

# LM675

## Power Operational Amplifier

### General Description

The LM675 is a monolithic power operational amplifier featuring wide bandwidth and low input offset voltage, making it equally suitable for AC and DC applications.

The LM675 is capable of delivering output currents in excess of 3 amps, operating at supply voltages of up to 60V. The device overload protection consists of both internal current limiting and thermal shutdown. The amplifier is also internally compensated for gains of 10 or greater.

### Features

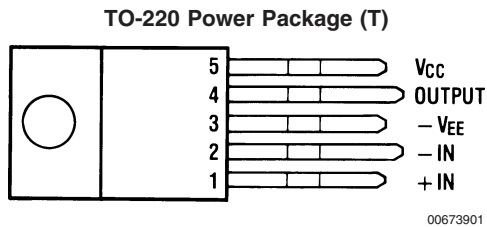
- 3A current capability
- $A_{VO}$  typically 90 dB
- 5.5 MHz gain bandwidth product
- 8 V/ $\mu$ s slew rate
- Wide power bandwidth 70 kHz

- 1 mV typical offset voltage
- Short circuit protection
- Thermal protection with parole circuit (100% tested)
- 16V–60V supply range
- Wide common mode range
- Internal output protection diodes
- 90 dB ripple rejection
- Plastic power package TO-220

### Applications

- High performance power op amp
- Bridge amplifiers
- Motor speed controls
- Servo amplifiers
- Instrument systems

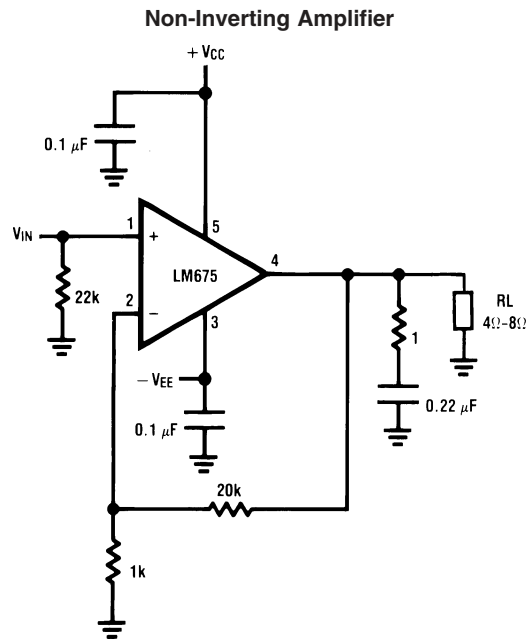
### Connection Diagram



\*The tab is internally connected to pin 3 (-V<sub>EE</sub>)

**Front View**  
**Order Number LM675T**  
**See NS Package T05D**

### Typical Applications



## Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	±30V
Input Voltage	-V <sub>EE</sub> to V <sub>CC</sub>
Operating Temperature	0°C to +70°C

Storage Temperature	-65°C to +150°C
Junction Temperature	150°C
Power Dissipation (Note 2)	30W
Lead Temperature (Soldering, 10 seconds)	260°C
ESD rating to be determined.	

## Electrical Characteristics

V<sub>S</sub>=±25V, T<sub>A</sub>=25°C unless otherwise specified.

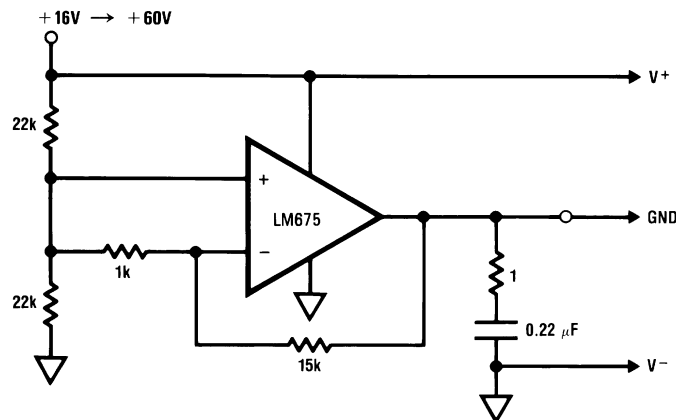
Parameter	Conditions	Typical	Tested Limit	Units
Supply Current	P <sub>OUT</sub> = 0W	18	50 (max)	mA
Input Offset Voltage	V <sub>CM</sub> = 0V	1	10 (max)	mV
Input Bias Current	V <sub>CM</sub> = 0V	0.2	2 (max)	μA
Input Offset Current	V <sub>CM</sub> = 0V	50	500 (max)	nA
Open Loop Gain	R <sub>L</sub> = ∞Ω	90	70 (min)	dB
PSRR	ΔV <sub>S</sub> = ±5V	90	70 (min)	dB
CMRR	V <sub>IN</sub> = ±20V	90	70 (min)	dB
Output Voltage Swing	R <sub>L</sub> = 8Ω	±21	±18 (min)	V
Offset Voltage Drift Versus Temperature	R <sub>S</sub> < 100 kΩ	25		μV/°C
Offset Voltage Drift Versus Output Power		25		μV/W
Output Power	THD = 1%, f <sub>O</sub> = 1 kHz, R <sub>L</sub> = 8Ω	25	20	W
Gain Bandwidth Product	f <sub>O</sub> = 20 kHz, A <sub>VCL</sub> = 1000	5.5		MHz
Max Slew Rate		8		V/μs
Input Common Mode Range		±22	±20 (min)	V

