

Dual CMOS operational amplifier IC with rail-to-rail input / output
レール・ツー・レール入出力デュアルCMOSオペアンプIC

TK62002F, TK62012F, TK62022F

DESCRIPTION

The TK62002F, TK62012F and TK62022F are dual CMOS operational amplifier ICs with rail-to-rail input and output. Featuring low voltage operation and a very small package, it is suitable for use with battery-powered portable equipment.

TK62002F、TK62012F、TK62022Fはレール・ツー・レール入出力デュアルCMOSオペアンプICです。低電圧動作、超小型パッケージ等の特長から、バッテリー駆動のポータブル機器等での用途に最適です。

FEATURES

| | | TK62002F | TK60012F | TK62022F |
|---------------------------|----------|------------------------|------------------------|------------------------|
| ■ Low Voltage Operation | ■ 低電圧動作 | $V_{OP}=1.8$ to $5.5V$ | $V_{OP}=2.0$ to $5.5V$ | $V_{OP}=2.7$ to $5.5V$ |
| ■ Very Low Supply Current | ■ 低電源電流 | $I_{CC}=8\mu A$ | $I_{CC}=45\mu A$ | $I_{CC}=250\mu A$ |
| ■ Slew Rate | ■ スルーレート | $SR=0.05V/\mu sec$ | $SR=0.4V/\mu sec$ | $SR=3.0V/\mu sec$ |
| ■ Gain Bandwidth Product | ■ 利得帯域幅積 | $GB=200kHz$ | $GB=1MHz$ | $GB=5MHz$ |

■ 0.75mm Low Profile Package: SON3024-8


■ 0.75mm薄型パッケージ

APPLICATIONS

- General Purpose
- Portable Equipment Operating From Low Voltage
- 汎用
- 低電圧動作ポータブル機器

PACKAGE OUTLINE

ORDERING INFORMATION

| Part name | Package | Marking | Pin configuration | Ordering information | | | | | | | | | |
|-----------|--|---------|-------------------|---|---|---|---|---|---|---|---|---|---|
| TK62002F |  SON3024-8 | AA1 | See next page | <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>T</td><td>K</td><td>6</td><td>2</td><td>0</td><td>2</td><td>F</td><td>T</td><td>L</td> </tr> </table> Number: 0, 1, 2 Package code: F: SON Storage direction: TL: Left type | T | K | 6 | 2 | 0 | 2 | F | T | L |
| T | | K | | | 6 | 2 | 0 | 2 | F | T | L | | |
| TK62012F | | AA2 | | | | | | | | | | | |
| TK62022F | AA3 | | | | | | | | | | | | |

ABSOLUTE MAXIMUM RATINGS

| Parameter | 項目 | Symbol | 記号 | Rating | 定格 | Unit | 単位 | Remarks | 備考 |
|-----------------------------|---------|----------|----|------------|----|------|----|----------|----|
| Operating Voltage Range | 動作電圧範囲 | V_{OP} | | 1.8 to 5.5 | | V | | TK62002F | |
| | | | | 2.0 to 5.5 | | | | TK62012F | |
| | | | | 2.7 to 5.5 | | | | TK62022F | |
| Operating Temperature Range | 動作温度範囲 | T_{OP} | | -40 to +85 | | °C | | | |
| Power Dissipation | 許容消費電力 | P_D | | 400 | | mW | | | |
| Operating Frequency Range | 動作周波数範囲 | f_{OP} | | to 0.2 | | MHz | | TK62002F | |
| | | | | to 1 | | | | TK62012F | |
| | | | | to 5 | | | | TK62022F | |

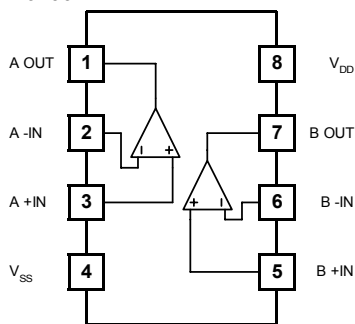
ELECTRICAL CHARACTERISTICS

$V_{DD} = +1.5V, V_{SS} = -1.5V$ (TK62002F, TK62012F), $V_{DD} = +2.25V, V_{SS} = -2.25V$ (TK62022F), $T_A = 25^\circ C$

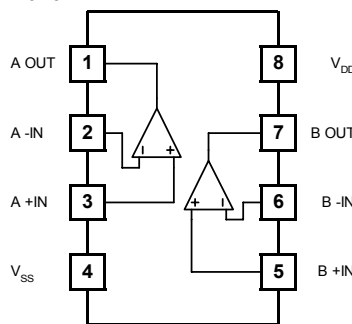
| Parameter 項目 | Symbol 記号 | Value | | | Units 単位 | Conditions 条件 |
|--|--------------|-------|-------|-----|-------------|---|
| | | MIN | TYP | MAX | | |
| Supply Current 電源電流 | I_{CC} | | 8.0 | | μA | TK62002F TK62012F TK62022F 2ch, $V_{I+} = 0V, R_L = \infty$ |
| | | | 45 | | | |
| | | | 250 | | | |
| Input Offset Voltage 入力オフセット電圧 | V_{IO} | | 0 | | mV | |
| Input Offset Current 入力オフセット電流 | I_{IO} | | 1 | | pA | |
| Input Bias Current 入力バイアス電流 | I_{IB} | | 1 | | pA | |
| Common-Mode Input Voltage Range 同相入力電圧範囲 | V_{ICMR} | | 2.8 | | V | TK62002F, TK62012F TK62022F |
| | | | 4.4 | | | |
| Maximum Output Voltage(High) 最大出力電圧(High) | V_{OMH} | | 1.49 | | V | TK62002F, TK62012F TK62022F $V_{I+} = +0.5V, V_{I-} = 0V,$ $R_L = \infty$ |
| | | | 2.24 | | | |
| Maximum Output Voltage(Low) 最大出力電圧(Low) | V_{OML} | | -1.49 | | V | TK62002F, TK62012F TK62022F $V_{I+} = -0.5V, V_{I-} = 0V,$ $R_L = \infty$ |
| | | | -2.24 | | | |
| Source Current 流出電流 | I_{SO} | | 9 | | mA | TK62002F, TK62012F TK62022F $V_{I+} = +0.5V, V_{I-} = 0V,$ $R_L = \infty$ |
| | | | 15 | | | |
| Sink Current 流入電流 | I_{SI} | | 9 | | mA | TK62002F, TK62012F TK62022F $V_{I+} = -0.5V, V_{I-} = 0V,$ $R_L = \infty$ |
| | | | 15 | | | |
| Common-Mode Rejection Ratio 同相信号除去比 | CMRR | | 70 | | dB | $-0.5V \leq V_{ICM} \leq 0.5V$ |
| Supply Voltage Rejection Ratio 電源電圧除去比 | SVRR | | 65 | | dB | |
| Open Circuit Voltage Gain 開回路電圧利得 | G_{VO} | | 100 | | dB | |
| Slew Rate スルーレート | SR | | 0.05 | | $V/\mu s$ | TK62002F TK62012F TK62022F $R_L = 2k\Omega, C_L = 15pF$ |
| | | | 0.4 | | | |
| | | | 3 | | | |
| Gain-Bandwidth Product 利得帯域幅 | GB | | 200k | | Hz | TK62002F TK62012F TK62022F |
| | | | 1M | | | |
| | | | 5M | | | |

BLOCK DIAGRAM

■ TK62002F



■ TK62012F



■ TK62022F

