

## Excellent Integrated System Limited

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[Central Semiconductor Corp](#)  
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For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)

**CMPT3820**

**SURFACE MOUNT  
VERY LOW  $V_{CE(SAT)}$   
NPN SILICON TRANSISTOR**



**SOT-23 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMPT3820 is a very low  $V_{CE(SAT)}$  NPN Transistor, designed for applications where size and efficiency are prime requirements. Packaged in an industry standard SOT-23, this device brings updated electrical specifications and characteristics suitable for the most demanding designs.

**MARKING CODE: 38C**

**APPLICATIONS:**

- DC/DC Converters
- Voltage Clamping
- Protection Circuits
- Battery powered Cell Phones, Pagers, Digital Cameras, PDAs, Laptops, etc.

**MAXIMUM RATINGS:** ( $T_A=25^{\circ}\text{C}$ )

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Peak Collector Current  
Continuous Base Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

**FEATURES:**

- Device is **Halogen Free** by design
- High Current ( $I_C=1.0\text{A}$ )
- $V_{CE(SAT)}=0.28\text{V MAX @ } I_C=1.0\text{A}$
- SOT-23 surface mount package
- Complementary PNP device **CMPT7820**

| SYMBOL         |             | UNITS                |
|----------------|-------------|----------------------|
| $V_{CBO}$      | 80          | V                    |
| $V_{CEO}$      | 60          | V                    |
| $V_{EBO}$      | 5.0         | V                    |
| $I_C$          | 1.0         | A                    |
| $I_{CM}$       | 2.0         | A                    |
| $I_B$          | 300         | mA                   |
| $P_D$          | 350         | mW                   |
| $T_J, T_{stg}$ | -65 to +150 | $^{\circ}\text{C}$   |
| $\Theta_{JA}$  | 357         | $^{\circ}\text{C/W}$ |

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

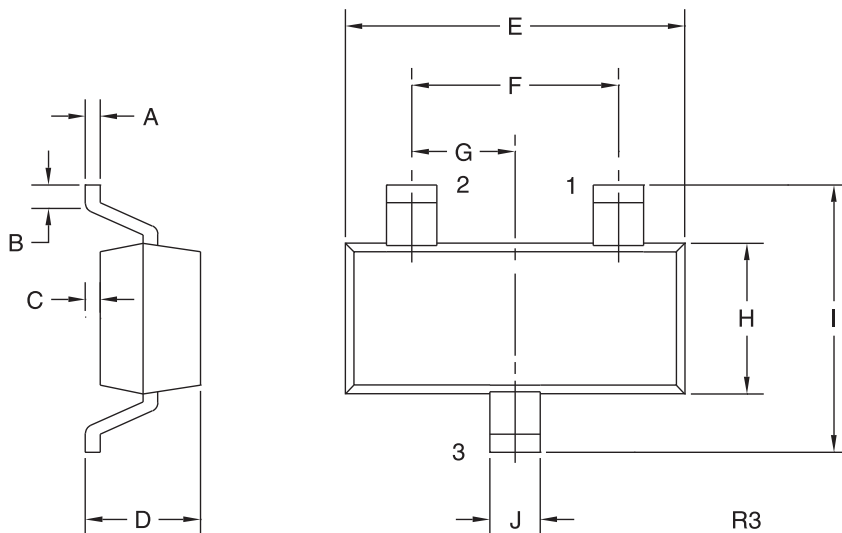
| SYMBOL        | TEST CONDITIONS                             | MIN | MAX   | UNITS |
|---------------|---------------------------------------------|-----|-------|-------|
| $I_{CBO}$     | $V_{CB}=60\text{V}$                         |     | 100   | nA    |
| $I_{EBO}$     | $V_{EB}=5.0\text{V}$                        |     | 100   | nA    |
| $BV_{CBO}$    | $I_C=100\mu\text{A}$                        | 80  |       | V     |
| $BV_{CEO}$    | $I_C=10\text{mA}$                           | 60  |       | V     |
| $BV_{EBO}$    | $I_E=100\mu\text{A}$                        | 5.0 |       | V     |
| $V_{CE(SAT)}$ | $I_C=100\text{mA}, I_B=1.0\text{mA}$        |     | 0.115 | V     |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$         |     | 0.15  | V     |
| $V_{CE(SAT)}$ | $I_C=1.0\text{A}, I_B=100\text{mA}$         |     | 0.28  | V     |
| $V_{BE(SAT)}$ | $I_C=1.0\text{A}, I_B=50\text{mA}$          |     | 1.1   | V     |
| $V_{BE(ON)}$  | $V_{CE}=5.0\text{V}, I_C=1.0\text{A}$       |     | 0.9   | V     |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$      | 200 |       |       |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=500\text{mA}$      | 200 |       |       |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{A}$       | 100 |       |       |
| $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}$        | 150 |       | MHz   |
| $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$ |     | 10    | pF    |

R1 (1-February 2010)

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**SOT-23 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

- 1) Base
- 2) Emitter
- 3) Collector

**MARKING CODE: 38C**

| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | INCHES |       | MILLIMETERS |      |
|            | MIN    | MAX   | MIN         | MAX  |
| A          | 0.003  | 0.007 | 0.08        | 0.18 |
| B          | 0.006  | -     | 0.15        | -    |
| C          | -      | 0.005 | -           | 0.13 |
| D          | 0.035  | 0.043 | 0.89        | 1.09 |
| E          | 0.110  | 0.120 | 2.80        | 3.05 |
| F          | 0.075  |       | 1.90        |      |
| G          | 0.037  |       | 0.95        |      |
| H          | 0.047  | 0.055 | 1.19        | 1.40 |
| I          | 0.083  | 0.098 | 2.10        | 2.49 |
| J          | 0.014  | 0.020 | 0.35        | 0.50 |

SOT-23 (REV: R3)

R1 (1-February 2010)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### CONTACT US

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