**Note 1:** Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits. Electrical Characteristics state DC and AC electrical specifications under particular test conditions which guarantee specific performance limits. This assumes that the device is within the Operating Ratings. Specifications are not guaranteed for parameters where no limit is given, however, the typical value is a good indication of device performance.

**Note 2:** Assumes T<sub>A</sub> equal to 70°C. For operation at higher tab temperatures, the LM675 must be derated based on a maximum junction temperature of 150°C.

## Typical Applications

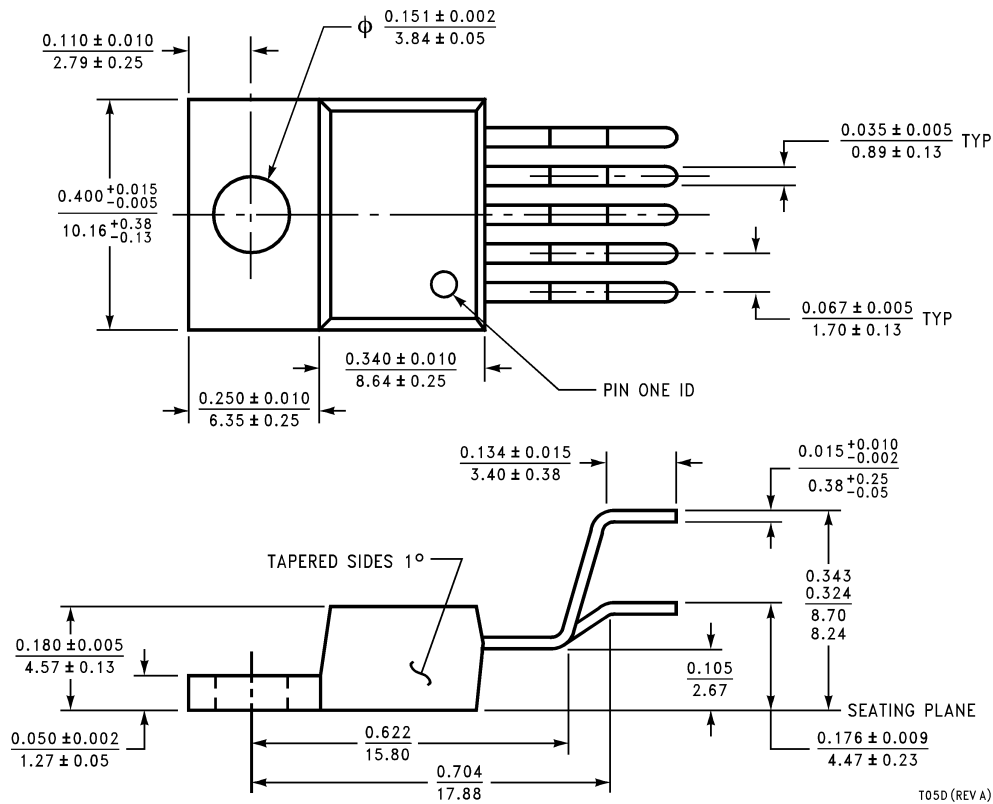
### Generating a Split Supply From a Single Supply



V<sub>S</sub> = ±8V → ±30V

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**Physical Dimensions** inches (millimeters) unless otherwise noted



**TO-220 Power Package (T)**  
**Order Number LM675T**  
**NS Package T05D**

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