

# 75Ω Driver without Output Capacitor

## Monolithic IC MM1756 □□□□

### Outline

This IC is a 75Ω driver with a built-in LPF and can operate at low voltage without requiring the output capacitor.

This IC is compatible with operating voltage of 3V and 5V systems, and can be used in such portable equipment as digital still camera as well as such stationary equipment as DVD player. It incorporates the 2nd order LPF, which is ideal for removing the DAC sampling noises.

In addition, ultra-low power consumption has been achieved by suppressing the current consumption during Power Save to under 1μA.

This IC can extend the battery life of the portable equipment.

### Features

- 1. No output coupling capacitor required
- 2. Operation power supply voltage 2.8 to 5.5V (Compatible with 3V and 5V systems)
- 3. Operation ambient temperature range -40~85°C
- 4. Supply current under no load condition (No signal) 1.2mA  
Supply current at 75Ω drive (No signal) 2.4mA
- 5. Current consumption during Power Save 1.0μA max.
- 6. Voltage gain 6±0.3dB at 100kHz
- 7. Built-in 2nd order LPF 4.5MHz/100kHz max. ±1.0dB  
27MHz/100kHz typ. -21dB
- 8. Amplifier gain

| Rank | Gain |
|------|------|
| A    | 6dB  |
| B    | 9dB  |
| C    | 12dB |

### Package

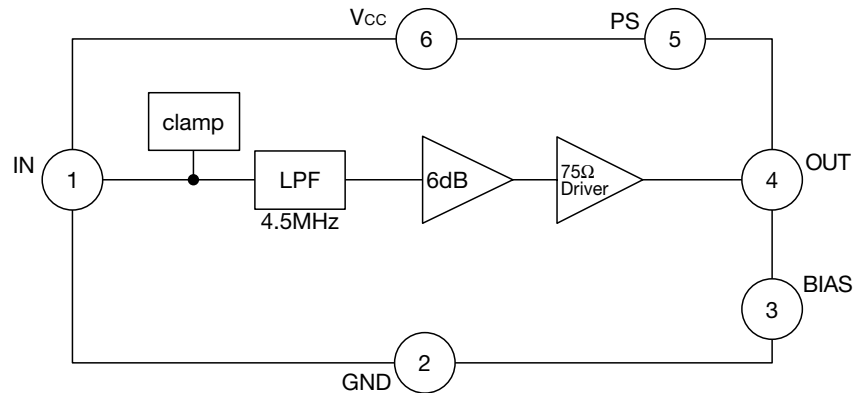
- SC-88
- SSON-6C

### Applications

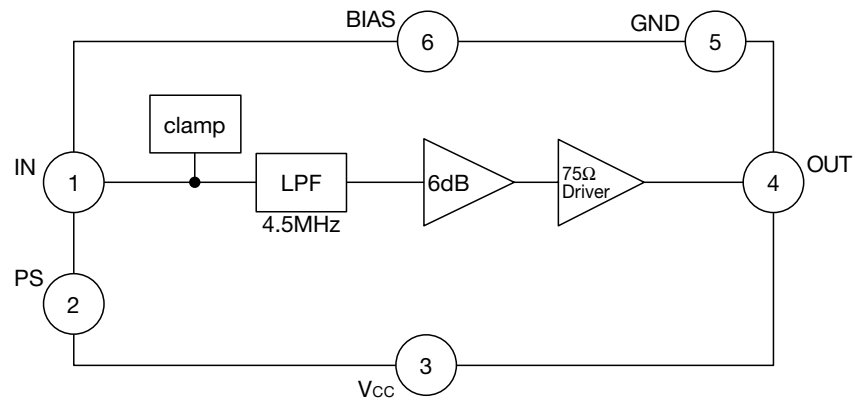
- 1. Digital still cameras
- 2. Cellular phone
- 3. DVD player and DVD recorder
- 4. Other video equipment

