


|   |   |   |
|---|---|---|
|  | No. 5162A                                   | Monolithic Linear IC<br><b>LA6517, 6517M, 6518M</b> |
|   | <b>2-Output Power Operational Amplifier</b> |   |

## Applications

The LA6517, LA6517M, and LA6518M are 2-output power operational amplifiers developed for use in consumer and industrial equipment.

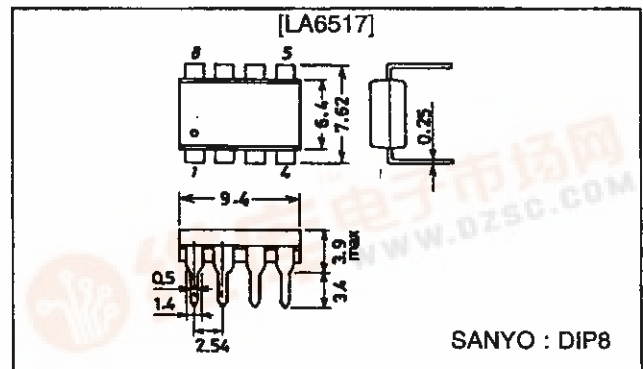
## Features and Functions

- High output current ( $I_{O \text{ max}} = 0.5 \text{ A}$ ).
- High gain.
- Includes a current limiter.
- Wide operating voltage range ( $\pm 2$  to  $\pm 18 \text{ V}$ ).
- Single-supply operation possible (4 to 36 V).
- Thermal shutdown built in.

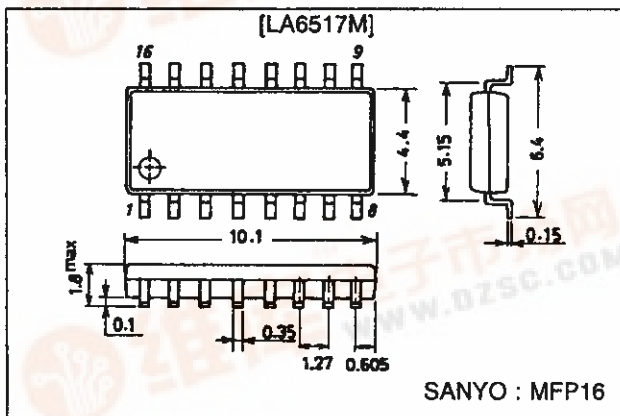
## Package Dimensions

unit : mm

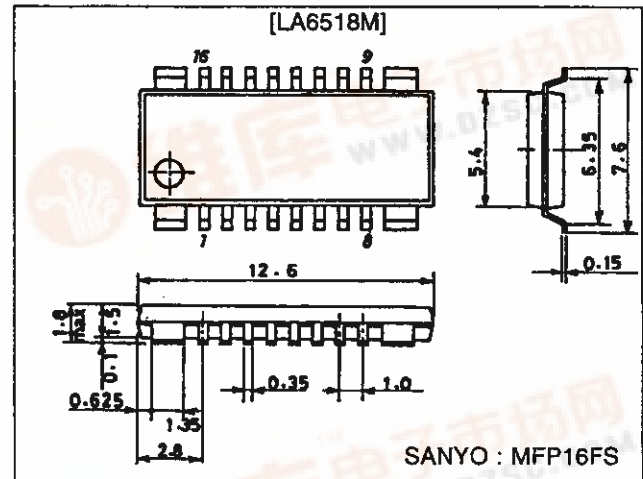
### 3001-DIP8



### 3035A-MFP16



### 3097-MFP16FS



## LA6517, 6517M, 6518M

### Specifications

#### Maximum Ratings at $T_a = 25\text{ }^\circ\text{C}$

| Parameter                   | Symbol          | Conditions | Ratings     | Unit             |
|-----------------------------|-----------------|------------|-------------|------------------|
| Maximum supply voltage      | $V_{CC}/V_{EE}$ |            | $\pm 18$    | V                |
| Differential input voltage  | $V_{ID}$        |            | 30          | V                |
| Common-mode input voltage   | $V_{IN}$        |            | $\pm 15$    | V                |
| Allowable power dissipation | Pd max          | LA6517     | 1000        | mW               |
|                             |                 | LA6517M    | 350         | mW               |
|                             |                 | LA6518M    | 700         | mW               |
| Operating temperature       | Topr            |            | -20 to +75  | $^\circ\text{C}$ |
| Storage temperature         | Tstg            |            | -55 to +150 | $^\circ\text{C}$ |

