C    |
| T <sub>J</sub>   | Junction Temperature Range                         | -65 to +200°C |              |
| T <sub>stg</sub> | Storage Temperature Range                          | -65 to +200°C |              |

### THERMAL PROPERTIES

| Symbols           | Parameters                                   | EachSide  | Total Device |
|-------------------|----------------------------------------------|-----------|--------------|
| R <sub>θJA</sub>  | Thermal Resistance, Junction To Ambient      | 486°C/W   | 350°C/W      |
| R <sub>θJSP</sub> | Thermal Resistance, Junction To Solder Point | 208.3°C/W | 150°C/W      |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

# DUAL NPN SWITCHING TRANSISTORS 2N2369ADCSM

## ELECTRICAL CHARACTERISTICS (Each Side , $T_A = 25^\circ\text{C}$ unless otherwise stated)

| Symbols             | Parameters                           | Test Conditions                                                             | Min. | Typ | Max. | Units         |
|---------------------|--------------------------------------|-----------------------------------------------------------------------------|------|-----|------|---------------|
| $V_{(BR)CEO}^{(1)}$ | Collector-Emitter Breakdown Voltage  | $I_C = 10\text{mA}$ $I_B = 0$                                               | 15   |     |      | V             |
| $I_{CES}$           | Collector-Cut-Off Current            | $V_{CE} = 20\text{V}$ $I_B = 0$                                             |      |     | 0.4  | $\mu\text{A}$ |
| $I_{CBO}$           | Collector-Cut-Off Current            | $V_{CB} = 40\text{V}$ $I_E = 0$                                             |      |     | 10   |               |
|                     |                                      | $V_{CB} = 32\text{V}$ $I_E = 0$                                             |      |     | 0.2  |               |
|                     |                                      | $V_{CB} = 20\text{V}$ $I_E = 0$<br>$T_A = 150^\circ\text{C}^{(2)}$          |      |     | 30   |               |
| $I_{EBO}$           | Emitter-Cut-Off Current              | $V_{EB} = 4.5\text{V}$ $I_C = 0$                                            |      |     | 10   |               |
|                     |                                      | $V_{EB} = 4\text{V}$ $I_C = 0$                                              |      |     | 0.25 |               |
| $I_{CEX}$           | Collector Cut-Off Current            | $V_{CE} = 10\text{V}$ $V_{BE} = -0.25\text{V}$<br>$T_A = 125^\circ\text{C}$ |      |     | 30   |               |
| $h_{FE}^{(1)}$      | Forward-current transfer ratio       | $I_C = 10\text{mA}$ $V_{CE} = 0.35\text{V}$                                 | 40   |     | 120  |               |
|                     |                                      | $I_C = 30\text{mA}$ $V_{CE} = 0.4\text{V}$                                  | 30   |     | 120  |               |
|                     |                                      | $I_C = 10\text{mA}$ $V_{CE} = 1.0\text{V}$                                  | 40   |     | 120  |               |
|                     |                                      | $T_A = -55^\circ\text{C}$                                                   | 20   |     |      |               |
| $V_{CE(sat)}^{(1)}$ | Collector-Emitter Saturation Voltage | $I_C = 10\text{mA}$ $I_B = 1.0\text{mA}$<br>$T_A = 125^\circ\text{C}$       |      |     | 0.2  | V             |
|                     |                                      | $T_A = 125^\circ\text{C}$                                                   |      |     | 0.3  |               |
|                     |                                      | $I_C = 30\text{mA}$ $I_B = 3\text{mA}$                                      |      |     | 0.25 |               |
| $V_{BE(sat)}^{(1)}$ | Base-Emitter Saturation Voltage      | $I_C = 100\text{mA}$ $I_B = 10\text{mA}$                                    |      |     | 0.45 |               |
|                     |                                      | $I_C = 10\text{mA}$ $I_B = 1.0\text{mA}$                                    | 0.7  |     | 0.85 |               |
|                     |                                      | $T_A = 125^\circ\text{C}$                                                   | 0.59 |     |      |               |
|                     |                                      | $T_A = -55^\circ\text{C}$                                                   |      |     | 1.02 |               |
|                     |                                      | $I_C = 30\text{mA}$ $I_B = 3\text{mA}$                                      |      |     | 0.9  |               |
|                     |                                      | $I_C = 100\text{mA}$ $I_B = 10\text{mA}$                                    | 0.8  |     | 1.2  |               |

### Notes

(1) Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$

(2) By design only, not a production test.

