## CMLDM3757

### SURFACE MOUNT SILICON N-CHANNEL AND P-CHANNEL ENHANCEMENT-MODE COMPLEMENTARY MOSFETS

**SOT-563 CASE**

# Central™
## Semiconductor Corp.

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLDM3757 consists of complementary N-Channel and P-Channel enhancement-mode silicon MOSFETs designed for high speed pulsed amplifier and driver applications. These MOSFETs offer very low $r_{DS(ON)}$ and low threshold voltage.

**MARKING CODE: 3C7**

**FEATURES:**
• ESD protection up to 1800V (Human Body Model)
• 350mW power dissipation
• Very low $r_{DS(ON)}$
• Low threshold voltage
• Logic level compatible
• Small, SOT-563 surface mount package

**APPLICATIONS:**
• Load/Power switches
• Power supply converter circuits
• Battery powered portable devices

**MAXIMUM RATINGS:** ($T_A$=25°C)

| | SYMBOL | N-CH (Q1) | P-CH (Q2) | UNITS |
|---|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 20 | | V |
| Gate-Source Voltage | $V_{GS}$ | 8.0 | | V |
| Continuous Drain Current (Steady State) | $I_D$ | 540 | 430 | mA |
| Maximum Pulsed Drain Current (tp=10µs) | $I_{DM}$ | 1500 | 750 | mA |
| Power Dissipation (Note 1) | $P_D$ | 350 | | mW |
| Power Dissipation (Note 2) | $P_D$ | 300 | | mW |
| Power Dissipation (Note 3) | $P_D$ | 150 | | mW |
| Operating and Storage Junction Temperature | $T_J$, $T_{stg}$ | -65 to +150 | | °C |
| Thermal Resistance (Note 1) | $\Theta_{JA}$ | 357 | | °C/W |

**ELECTRICAL CHARACTERISTICS:** ($T_A$=25°C)

| SYMBOL | TEST CONDITIONS | N-CH (Q1) MIN | TYP | MAX | P-CH (Q2) MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|---|---|
| $I_{GSSF}$, $I_{GSSR}$ | $V_{GS}$=4.5V, $V_{DS}$=0 | - | - | 5.0 | - | - | 2.0 | µA |
| $I_{DSS}$ | $V_{DS}$=16V, $V_{GS}$=0 | - | - | 1.0 | - | - | 1.0 | µA |
| $BV_{DSS}$ | $V_{GS}$=0, $I_D$=250µA | 20 | - | - | 20 | - | - | V |
| $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250µA | 0.45 | - | 1.0 | 0.45 | - | 1.0 | V |
| $V_{SD}$ | $V_{GS}$=0, $I_S$=350mA | - | - | 1.2 | - | - | 1.2 | V |
| $r_{DS(ON)}$ | $V_{GS}$=4.5V, $I_D$=540mA | - | 0.35 | 0.55 | - | - | - | Ω |
| $r_{DS(ON)}$ | $V_{GS}$=4.5V, $I_D$=430mA | - | - | - | - | 0.4 | 0.9 | Ω |
| $r_{DS(ON)}$ | $V_{GS}$=2.5V, $I_D$=500mA | - | 0.5 | 0.7 | - | - | - | Ω |
| $r_{DS(ON)}$ | $V_{GS}$=2.5V, $I_D$=300mA | - | - | - | - | 0.55 | 1.2 | Ω |
| $r_{DS(ON)}$ | $V_{GS}$=1.8V, $I_D$=350mA | - | 0.7 | 0.9 | - | - | - | Ω |
| $r_{DS(ON)}$ | $V_{GS}$=1.8V, $I_D$=150mA | - | - | - | - | 0.75 | 2.0 | Ω |

Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0mm²
    (2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm²
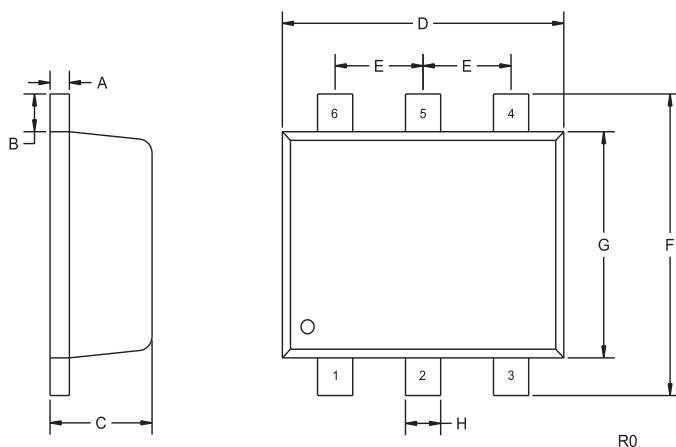    (3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm²