#### Operating Conditions at $T_a = 25\text{ }^\circ\text{C}$

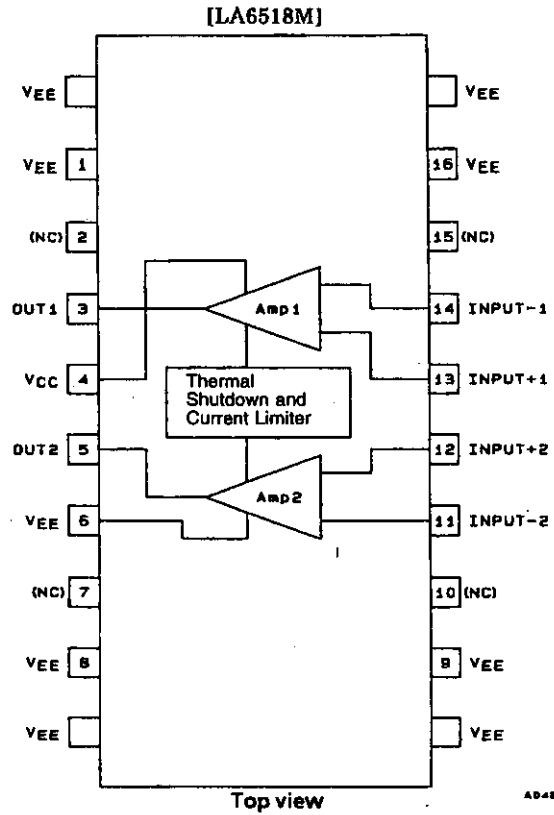
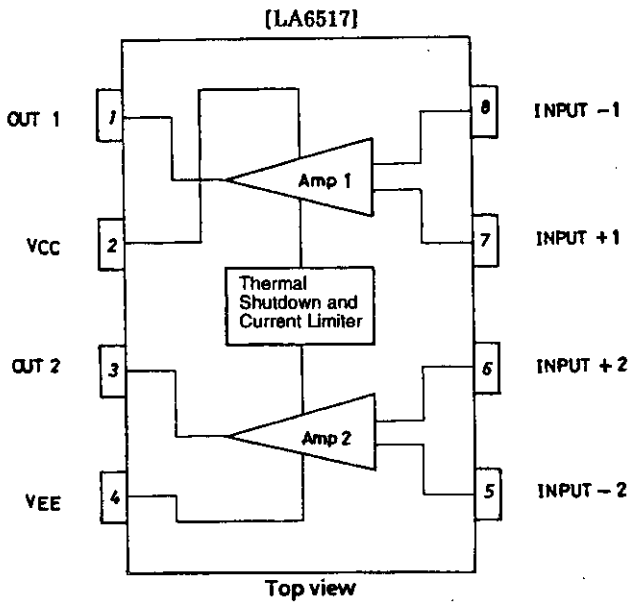
| Parameter                  | Symbol          | Conditions | Ratings             | Unit |
|----------------------------|-----------------|------------|---------------------|------|
| Recommended supply voltage | $V_{CC}/V_{EE}$ |            | $\pm 2$ to $\pm 16$ | V    |

#### Electrical Characteristics at $T_a = 25\text{ }^\circ\text{C}$ , $V_{CC}/V_{EE} = \pm 15\text{ V}$

| Parameter                          | Symbol    | Conditions  | min      | typ      | max | Unit             |
|------------------------------------|-----------|---|----------|----------|-----|------------------|
| No-load current drain              | $I_{CC}$  |   |          | 8        | 20  | mA               |
| Input offset voltage               | $V_{IO}$  | $R_S \leq 10\text{ k}\Omega$                                      |          | 2        | 7   | mV               |
| Input offset current               | $I_{IO}$  |   |          | 10       | 100 | nA               |
| Input bias current                 | $I_B$     |   |          | 100      | 300 | nA               |
| Common-mode input voltage range    | $V_{ICM}$ | LA6517, 6517M   | -15      |          | +13 | V                |
|                                    |           | LA6518M   | -14      |          | +13 | V                |
| Common-mode signal rejection ratio | CMRR      |   | 65       | 80       |     | dB               |
| Maximum output voltage             | $V_O$     | $R_L = 33\ \Omega$  | $\pm 11$ | $\pm 12$ |     | V                |
| Voltage gain                       | $V_{G_O}$ |   |          | 85       |     | dB               |
| Slew rate                          | SR        | $G_V = 0, R_L = 33\ \Omega, R = 10\ \Omega, L = 0.1\ \mu\text{F}$ |          | 0.15     |     | V/ $\mu\text{s}$ |
| Supply voltage rejection ratio     | SVR       |   |          | 30       | 300 | $\mu\text{V/V}$  |
| Limiting current (built in)        | $I_{SC}$  |   |          | 0.5      |     | A                |