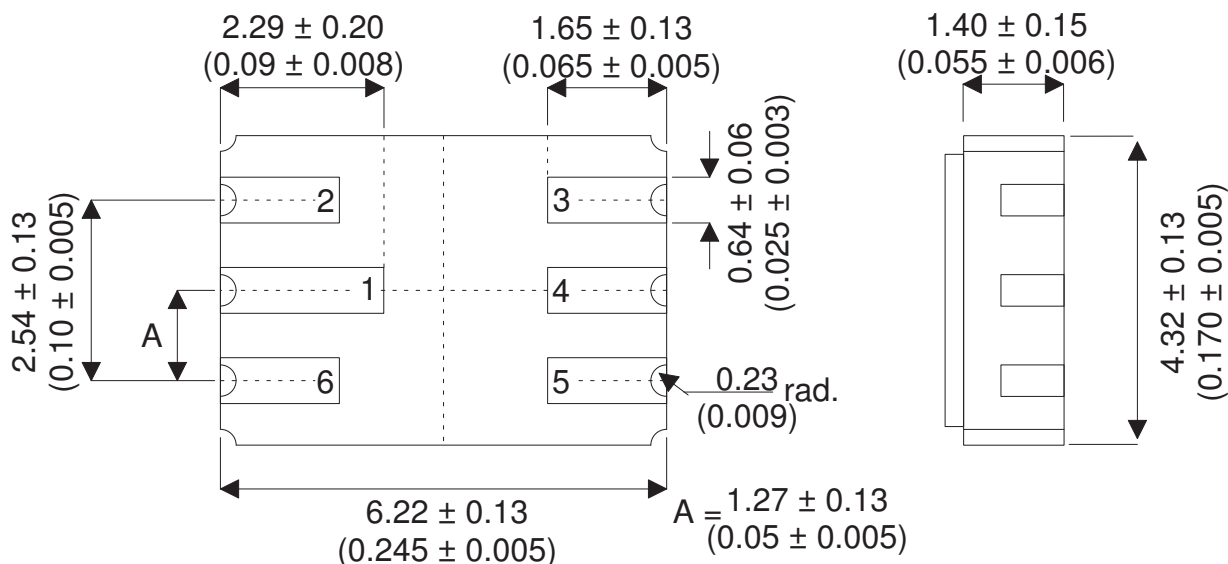
# DUAL NPN SWITCHING TRANSISTORS 2N2369ADCSM

## DYNAMIC CHARACTERISTICS (Each Side, $T_A = 25^\circ\text{C}$ unless otherwise stated)

| Symbols    | Parameters                                  | Test Conditions                                                                            | Min. | Typ | Max. | Units |
|------------|---------------------------------------------|--------------------------------------------------------------------------------------------|------|-----|------|-------|
| $ h_{fe} $ | Small signal forward-current transfer ratio | $I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$<br>$f = 100\text{MHz}$                           | 5    |     | 10   |       |
| $C_{obo}$  | Output Capacitance                          | $V_{CB} = 5\text{V}$ $I_E = 0$<br>$f = 1.0\text{MHz}$                                      |      |     | 4    | pF    |
| $C_{ibo}$  | Input Capacitance                           | $V_{EB} = 0.5\text{V}$ $I_C = 0$<br>$f = 1.0\text{MHz}$                                    |      |     | 5    |       |
| $t_s$      | Storage Time                                | $I_C = 10\text{mA}$ $I_{B1} = I_{B2} = 10\text{mA}$                                        |      |     | 13   | ns    |
| $t_{on}$   | Turn-On Time                                | $I_C = 10\text{mA}$ $V_{CC} = 3\text{V}$<br>$I_{B1} = 3\text{mA}$                          |      |     | 12   |       |
| $t_{off}$  | Turn-Off Time                               | $I_C = 10\text{mA}$ $V_{CC} = 3\text{V}$<br>$I_{B1} = 3\text{mA}$ $I_{B2} = -1.5\text{mA}$ |      |     | 18   |       |

## MECHANICAL DATA

Dimensions in mm (inches)



## LCC2 (MO-041BB)

### Underside View

Pad 1 – Collector 1      Pad 4 – Collector 2  
Pad 2 – Base 1      Pad 5 – Emitter 2  
Pad 3 – Base 2      Pad 6 – Emitter 1

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