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COMPLEMENTARY MOSFETS**

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**ELECTRICAL CHARACTERISTICS - Continued:** ($T_A$=25°C)

| SYMBOL | TEST CONDITIONS | N-CH (Q1) TYP | N-CH (Q1) MAX | P-CH (Q2) TYP | P-CH (Q2) MAX | UNITS |
|---|---|---|---|---|---|---|
| $C_{rss}$ | $V_{DS}$=16V, $V_{GS}$=0, f=1.0MHz | - | 20 | - | 20 | pF |
| $C_{iss}$ | $V_{DS}$=16V, $V_{GS}$=0, f=1.0MHz | - | 150 | - | 175 | pF |
| $C_{oss}$ | $V_{DS}$=16V, $V_{GS}$=0, f=1.0MHz | - | 25 | - | 30 | pF |
| $Q_{g(tot)}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=500mA | 1.58 | - | - | - | nC |
| $Q_{g(tot)}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=200mA | - | - | 1.2 | - | nC |
| $Q_{gs}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=500mA | 0.17 | - | - | - | nC |
| $Q_{gs}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=200mA | - | - | 0.24 | - | nC |
| $Q_{gd}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=500mA | 0.24 | - | - | - | nC |
| $Q_{gd}$ | $V_{DS}$=10V, $V_{GS}$=4.5V, $I_D$=200mA | - | - | 0.36 | - | nC |
| $t_{on}$ | $V_{DD}$=10V, $V_{GS}$=4.5V, $I_D$=540mA, $R_G$=10Ω | 10 | - | - | - | ns |
| $t_{off}$ | $V_{DD}$=10V, $V_{GS}$=4.5V, $I_D$=540mA, $R_G$=10Ω | 25 | - | - | - | ns |
| $t_{on}$ | $V_{DD}$=10V, $V_{GS}$=4.5V, $I_D$=215mA, $R_G$=10Ω | - | - | 38 | - | ns |
| $t_{off}$ | $V_{DD}$=10V, $V_{GS}$=4.5V, $I_D$=215mA, $R_G$=10Ω | - | - | 48 | - | ns |

**SOT-563 CASE - MECHANICAL OUTLINE**



| DIMENSIONS | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.004 | 0.007 | 0.10 | 0.18 |
| B | 0.008 | | 0.20 | |
| C | 0.022 | 0.024 | 0.56 | 0.60 |
| D | 0.059 | 0.067 | 1.50 | 1.70 |
| E | 0.020 | | 0.50 | |
| F | 0.061 | 0.067 | 1.55 | 1.70 |
| G | 0.047 | | 1.20 | |
| H | 0.006 | 0.012 | 0.15 | 0.30 |

SOT-563 (REV: R0)

**PIN CONFIGURATION**



**LEAD CODE:**
1) Source Q1
2) Gate Q1
3) Drain Q2
4) Source Q2
5) Gate Q2
6) Drain Q1

**MARKING CODE: 3C7**
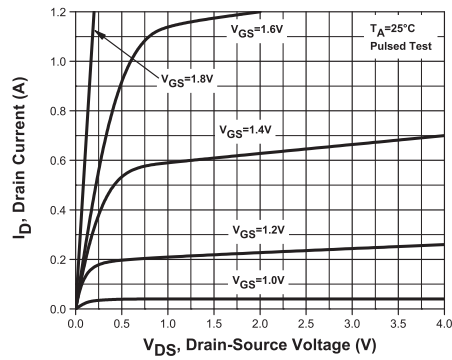
R4 (5-June 2013)

**CMLDM3757**

**SURFACE MOUNT SILICON
N-CHANNEL AND P-CHANNEL
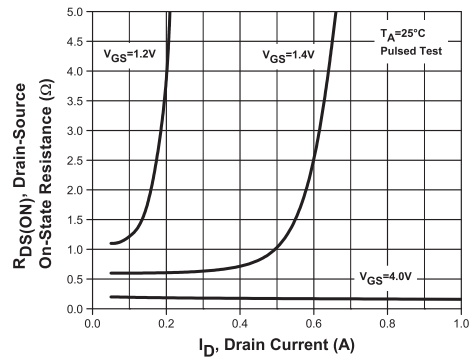ENHANCEMENT-MODE
COMPLEMENTARY MOSFETS**