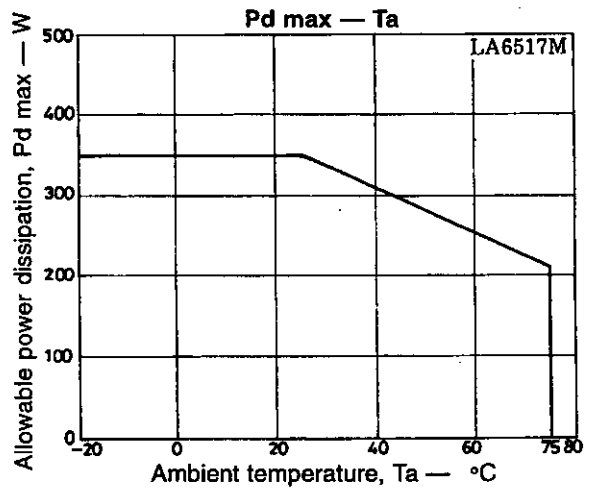
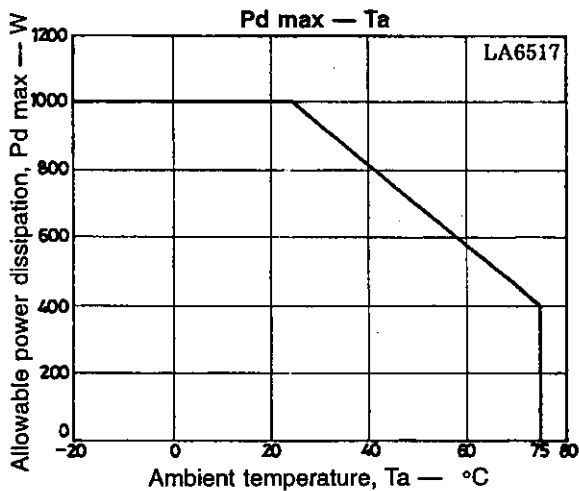
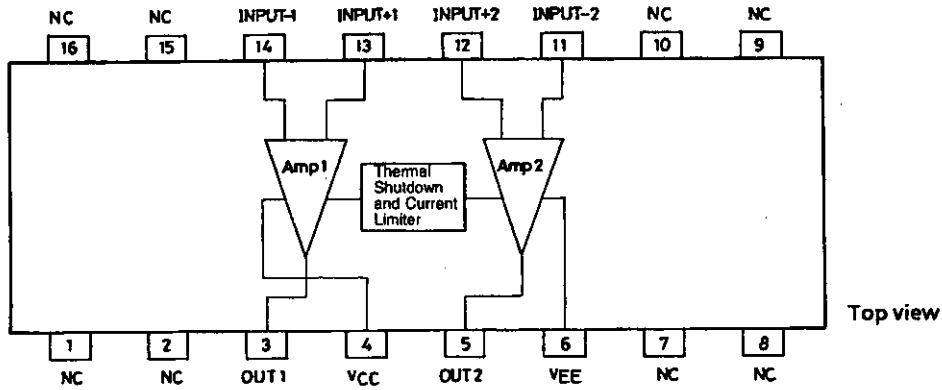
# LA6517, 6517M, 6518M