## Block Diagram

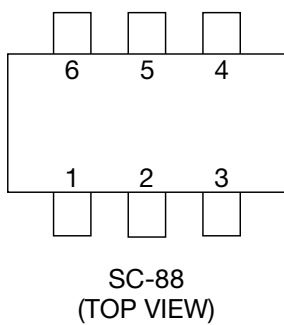
### SC-88



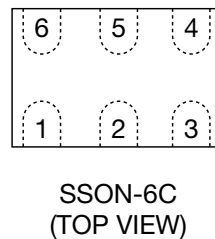
### SSON-6C



## Pin Assignment



|   |      |
|---|------|
| 1 | IN   |
| 2 | GND  |
| 3 | BIAS |
| 4 | OUT  |
| 5 | PS   |
| 6 | Vcc  |



|   |      |
|---|------|
| 1 | IN   |
| 2 | PS   |
| 3 | Vcc  |
| 4 | OUT  |
| 5 | GND  |
| 6 | BIAS |

## Pin Description

### SC-88

| Pin No. | Pin name | Functions     |
|---------|----------|---------------|
| 1       | IN       | Signal input  |
| 2       | GND      | GND           |
| 3       | BIAS     | Bias          |
| 4       | OUT      | Signal output |
| 5       | PS       | Power save    |
| 6       | Vcc      | Vcc           |

### SSON-6C

| Pin No. | Pin name | Functions     |
|---------|----------|---------------|
| 1       | IN       | Signal input  |
| 2       | PS       | Power save    |
| 3       | Vcc      | Vcc           |
| 4       | OUT      | Signal output |
| 5       | GND      | GND           |
| 6       | BIAS     | Bias          |

**Absolute Maximum Ratings** (Ta=25°C) SSON-6

| Item                  | Symbol               | Ratings  | Unit |
|-----------------------|----------------------|----------|------|
| Storage temperature   | T <sub>STG</sub>     | -55~+150 | °C   |
| Operating temperature | T <sub>OPR</sub>     | -40~+85  | °C   |
| Supply voltage        | V <sub>CC max.</sub> | 6        | V    |
| Allowable loss        | P <sub>d</sub>       | 720      | mW   |

Board : 60 × 65mm t=1.6mm single sided glass epoxy

**Recommended Operating Conditions**

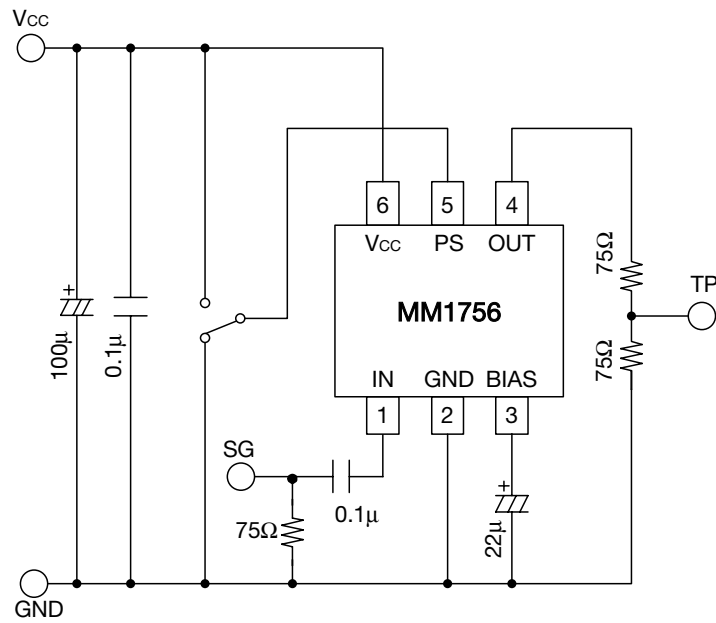
| Item                  | Symbol            | Ratings | Unit |
|-----------------------|-------------------|---------|------|
| Operating temperature | T <sub>OPR</sub>  | -40~+85 | °C   |
| Operating voltage     | V <sub>CCOP</sub> | 2.8~5.5 | V    |

