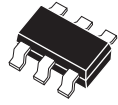


CMXT3946

**SURFACE MOUNT  
SUPERmini™  
DUAL COMPLEMENTARY  
SILICON TRANSISTOR**

**SUPERmini™**



**SOT-26 CASE**

**Central™**  
**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMXT3946 type is a dual complementary silicon transistor manufactured by the epitaxial planar process, epoxy molded in a SUPERmini™ surface mount package, designed for small signal general purpose and switching applications.

**MARKING CODE: X46**

**MAXIMUM RATINGS: (T<sub>A</sub>=25°C)**

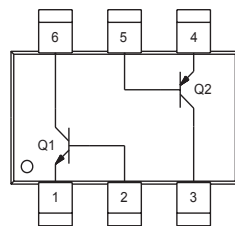
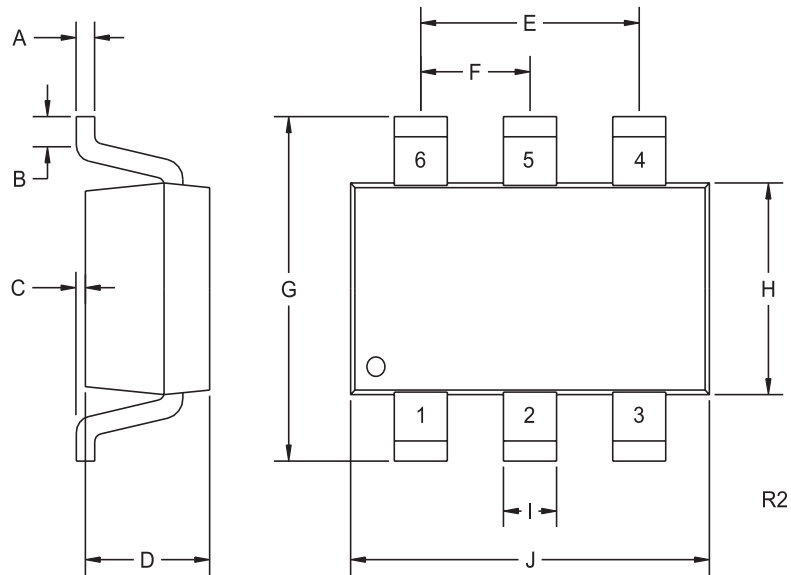
|                           | SYMBOL                            | NPN         | PNP | UNITS |
|---------------------------|-----------------------------------|-------------|-----|-------|
| Collector-Base Voltage    | V <sub>CBO</sub>                  | 60          | 40  | V     |
| Collector-Emitter Voltage | V <sub>CEO</sub>                  | 40          | 40  | V     |
| Emitter-Base Voltage      | V <sub>EBO</sub>                  | 6.0         | 5.0 | V     |
| Collector Current         | I <sub>C</sub>                    | 200         |     | mA    |
| Power Dissipation         | P <sub>D</sub>                    | 350         |     | mW    |
| Operating and Storage     |                                   |             |     |       |
| Junction Temperature      | T <sub>J</sub> , T <sub>stg</sub> | -65 to +150 |     | °C    |
| Thermal Resistance        | Θ <sub>JA</sub>                   | 357         |     | °C/W  |