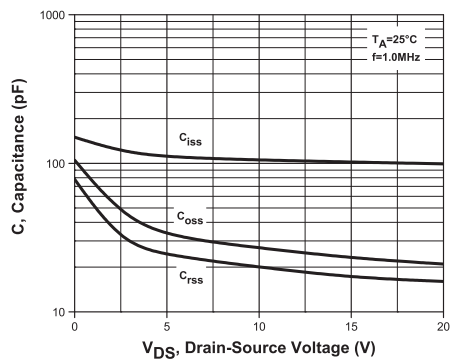## N-CHANNEL TYPICAL ELECTRICAL CHARACTERISTICS
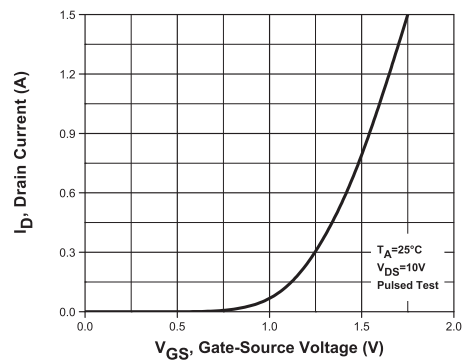
**Output Characteristics**



**Drain Source On Resistance**
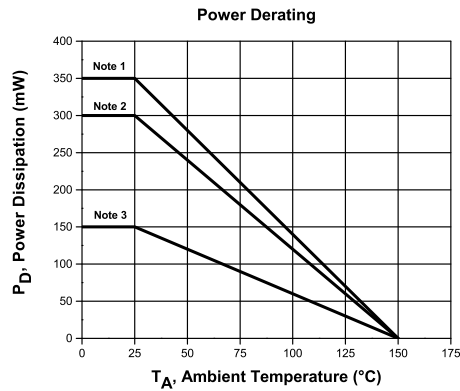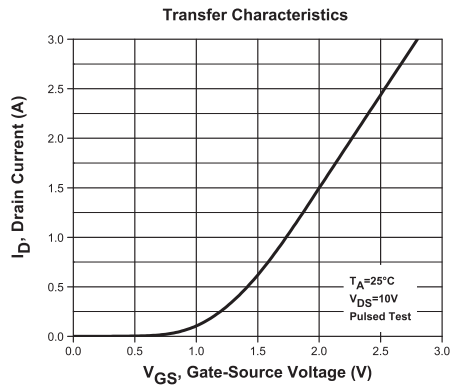


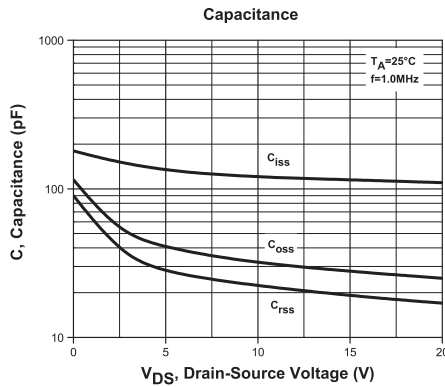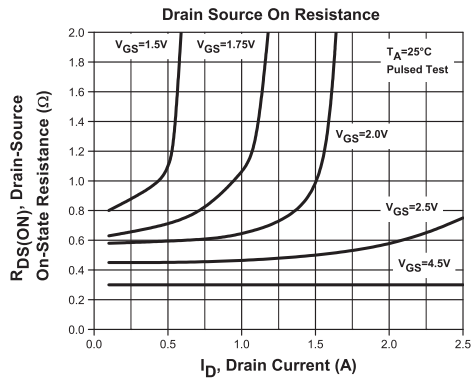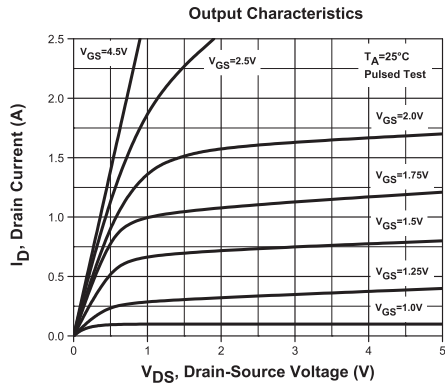**Capacitance**



**Transfer Characteristics**

**Central**
Semiconductor Corp.

## P-CHANNEL TYPICAL ELECTRICAL CHARACTERISTICS

**Output Characteristics**



**Drain Source On Resistance**



**Capacitance**



**Transfer Characteristics**



**Power Derating**



R4 (5-June 2013)

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