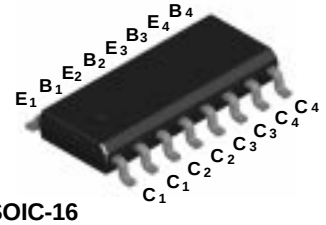
FAIRCHILD
SEMICONDUCTOR TM

# MMPQ6700




**SOIC-16**

| TRANSISTOR TYPE | |
|---|---|
| $C_1$ $B_1$ $E_1$ & $C_2$ $B_2$ $E_2$ | NPN |
| $C_3$ $B_3$ $E_3$ & $C_4$ $B_4$ $E_4$ | PNP |

## Quad NPN & PNP General Purpose Amplifier

These complimentary devices can be used in switches with collector currents of 10 µA to 100 mA. These devices are best used when space is the primary consideration. Sourced from Process 23 & 66. See 2N3904 (NPN) & 2N3906 (PNP) for characteristics.

### Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 40 | V |
| $V_{CBO}$ | Collector-Base Voltage | 40 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5.0 | V |
| $I_C$ | Collector Current - Continuous | 200 | mA |
| $T_J$, $T_{stg}$ | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**NOTES**:
**1)** These ratings are based on a maximum junction temperature of 150 degrees C.
**2)** These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|---|---|---|---|
| | | MMPQ6700 | |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 1000<br>8.0 | mW<br>mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient<br>Effective 4 Die<br>Each Die | <br>125<br>240 | <br>°C/W<br>°C/W |

## Quad NPN & PNP General Purpose Amplifier
(continued)

### Electrical Characteristics
TA = 25°C unless otherwise noted

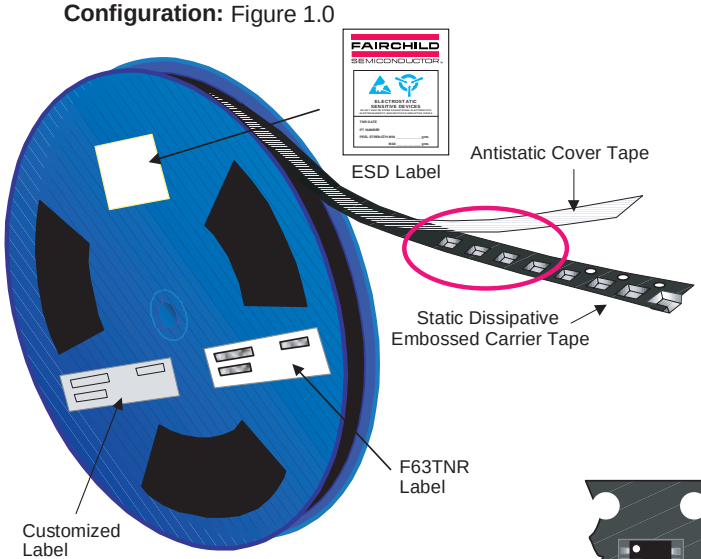
| Symbol | Parameter | Test Conditions | Min | Max | Units |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C$ = 10 mA, $I_B$ = 0 | 40 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 10 μA, $I_E$ = 0 | 40 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 10 μA, $I_C$ = 0 | 5.0 | | V |
| $I_{CBO}$ | Collector-Cutoff Current | $V_{CB}$ = 30 V, $I_E$ = 0 | | 50 | nA |
| $I_{EBO}$ | Emitter-Cutoff Current | $V_{EB}$ = 4.0 V, $I_C$ = 0 | | 50 | nA |
| **ON CHARACTERISTICS*** | | | | | |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = 1.0 V, $I_C$ = 0.1 mA<br>$V_{CE}$ = 1.0 V, $I_C$ = 1.0 mA<br>$V_{CE}$ = 1.0 V, $I_C$ = 10 mA | 30<br>50<br>70 | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = 10 mA, $I_B$ = 1.0 mA | | 0.25 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$ = 10 mA, $I_B$ = 1.0 mA | | 0.90 | V |
| **SMALL SIGNAL CHARACTERISTICS** | | | | | |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = 5.0 V, f = 100 kHz | | 4.5 | pF |
| $C_{ib}$ | Input Capacitance | $V_{BE}$ = 0.5 V, f = 1.0 kHz | | 10 | pF |
| $f_T$ | Current-Gain Bandwidth Product | $I_C$ = 10 mA, $V_{CE}$ = 20 V, f = 100 MHz | 200 | | MHz |

