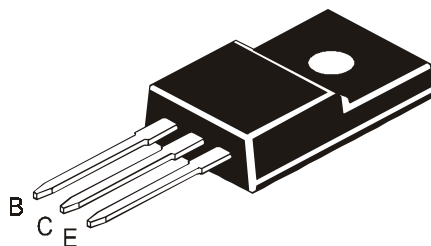


SILICON PLANAR POWER TRANSISTORS



NPN

CJF31

CJF31A

CJF31B

CJF31C

PNP

CJF32

CJF32A

CJF32B

CJF32C

**TO-220FP Fully Isolated
Plastic Package**

Designed for use in General Purpose Amplifier and Switching Applications

ABSOLUTE MAXIMUM RATINGS

| DESCRIPTION | SYMBOL | CJF31 CJF32 | CJF31A CJF32A | CJF31B CJF32B | CJF31C CJF32C | UNIT |
|---|--------------|---------------------------|------------------|------------------|------------------|---------------------|
| Collector Base Voltage | V_{CBO} | 40 | 60 | 80 | 100 | V |
| Collector Emitter Voltage | V_{CEO} | 40 | 60 | 80 | 100 | V |
| Emitter Base Voltage | V_{EBO} | ←————— 5 —————→ | | | | V |
| Collector Current - Continuous Peak | I_C | ←————— 3 —————→ | | | | A |
| | | ←————— 5 —————→ | | | | A |
| Base Current | I_B | ←————— 1 —————→ | | | | A |
| Total Power Dissipation @ $T_c=25^\circ\text{C}$ | P_D | ←————— 40 —————→ | | | | W |
| Derate Above 25°C | | ←————— 0.32 —————→ | | | | W/ $^\circ\text{C}$ |
| Total Power Dissipation @ $T_a=25^\circ\text{C}$ | P_D | ←————— 2 —————→ | | | | W |
| Derate Above 25°C | | ←————— 0.016 —————→ | | | | W/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | $T_{j,Tstg}$ | ←————— -65 to +150 —————→ | | | | $^\circ\text{C}$ |

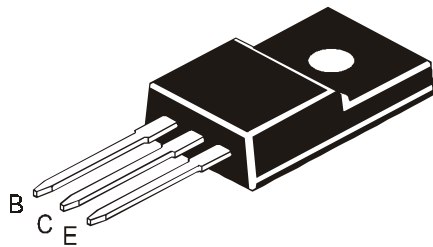
THERMAL RESISTANCE

| | | | |
|--------------------------|---------------|---------------------|--------------------|
| From Junction to Ambient | $R_{th(j-a)}$ | ←————— 62.5 —————→ | $^\circ\text{C/W}$ |
| From Junction to Case | $R_{th(j-c)}$ | ←————— 3.125 —————→ | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless specified otherwise)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | MAX | UNIT |
|---------------------------------|------------------|---|-----|-----|---------------|
| Collector Emitter (sus) Voltage | $V_{CEO(sus)}$ * | $I_C=30\text{mA}, I_B=0$ | | | |
| | | CJF31, CJF32 | 40 | - | V |
| | | CJF31A, CJF32A | 60 | - | V |
| | | CJF31B, CJF32B | 80 | - | V |
| | | CJF31C, CJF32C | 100 | - | V |
| Collector Cut off Current | I_{CEO} | CJF31/31A, CJF32/32A $V_{CE}=30\text{V}, I_B=0$ | - | 0.3 | mA |
| | | CJF31B/31C, CJF32B/32C $V_{CE}=60\text{V}, I_B=0$ | - | 0.3 | mA |
| Collector Cut off Current | I_{CES} | $V_{CE}=\text{Rated } V_{CES}, V_{EB}=0$ | - | 200 | μA |
| Emitter Cut off Current | I_{EBO} | $V_{BE}=5\text{V}, I_C=0$ | - | 1.0 | mA |

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ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless specified otherwise)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | MAX | UNIT |
|--------------------------------------|-----------------|--|----------|---------|------|
| DC Current Gain | h_{FE}^* | $I_C=1.0\text{A}$, $V_{CE}=4\text{V}$ $I_C=3.0\text{A}$, $V_{CE}=4\text{V}$ | 25 10 | - 50 | |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}^*$ | $I_C=3\text{A}$, $I_B=375\text{mA}$ | - | 1.2 | V |
| Base Emitter on Voltage | $V_{BE(on)}^*$ | $I_C=3.0\text{A}$, $V_{CE}=4\text{V}$ | - | 1.8 | V |
| DYNAMIC CHARACTERISTICS | | | | | |
| Current Gain - Bandwidth Product ** | f_T | $I_C=500\text{mA}$, $V_{CE}=10\text{V}$ $f_{test}=1\text{MHz}$ | 3.0 | - | MHz |
| Small Signal Current Gain | $ h_{fe} $ | $I_C=0.5\text{A}$, $V_{CE}=10\text{V}$ $f=1\text{kHz}$ | 20 | - | |

