

**CMRDM3590****SURFACE MOUNT SILICON  
DUAL N-CHANNEL  
ENHANCEMENT-MODE  
MOSFET****SOT-963 CASE**

• Device is **Halogen Free** by design

**APPLICATIONS:**

- Load/Power switches
- Power supply converter circuits
- Battery powered portable devices

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

|  |  |
|--|--|
| Drain-Source Voltage                             |  |
| Gate-Source Voltage                              |  |
| Continuous Drain Current (Steady State)          |  |
| Continuous Drain Current, $t_p \leq 5.0\text{s}$ |  |
| Power Dissipation                                |  |
| Operating and Storage Junction Temperature       |  |
| Thermal Resistance                               |  |



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMRDM3590 is an enhancement-mode dual N-Channel MOSFET, manufactured by the N-Channel DMOS process, designed for high speed pulsed amplifier and driver applications. This MOSFET offers low  $r_{DS(ON)}$  and low threshold voltage.

**MARKING CODE: CR****FEATURES:**

- Power dissipation: 125mW
- Low package profile: 0.5mm (MAX)
- Low  $r_{DS(ON)}$
- Low threshold voltage
- Logic level compatible
- Small SOT-963 surface mount package

| SYMBOL         |             | UNITS              |
|----------------|-------------|--------------------|
| $V_{DS}$       | 20          | V                  |
| $V_{GS}$       | 8.0         | V                  |
| $I_D$          | 160         | mA                 |
| $I_D$          | 200         | mA                 |
| $P_D$          | 125         | mW                 |
| $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$   |
| $\theta_{JA}$  | 1000        | $^\circ\text{C/W}$ |

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

| SYMBOL              | TEST CONDITIONS   | MIN | TYP   | MAX | UNITS    |
|---------------------|---|-----|-------|-----|----------|
| $I_{GSS}, I_{GSSR}$ | $V_{GS}=5.0\text{V}, V_{DS}=0$                            |     |       | 100 | nA       |
| $I_{DSS}$           | $V_{DS}=5.0\text{V}, V_{GS}=0$                            |     |       | 50  | nA       |
| $I_{DSS}$           | $V_{DS}=16\text{V}, V_{GS}=0$                             |     |       | 100 | nA       |
| $BV_{DSS}$          | $V_{GS}=0, I_D=250\mu\text{A}$                            | 20  |       |     | V        |
| $V_{GS(th)}$        | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$                       | 0.4 |       | 1.0 | V        |
| $r_{DS(ON)}$        | $V_{GS}=4.5\text{V}, I_D=100\text{mA}$                    |     | 1.5   | 3.0 | $\Omega$ |
| $r_{DS(ON)}$        | $V_{GS}=2.5\text{V}, I_D=50\text{mA}$                     |     | 2.0   | 4.0 | $\Omega$ |
| $r_{DS(ON)}$        | $V_{GS}=1.8\text{V}, I_D=20\text{mA}$                     |     | 3.0   | 6.0 | $\Omega$ |
| $r_{DS(ON)}$        | $V_{GS}=1.5\text{V}, I_D=10\text{mA}$                     |     | 4.0   | 10  | $\Omega$ |
| $r_{DS(ON)}$        | $V_{GS}=1.2\text{V}, I_D=1.0\text{mA}$                    |     | 7.0   |     | $\Omega$ |
| $g_{FS}$            | $V_{DS}=5.0\text{V}, I_D=125\text{mA}$                    |     | 1.3   |     | S        |
| $C_{rss}$           | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$            |     | 2.2   |     | pF       |
| $C_{iss}$           | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$            |     | 9.0   |     | pF       |
| $C_{oss}$           | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$            |     | 3.0   |     | pF       |
| $Q_g(\text{tot})$   | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$ |     | 0.458 |     | nC       |
| $Q_{gs}$            | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$ |     | 0.176 |     | nC       |
| $Q_{gd}$            | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$ |     | 0.138 |     | nC       |
| $t_{on}$            | $V_{DD}=10\text{V}, V_{GS}=4.5\text{V}, I_D=200\text{mA}$ |     | 25    |     | ns       |
| $t_{off}$           | $V_{DD}=10\text{V}, V_{GS}=4.5\text{V}, I_D=200\text{mA}$ |     | 85    |     | ns       |

