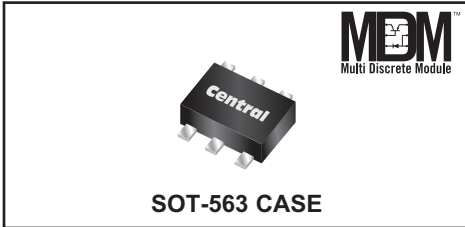


**CMLM0705**  
**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**PNP SWITCHING TRANSISTOR AND**  
**LOW V<sub>F</sub> SCHOTTKY DIODE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0705 is a Multi Discrete Module™ consisting of a single PNP transistor and a Schottky diode packaged in a space saving SOT-563 case. This device is designed for small signal general purpose applications where size and operational efficiency are prime requirements.

- Combination: Small Signal Switching PNP Transistor and Low V<sub>F</sub> Schottky Diode.
- Complementary Device: **CMLM2205**

**MARKING CODE: C75**

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

Power Dissipation  
 Operating and Storage Junction Temperature  
 Thermal Resistance

**MAXIMUM RATINGS - Q1: (T<sub>A</sub>=25°C)**

Collector-Base Voltage  
 Collector-Emitter Voltage  
 Emitter-Base Voltage  
 Continuous Collector Current

**MAXIMUM RATINGS - D1: (T<sub>A</sub>=25°C)**

Peak Repetitive Reverse Voltage  
 Continuous Forward Current  
 Peak Repetitive Forward Current, tp≤1.0ms  
 Peak Forward Surge Current, tp=8.0ms

| SYMBOL                            |             | UNITS |
|-----------------------------------|-------------|-------|
| P <sub>D</sub>                    | 350         | mW    |
| T <sub>J</sub> , T <sub>stg</sub> | -65 to +150 | °C    |
| θ <sub>JA</sub>                   | 357         | °C/W  |

| SYMBOL           |     | UNITS |
|------------------|-----|-------|
| V <sub>CBO</sub> | 90  | V     |
| V <sub>CEO</sub> | 60  | V     |
| V <sub>EBO</sub> | 6.0 | V     |
| I <sub>C</sub>   | 600 | mA    |

| SYMBOL           |     | UNITS |
|------------------|-----|-------|
| V <sub>RRM</sub> | 40  | V     |
| I <sub>F</sub>   | 500 | mA    |
| I <sub>FRM</sub> | 3.5 | A     |
| I <sub>FSM</sub> | 10  | A     |

**ELECTRICAL CHARACTERISTICS - Q1: (T<sub>A</sub>=25°C unless otherwise noted)**

| SYMBOL               | TEST CONDITIONS                             | MIN | TYP   | MAX | UNITS |
|----------------------|---|-----|-------|-----|-------|
| I <sub>CBO</sub>     | V <sub>CB</sub> =50V                        |     |       | 10  | nA    |
| I <sub>CBO</sub>     | V <sub>CB</sub> =50V, T <sub>A</sub> =125°C |     |       | 10  | μA    |
| I <sub>CEV</sub>     | V <sub>CE</sub> =30V, V <sub>BE</sub> =0.5V |     |       | 50  | nA    |
| BV <sub>CBO</sub>    | I <sub>C</sub> =10μA                        | 90  | 115   |     | V     |
| BV <sub>CEO</sub>    | I <sub>C</sub> =10mA                        | 60  |       |     | V     |
| BV <sub>EBO</sub>    | I <sub>E</sub> =10μA                        | 5.0 |       |     | V     |
| V <sub>CE(SAT)</sub> | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA |     | 0.113 | 0.2 | V     |
| V <sub>CE(SAT)</sub> | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA |     | 0.280 | 0.7 | V     |
| V <sub>BE(SAT)</sub> | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA |     |       | 1.3 | V     |
| V <sub>BE(SAT)</sub> | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA |     |       | 2.6 | V     |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =0.1mA | 100 | 205   |     |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA | 100 |       |     |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =10mA  | 100 |       |     |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =150mA | 100 |       | 300 |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =500mA | 75  | 110   |     |       |

R3 (1-July 2015)