**ELECTRICAL CHARACTERISTICS PER TRANSISTOR: (T<sub>A</sub>=25°C unless otherwise noted)**

| SYMBOL                | TEST CONDITIONS                                                                            | NPN  |      | PNP  |      | UNITS             |
|-----------------------|--------------------------------------------------------------------------------------------|------|------|------|------|-------------------|
|                       |                                                                                            | MIN  | MAX  | MIN  | MAX  |                   |
| I <sub>CEV</sub>      | V <sub>CE</sub> =30V, V <sub>EB</sub> =3.0V                                                |      | 50   |      | 50   | nA                |
| BV <sub>CBO</sub>     | I <sub>C</sub> =10μA                                                                       | 60   |      | 40   |      | V                 |
| BV <sub>CEO</sub>     | I <sub>C</sub> =1.0mA                                                                      | 40   |      | 40   |      | V                 |
| BV <sub>EBO</sub>     | I <sub>E</sub> =10μA                                                                       | 6.0  |      | 5.0  |      | V                 |
| V <sub>CE</sub> (SAT) | I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA                                                |      | 0.20 |      | 0.25 | V                 |
| V <sub>CE</sub> (SAT) | I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA                                                |      | 0.30 |      | 0.40 | V                 |
| V <sub>BE</sub> (SAT) | I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA                                                | 0.65 | 0.85 | 0.65 | 0.85 | V                 |
| V <sub>BE</sub> (SAT) | I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA                                                |      | 0.95 |      | 0.95 | V                 |
| h <sub>FE</sub>       | V <sub>CE</sub> =1.0V, I <sub>C</sub> =0.1mA                                               | 40   |      | 60   |      |                   |
| h <sub>FE</sub>       | V <sub>CE</sub> =1.0V, I <sub>C</sub> =1.0mA                                               | 70   |      | 80   |      |                   |
| h <sub>FE</sub>       | V <sub>CE</sub> =1.0V, I <sub>C</sub> =10mA                                                | 100  | 300  | 100  | 300  |                   |
| h <sub>FE</sub>       | V <sub>CE</sub> =1.0V, I <sub>C</sub> =50mA                                                | 60   |      | 60   |      |                   |
| h <sub>FE</sub>       | V <sub>CE</sub> =1.0V, I <sub>C</sub> =100mA                                               | 30   |      | 30   |      |                   |
| f <sub>T</sub>        | V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz                                       | 300  |      | 250  |      | MHz               |
| C <sub>ob</sub>       | V <sub>CB</sub> =5.0V, I <sub>E</sub> =0, f=1.0MHz                                         |      | 4.0  |      | 4.5  | pF                |
| C <sub>ib</sub>       | V <sub>BE</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz                                         |      | 8.0  |      | 10   | pF                |
| h <sub>ie</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA, f=1.0kHz                                      | 1.0  | 10   | 2.0  | 12   | kΩ                |
| h <sub>re</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA, f=1.0kHz                                      | 0.5  | 8.0  | 0.1  | 10   | x10 <sup>-4</sup> |
| h <sub>fe</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA, f=1.0kHz                                      | 100  | 400  | 100  | 400  |                   |
| h <sub>oe</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA, f=1.0kHz                                      | 1.0  | 40   | 3.0  | 60   | μmhos             |
| NF                    | V <sub>CE</sub> =5.0V, I <sub>C</sub> =100μA, R <sub>S</sub> =1.0kΩ<br>f=10Hz to 15.7kHz   |      | 5.0  |      | 4.0  | dB                |
| t <sub>d</sub>        | V <sub>CC</sub> =3.0V, V <sub>BE</sub> =0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1.0mA |      | 35   |      | 35   | ns                |
| t <sub>r</sub>        | V <sub>CC</sub> =3.0V, V <sub>BE</sub> =0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1.0mA |      | 35   |      | 35   | ns                |
| t <sub>s</sub>        | V <sub>CC</sub> =3.0V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1.0mA       |      | 200  |      | 225  | ns                |
| t <sub>f</sub>        | V <sub>CC</sub> =3.0V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1.0mA       |      | 50   |      | 75   | ns                |

R2 (06-August 2003)

**SOT-26 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

- 1) EMITTER Q1
- 2) BASE Q1
- 3) COLLECTOR Q2
- 4) EMITTER Q2
- 5) BASE Q2
- 6) COLLECTOR Q1

**MARKING CODE: X46**

| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | INCHES |       | MILLIMETERS |      |
|            | MIN    | MAX   | MIN         | MAX  |
| A          | 0.004  | 0.007 | 0.11        | 0.19 |
| B          | 0.016  | -     | 0.40        | -    |
| C          | -      | 0.004 | -           | 0.10 |
| D          | 0.039  | 0.047 | 1.00        | 1.20 |
| E          | 0.074  | 0.075 | 1.88        | 1.92 |
| F          | 0.037  | 0.038 | 0.93        | 0.97 |
| G          | 0.102  | 0.118 | 2.60        | 3.00 |
| H          | 0.059  | 0.067 | 1.50        | 1.70 |
| I          | 0.016  |       | 0.41        |      |
| J          | 0.110  | 0.118 | 2.80        | 3.00 |

SOT-26 (REV: R2)

R2 (06-August 2003)