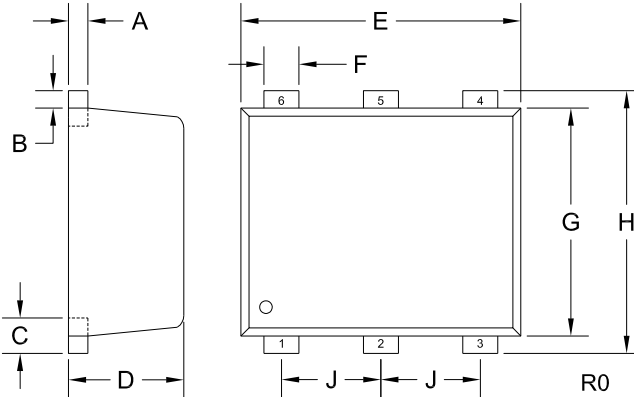
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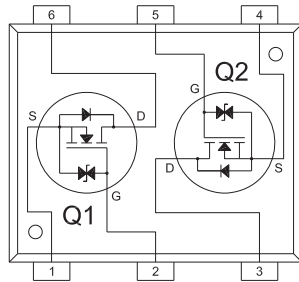
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**SOT-963 CASE - MECHANICAL OUTLINE**



**PIN CONFIGURATION**



**LEAD CODE:**

- 1) Source Q1
- 2) Gate Q1
- 3) Drain Q2
- 4) Source Q2
- 5) Gate Q2
- 6) Drain Q1

**MARKING CODE: CR**

| SYMBOL | DIMENSIONS |       |             |       |
|--------|------------|-------|-------------|-------|
|        | INCHES     |       | MILLIMETERS |       |
|        | MIN        | MAX   | MIN         | MAX   |
| A      | 0.002      | 0.006 | 0.050       | 0.150 |
| B      | 0.002      | 0.006 | 0.050       | 0.150 |
| C      | 0.005      | 0.007 | 0.125       | 0.175 |
| D      | 0.016      | 0.020 | 0.400       | 0.500 |
| E      | 0.037      | 0.041 | 0.950       | 1.050 |
| F      | 0.004      | 0.008 | 0.100       | 0.200 |
| G      | 0.030      | 0.033 | 0.750       | 0.850 |
| H      | 0.037      | 0.041 | 0.950       | 1.050 |
| J      | 0.014      |       | 0.350       |       |

SOT-963 (REV: R0)

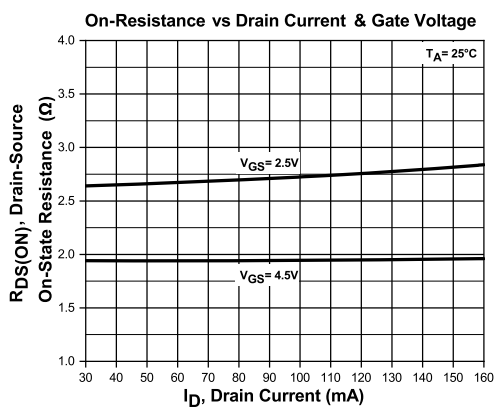
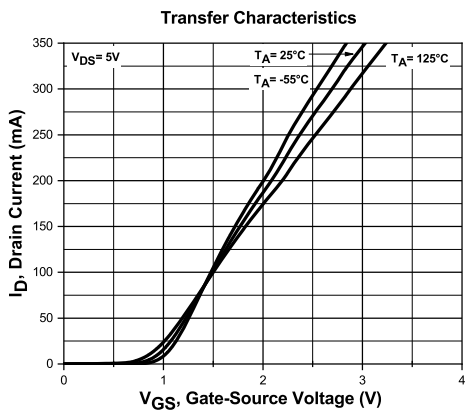
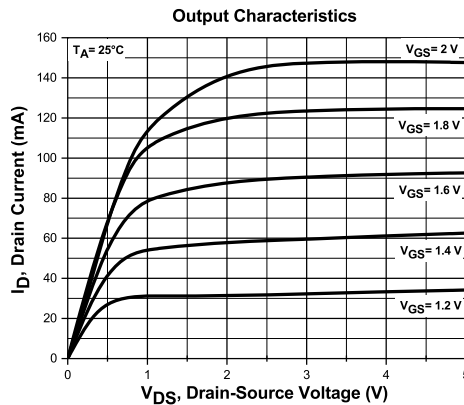
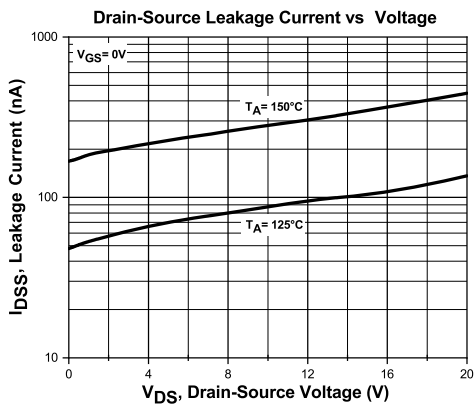
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TYPICAL ELECTRICAL CHARACTERISTICS