**Electrical Characteristics** (Except where noted otherwise Ta=25°C, V<sub>CC</sub>=3V) SSON-6 A rank product

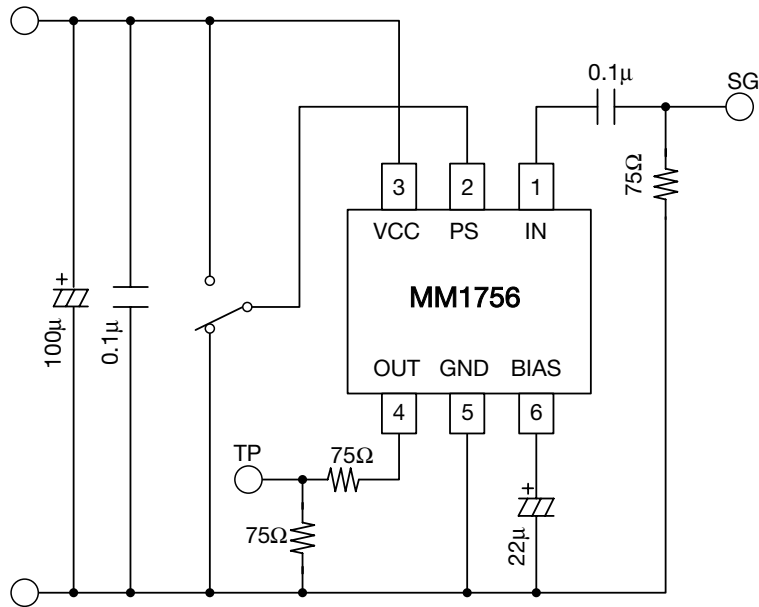
| Item  | Symbol                   | Measurement conditions         | Min. | Typ. | Max.            | Units |
|---|--------------------------|--------------------------------|------|------|-----------------|-------|
| Supply current                                  | I <sub>CC1</sub>         | No signal                      |      | 1.2  | 1.6             | mA    |
| Supply current at 75Ω drive                     | I <sub>CC2</sub>         | No signal R <sub>L</sub> =150Ω |      | 2.4  | 3.2             | mA    |
| Supply current (at Power save mode)             | I <sub>CC3</sub>         | No signal PS : ON              |      |      | 1               | μA    |
| Power save terminal input current               | H                        | I <sub>PSH</sub>               |      |      | 110             | μA    |
|   | L                        | I <sub>PSL</sub>               |      |      | 6               | μA    |
| Power save terminal input voltage               | H                        | V <sub>PSH</sub>               | 2.0  |      | V <sub>CC</sub> | V     |
|   | L                        | V <sub>PSL</sub>               |      |      | 0.5             | V     |
| Input terminal voltage                          | V <sub>IN</sub>          | 1pin                           |      | 1.2  |                 | V     |
| Output terminal voltage                         | V <sub>OUT</sub>         | 4 pin                          | 0.05 | 0.1  | 0.15            | V     |
| 75Ω termination point voltage                   | V <sub>term</sub>        | TP                             | 25   | 50   | 75              | mV    |
| Voltage gain                                    | G <sub>V</sub>           | SIN wave : 1V f=100kHz         | 5.7  | 6    | 6.3             | dB    |
| Frequency characteristic 1                      | f <sub>c1</sub>          | SIN wave : 1V 4.5MHz/100kHz    | -1.0 | 0    | 1.0             | dB    |
| Frequency characteristic 2                      | f <sub>c2</sub>          | SIN wave : 1V 27MHz/100kHz     |      | -21  | -18             | dB    |
| Differential gain                               | DG                       | Staircase signal 1V            |      | 1.0  | 2.0             | %     |
| Differential phase                              | DP                       | Staircase signal 1V            |      | 0.5  | 2.0             | °     |
| Output dynamic range                            | DR                       | SIN wave : 100kHz THD=1.0%     | 2.4  | 2.6  |                 | V     |
| S/N   | SN                       | BW : 100k~6MHz                 |      | 83   |                 | dB    |
| Group delay                                     | t <sub>l</sub>           | at 100kHz                      |      | 30   | 60              | ns    |
|   |                          | to 3.58MHz                     |      | 4    |                 | ns    |
|   |                          | to 4.43MHz                     |      | 5    | 20              | ns    |
| Output terminal resistance (at Power save mode) | 4pin : 1.5V<br>5pin : 0V | 4pin                           | 1.4  | 2.0  | 2.6             | MΩ    |

Measuring Circuit

SC-88



SSON-6C



Switch Control Table

| PS-Pin | Power-save |
|--------|------------|
| H      | OFF        |
| L      | ON         |
| OPEN   | ON         |