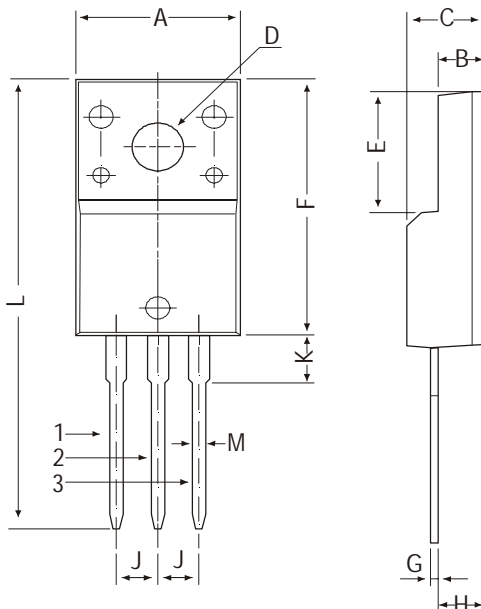
* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

** $f_T = |h_{fe}| f_{test}$

| | |
|---------------|---------------|
| NPN | PNP |
| CJF31 | CJF32 |
| CJF31A | CJF32A |
| CJF31B | CJF32B |
| CJF31C | CJF32C |

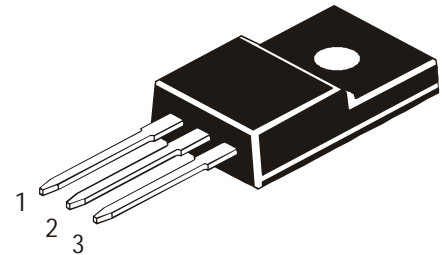
TO-220FP Fully Isolated Plastic Package

TO-220FP Fully Isolated Plastic Package



| DIM | MIN | MAX |
|-----|-------|-------|
| A | 9.96 | 10.36 |
| B | 2.60 | 3.00 |
| C | 4.50 | 4.90 |
| D | 3.10 | 3.30 |
| E | 7.90 | 8.20 |
| F | 16.87 | 17.27 |
| G | 0.45 | 0.50 |
| H | 2.56 | 2.96 |
| J | 2.34 | 2.74 |
| K | — | 3.08 |
| L | — | 30.05 |
| M | — | 0.80 |

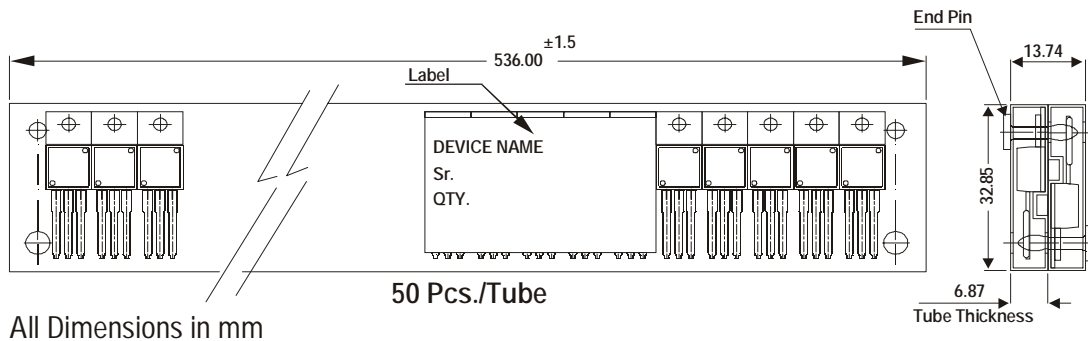
All dimensions in mm.



Pin Configuration

1. Base
2. Collector
3. Emitter

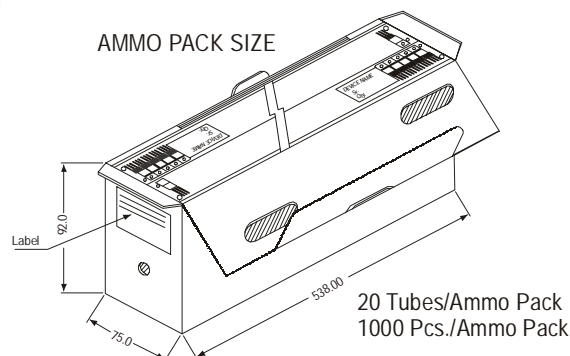
TO-220 FP Tube Packing



All Dimensions in mm

50 Pcs./Tube

AMMO PACK SIZE



Packing Detail

| PACKAGE | STANDARD PACK | | INNER CARTON BOX | | OUTER CARTON BOX | | |
|----------|-----------------|----------------|---------------------|-----|-------------------|-----|--------|
| | Details | Net Weight/Qty | Size | Qty | Size | Qty | Gr Wt |
| TO-220FP | 200 pcs/polybag | 396 gm/200 pcs | 3" x 7.5" x 7.5" | 1K | 17" x 15" x 13.5" | 16K | 36 kgs |
| | 50 pcs/tube | 135 gm/50 pcs | 3.5" x 3.7" x 21.5" | 1K | 19" x 19" x 19" | 10K | 28 kgs |

| NPN | PNP |
|--------|--------|
| CJF31 | CJF32 |
| CJF31A | CJF32A |
| CJF31B | CJF32B |
| CJF31C | CJF32C |

**TO-220FP Fully Isolated
Plastic Package**

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