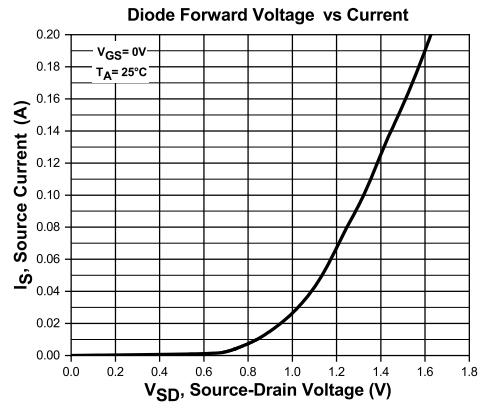
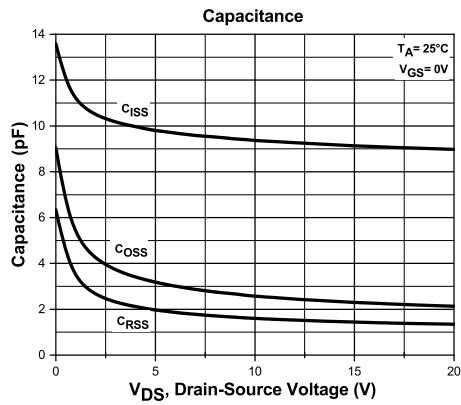
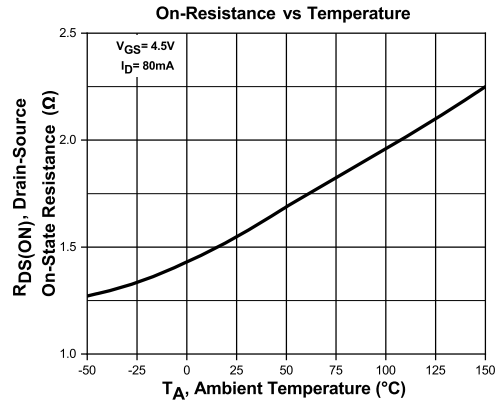
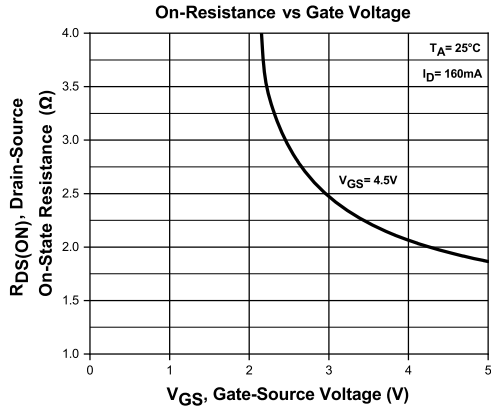
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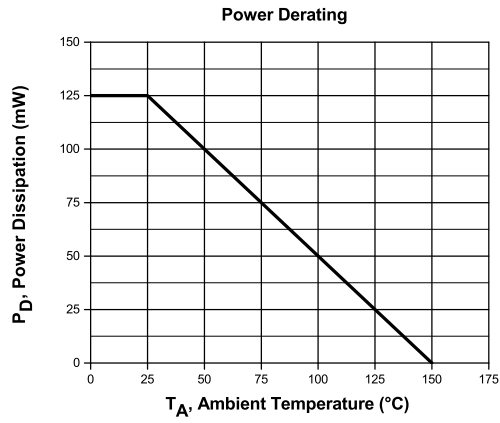
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### TYPICAL ELECTRICAL CHARACTERISTICS



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## 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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