

**CMLM0205**  
**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**N-CHANNEL MOSFET AND**  
**LOW  $V_F$  SCHOTTKY DIODE**



**SOT-563 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0205 is a Multi Discrete Module™ consisting of a single N-Channel MOSFET and a low  $V_F$  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: N-Channel MOSFET and Low  $V_F$  Schottky Diode.

**MARKING CODE: C25**

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

|  |  |
|--|--|
| Power Dissipation                          |  |
| Operating and Storage Junction Temperature |  |
| Thermal Resistance                         |  |

| SYMBOL         |             | UNITS              |
|----------------|-------------|--------------------|
| $P_D$          | 350         | mW                 |
| $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$   |
| $\theta_{JA}$  | 357         | $^\circ\text{C/W}$ |

**MAXIMUM RATINGS - Q1: ( $T_A=25^\circ\text{C}$ )**

|  |
|--|
| Drain-Source Voltage                   |
| Drain-Gate Voltage                     |
| Gate-Source Voltage                    |
| Continuous Drain Current               |
| Continuous Source Current (Body Diode) |
| Maximum Pulsed Drain Current           |
| Maximum Pulsed Source Current          |

| SYMBOL   |     | UNITS |
|----------|-----|-------|
| $V_{DS}$ | 60  | V     |
| $V_{DG}$ | 60  | V     |
| $V_{GS}$ | 40  | V     |
| $I_D$    | 280 | mA    |
| $I_S$    | 280 | mA    |
| $I_{DM}$ | 1.5 | A     |
| $I_{SM}$ | 1.5 | A     |

**MAXIMUM RATINGS - D1: ( $T_A=25^\circ\text{C}$ )**

|  |
|--|
| Peak Repetitive Reverse Voltage                          |
| Continuous Forward Current                               |
| Peak Repetitive Forward Current, $t_p \leq 1.0\text{ms}$ |
| Peak Forward Surge Current, $t_p = 8.0\text{ms}$         |

| SYMBOL    |     | UNITS |
|-----------|-----|-------|
| $V_{RRM}$ | 40  | V     |
| $I_F$     | 500 | mA    |
| $I_{FRM}$ | 3.5 | A     |
| $I_{FSM}$ | 10  | A     |

**ELECTRICAL CHARACTERISTICS - Q1: ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

| SYMBOL               | TEST CONDITIONS  | MIN | MAX  | UNITS         |
|----------------------|--|-----|------|---------------|
| $I_{GSSF}, I_{GSSR}$ | $V_{GS}=20\text{V}, V_{DS}=0$                                |     | 100  | nA            |
| $I_{DSS}$            | $V_{DS}=60\text{V}, V_{GS}=0$                                |     | 1.0  | $\mu\text{A}$ |
| $I_{DSS}$            | $V_{DS}=60\text{V}, V_{GS}=0, T_J=125^\circ\text{C}$         |     | 500  | $\mu\text{A}$ |
| $I_{D(ON)}$          | $V_{GS}=10\text{V}, V_{DS}=10\text{V}$                       | 500 |      | mA            |
| $BV_{DSS}$           | $V_{GS}=0, I_D=10\mu\text{A}$                                | 60  |      | V             |
| $V_{GS(th)}$         | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$                          | 1.0 | 2.5  | V             |
| $V_{DS(ON)}$         | $V_{GS}=10\text{V}, I_D=500\text{mA}$                        |     | 1.0  | V             |
| $V_{DS(ON)}$         | $V_{GS}=5.0\text{V}, I_D=50\text{mA}$                        |     | 0.15 | V             |
| $V_{SD}$             | $V_{GS}=0, I_S=400\text{mA}$                                 |     | 1.2  | V             |
| $r_{DS(ON)}$         | $V_{GS}=10\text{V}, I_D=500\text{mA}$                        |     | 2.0  | $\Omega$      |
| $r_{DS(ON)}$         | $V_{GS}=10\text{V}, I_D=500\text{mA}, T_J=125^\circ\text{C}$ |     | 3.5  | $\Omega$      |

R3 (15-June 2015)

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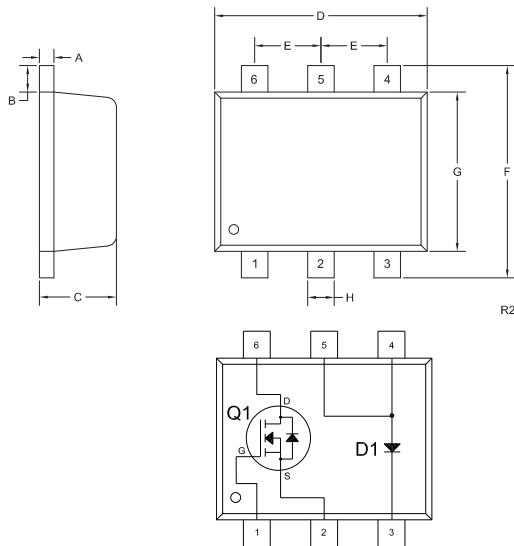
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:**

| SYMBOL             | TEST CONDITIONS  | MIN | MAX | UNITS    |
|--------------------|--|-----|-----|----------|
| $r_{DS(ON)}$       | $V_{GS}=5.0V, I_D=50mA$  |     | 3.0 | $\Omega$ |
| $r_{DS(ON)}$       | $V_{GS}=5.0V, I_D=50mA, T_J=125^\circ C$                             |     | 5.0 | $\Omega$ |
| gFS                | $V_{DS}=10V, I_D=200mA$  | 80  |     | mS       |
| $C_{rss}$          | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$                                     |     | 5.0 | pF       |
| $C_{iss}$          | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$                                     |     | 50  | pF       |
| $C_{oss}$          | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$                                     |     | 25  | pF       |
| $t_{on} / t_{off}$ | $V_{DD}=30V, V_{GS}=10V, I_D=200mA$<br>$R_G=25\Omega, R_L=150\Omega$ |     | 20  | ns       |

**ELECTRICAL CHARACTERISTICS - D1: ( $T_A=25^\circ C$ )**

|        |                      |    |      |         |
|--------|----------------------|----|------|---------|
| $I_R$  | $V_R=10V$            |    | 20   | $\mu A$ |
| $I_R$  | $V_R=30V$            |    | 100  | $\mu A$ |
| $BV_R$ | $I_R=500\mu A$       | 40 |      | V       |
| $V_F$  | $I_F=100\mu A$       |    | 0.13 | V       |
| $V_F$  | $I_F=1.0mA$          |    | 0.21 | V       |
| $V_F$  | $I_F=10mA$           |    | 0.27 | V       |
| $V_F$  | $I_F=100mA$          |    | 0.35 | V       |
| $V_F$  | $I_F=500mA$          |    | 0.47 | V       |
| $C_J$  | $V_R=1.0V, f=1.0MHz$ |    | 50   | pF      |

**SOT-563 CASE - MECHANICAL OUTLINE**



| SYMBOL | 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) Gate Q1
- 2) Source Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Drain Q1

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**SERVICES**

- Bonded Inventory
- Custom Electrical Screening
- Custom Electrical Characteristic Curves
- SPICE Models
- Custom Packaging
- Package Base Options
- Custom Device Development/ Multi Discrete Modules (MDM™)
- Bare Die Available for Hybrid Applications

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R3 (15-June 2015)