## Block Diagram and Pin Assignments

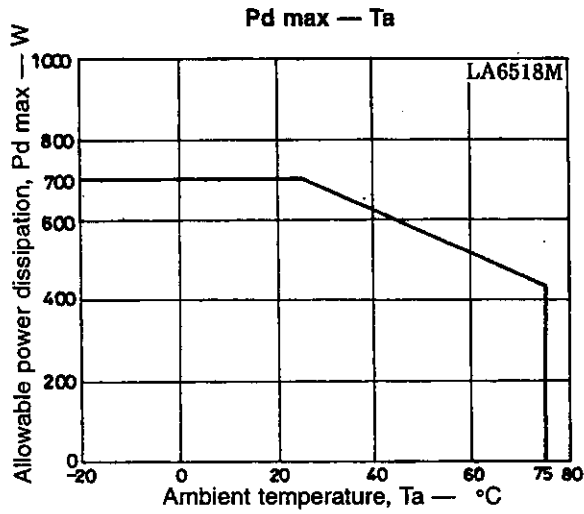


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**[LA6517M]**

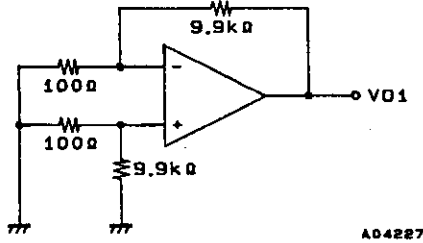


# LA6517, 6517M, 6518M



## Test Circuits

### 1. $V_{IO}$ , SVRR



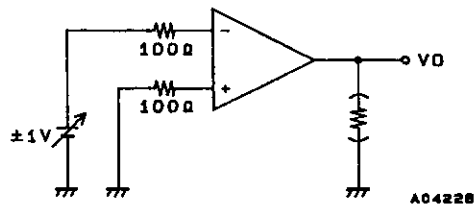
$$V_{IO}: V_{CC}/V_{EE} = \pm 15V$$

$$SVRR \begin{cases} V_{CC} = 15V, 5V \\ V_{EE} = -5V, -15V \end{cases}$$

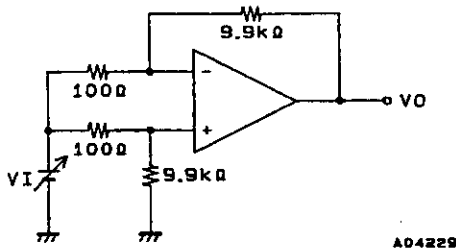
$$V_{IO} = V_{O1}/100$$

$$\frac{SVR(+)}{SVR(-)} = \left| \frac{\Delta V_{O1}}{100 \times 10V} \right|$$

### 2. $V_O$



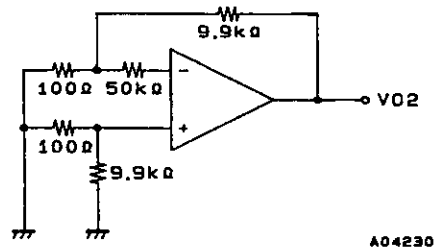
### 3. CMRR, $V_{ICM}$



$$CMRR: V_i = \pm 7.5V$$

$$CMR = 20 \log \frac{15 \times 100}{|\Delta V_O|}$$

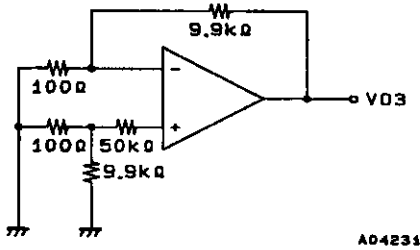
### 4. $I_B(-)$



$$I_B(-) = \frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$$

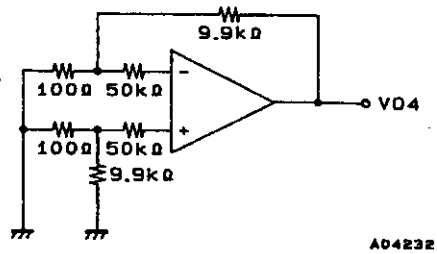
## LA6517, 6517M, 6518M

5.  $I_B(+)$



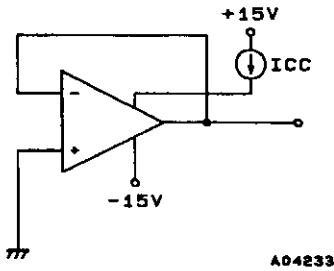
$$I_B(+) = \frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$$

6.  $I_{IO}$

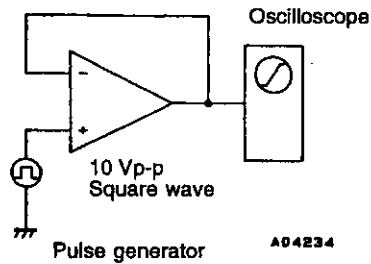


$$I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$$

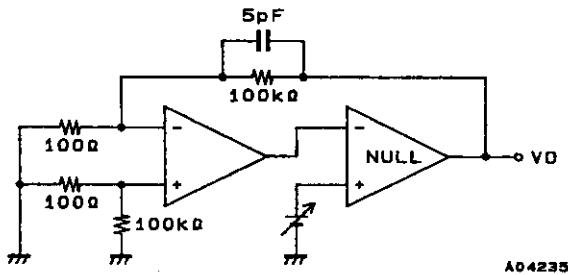
7.  $I_{CC}$



8. SR



9.  $V_{GO}$



$$V_{GO} = 20 \log \frac{1000 \times 20}{\Delta V_O}$$

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