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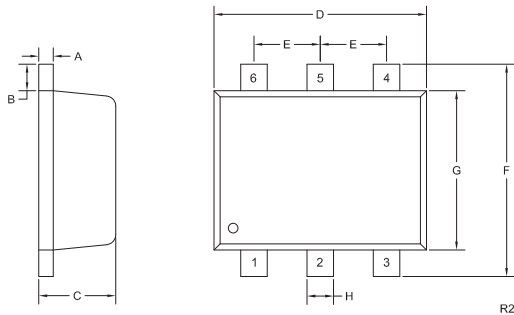
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:**

| SYMBOL           | TEST CONDITIONS   | MIN | MAX | UNITS |
|------------------|---|-----|-----|-------|
| f <sub>T</sub>   | V <sub>CE</sub> =20V, I <sub>C</sub> =50mA, f=100MHz                                      | 200 |     | MHz   |
| C <sub>ob</sub>  | V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1.0MHz   |     | 8.0 | pF    |
| C <sub>ib</sub>  | V <sub>BE</sub> =2.0V, I <sub>C</sub> =0, f=1.0MHz  |     | 30  | pF    |
| t <sub>on</sub>  | V <sub>CC</sub> =30V, V <sub>BE</sub> =0.5V, I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA |     | 45  | ns    |
| t <sub>d</sub>   | V <sub>CC</sub> =30V, V <sub>BE</sub> =0.5V, I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA |     | 10  | ns    |
| t <sub>r</sub>   | V <sub>CC</sub> =30V, V <sub>BE</sub> =0.5V, I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA |     | 40  | ns    |
| t <sub>off</sub> | V <sub>CC</sub> =6.0V, I <sub>C</sub> =150mA, I <sub>B1</sub> =I <sub>B2</sub> =15mA      |     | 100 | ns    |
| t <sub>s</sub>   | V <sub>CC</sub> =6.0V, I <sub>C</sub> =150mA, I <sub>B1</sub> =I <sub>B2</sub> =15mA      |     | 80  | ns    |
| t <sub>f</sub>   | V <sub>CC</sub> =6.0V, I <sub>C</sub> =150mA, I <sub>B1</sub> =I <sub>B2</sub> =15mA      |     | 30  | ns    |

**ELECTRICAL CHARACTERISTICS - D1: (T<sub>A</sub>=25°C)**

|                 |                                |    |      |    |
|-----------------|--------------------------------|----|------|----|
| I <sub>R</sub>  | V <sub>R</sub> =10V            |    | 20   | μA |
| I <sub>R</sub>  | V <sub>R</sub> =30V            |    | 100  | μA |
| BV <sub>R</sub> | I <sub>R</sub> =500μA          | 40 |      | V  |
| V <sub>F</sub>  | I <sub>F</sub> =100μA          |    | 0.13 | V  |
| V <sub>F</sub>  | I <sub>F</sub> =1.0mA          |    | 0.21 | V  |
| V <sub>F</sub>  | I <sub>F</sub> =10mA           |    | 0.27 | V  |
| V <sub>F</sub>  | I <sub>F</sub> =100mA          |    | 0.35 | V  |
| V <sub>F</sub>  | I <sub>F</sub> =500mA          |    | 0.47 | V  |
| C <sub>J</sub>  | V <sub>R</sub> =1.0V, f=1.0MHz |    | 50   | pF |

**SOT-563 CASE - MECHANICAL OUTLINE**



| SYMBOL | DIMENSIONS |       |             |      |
|--------|------------|-------|-------------|------|
|        | INCHES     |       | MILLIMETERS |      |
|        | MIN        | MAX   | MIN         | MAX  |
| A      | 0.0027     | 0.007 | 0.07        | 0.18 |
| B      | 0.008      |       | 0.20        |      |
| C      | 0.017      | 0.024 | 0.45        | 0.60 |
| D      | 0.059      | 0.067 | 1.50        | 1.70 |
| E      | 0.020      |       | 0.50        |      |
| F      | 0.059      | 0.067 | 1.50        | 1.70 |
| G      | 0.043      | 0.051 | 1.10        | 1.30 |
| H      | 0.006      | 0.012 | 0.15        | 0.30 |

SOT-563 (REV: R2)

**LEAD CODE:**

- 1) Emitter Q1
- 2) Base Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Collector Q1

**MARKING CODE: C75**

R3 (1-July 2015)

## 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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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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