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

# SOIC-16 Tape and Reel Data and Package Dimensions

FAIRCHILD SEMICONDUCTOR™

## SOIC(16lds) Packaging Configuration: Figure 1.0

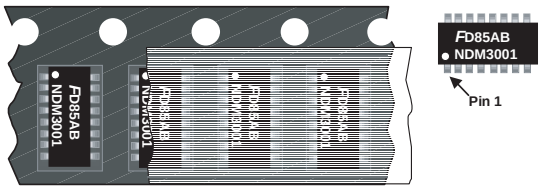



**Packaging Description:**

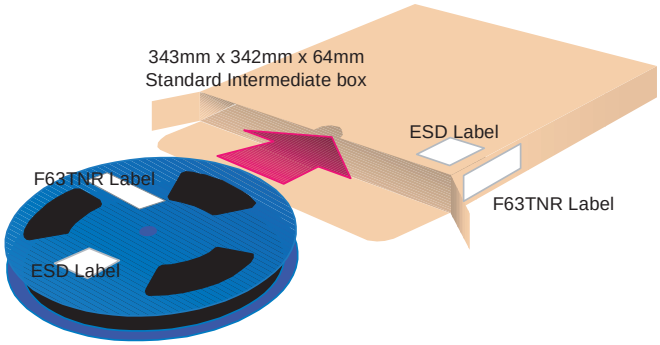
SOIC-16 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 330cm diameter reel. The reels are dark blue in color and is made of polystyrene plastic (anti-static coated). This and some other options are further described in the Packaging Information table.

These full reels are individually barcode labeled and placed inside a standard intermediate box (illustrated in figure 1.0) made of recyclable corrugated brown paper. One box contains two reels maximum. And these boxes are placed inside a barcode labeled shipping box which comes in different sizes depending on the number of parts shipped.

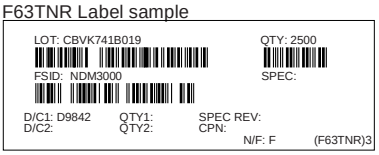
| SOIC (16lds) Packaging Information | | |
|---|---|---|
| **Packaging Option** | Standard (no flow code) | L86Z |
| **Packaging type** | TNR | Rail/Tube |
| **Qty per Reel/Tube/Bag** | 2,500 | 45 |
| **Reel Size** | 13" Dia | - |
| **Box Dimension (mm)** | 343x64x343 | 530x130x83 |
| **Max qty per Box** | 5,000 | 13,500 |
| **Weight per unit (gm)** | 0.1437 | 0.1437 |
| **Weight per Reel (kg)** | 0.7735 | - |
| **Note/Comments** | | |



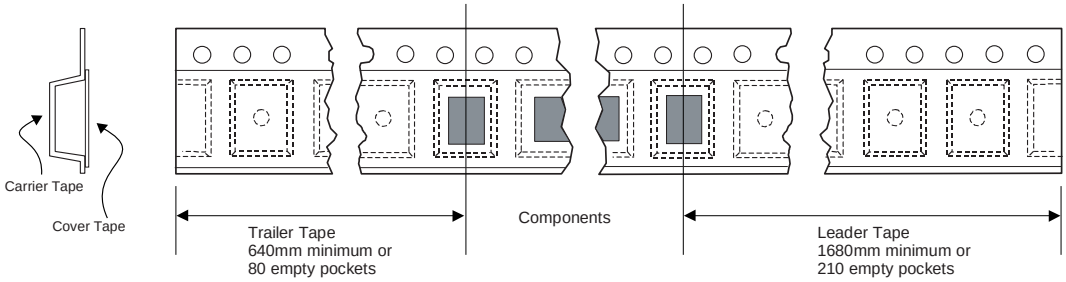

**SOIC-16 Unit Orientation**




F63TNR Label sample

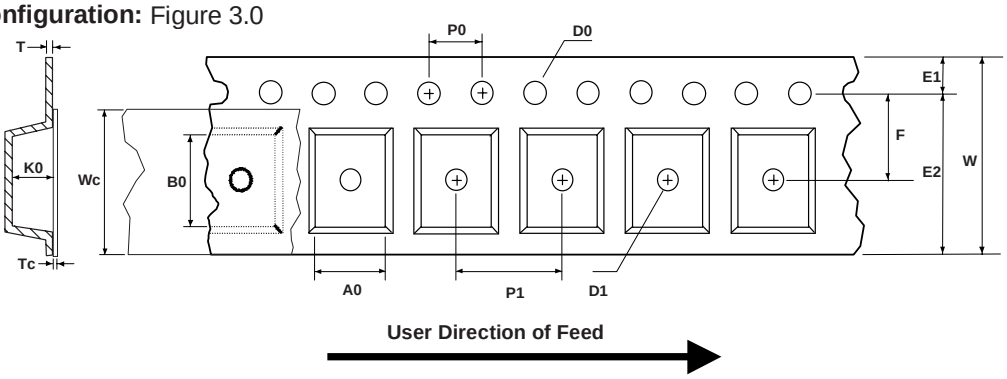



## SOIC(16lds) Tape Leader and Trailer Configuration: Figure 2.0



# SOIC-16 Tape and Reel Data and Package Dimensions, continued

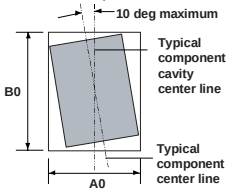
## SOIC(16lds) Embossed Carrier Tape
**Configuration:** Figure 3.0



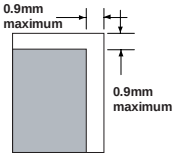

| Dimensions are in millimeter | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pkg type** | **A0** | **B0** | **W** | **D0** | **D1** | **E1** | **E2** | **F** | **P1** | **P0** | **K0** | **T** | **Wc** | **Tc** |
| **SOIC**(16lds) (16mm) | 6.60 +/-0.30 | 10.35 +/-0.25 | 16.0 +/-0.3 | 1.55 +/-0.05 | 1.60 +/-0.10 | 1.75 +/-0.10 | 14.25 min | 7.50 +/-0.05 | 8.0 +/-0.1 | 4.0 +/-0.1 | 2.40 +/-0.40 | 0.450 +/-0.150 | 13.0 +/-0.3 | 0.06 +/-0.02 |

Notes: A0, B0, and K0 dimensions are determined with respect to the EIA/Jedec RS-481 rotational and lateral movement requirements (see sketches A, B, and C).


Sketch A (Side or Front Sectional View)
**Component Rotation**

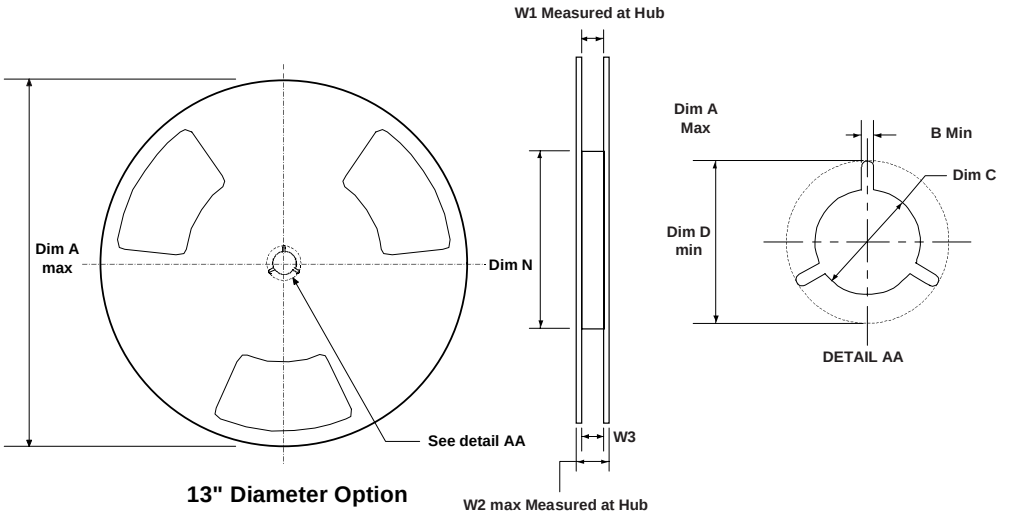



Sketch B (Top View)
**Component Rotation**




Sketch C (Top View)
**Component lateral movement**

## SOIC(16lds) Reel Configuration: Figure 4.0

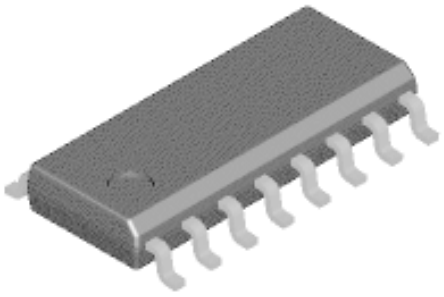


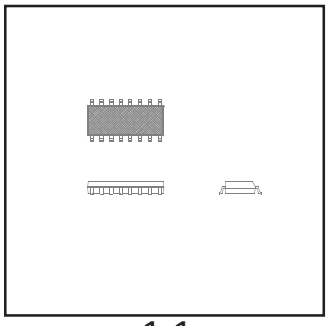

**13" Diameter Option**

| Dimensions are in inches and millimeters | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Tape Size** | **Reel Option** | **Dim A** | **Dim B** | **Dim C** | **Dim D** | **Dim N** | **Dim W1** | **Dim W2** | **Dim W3 (LSL-USL)** |
| 16mm | 13" Dia | 13.00 330 | 0.059 1.5 | 512 +0.020/-0.008 13 +0.5/-0.2 | 0.795 20.2 | 4.00 100 | 0.646 +0.078/-0.000 16.4 +2/0 | 0.882 22.4 | 0.626 – 0.764 15.9 – 19.4 |

## SOIC-16 Tape and Reel Data and Package Dimensions, continued

# SOIC-16 (FS PKG Code S3)



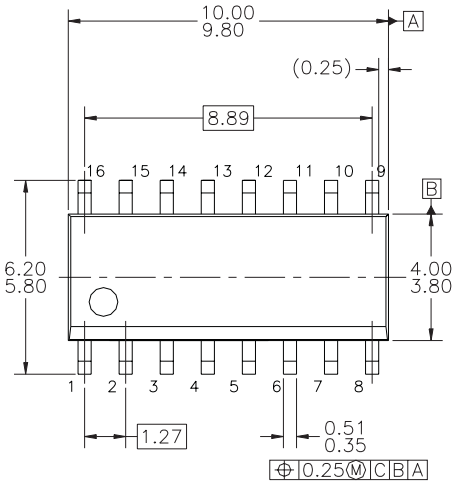


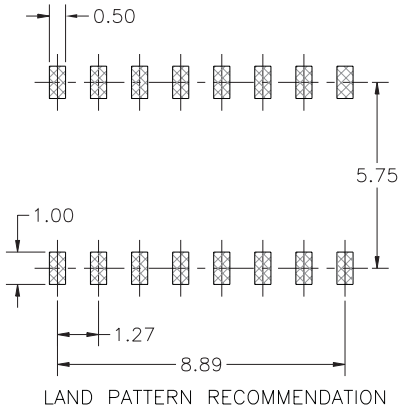
1:1

Scale 1:1 on letter size paper

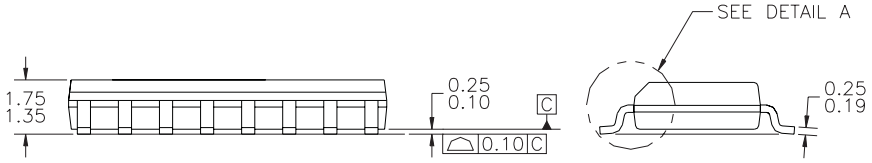
Dimensions shown below are in:
inches [millimeters]

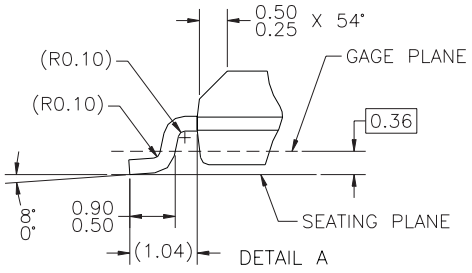
Part Weight per unit (gram): 0.1437




LAND PATTERN RECOMMENDATION

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