

# MC3361

## LOW POWER NARROW BAND FM IF

### Version 2.0

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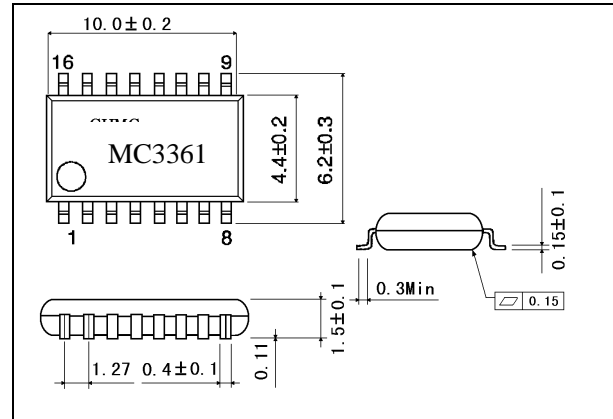
#### Version History

Version	Issued time	Notes
V1.0	Aug., 2006	Datasheet Created.
V2.0	Aug.8, 2010	Update datasheet format.

## DESCRIPTION

The MC3361 is designed for use in FM dual conversion communication equipment. It mainly consists of a narrow band FM demodulation system operable to less than 2.0V supply voltage. Besides of FM demodulator, MC3361 includes a mixer, crystal oscillator, second IFAMP, filter Amp, squelch circuitry, scan control and mute switch.

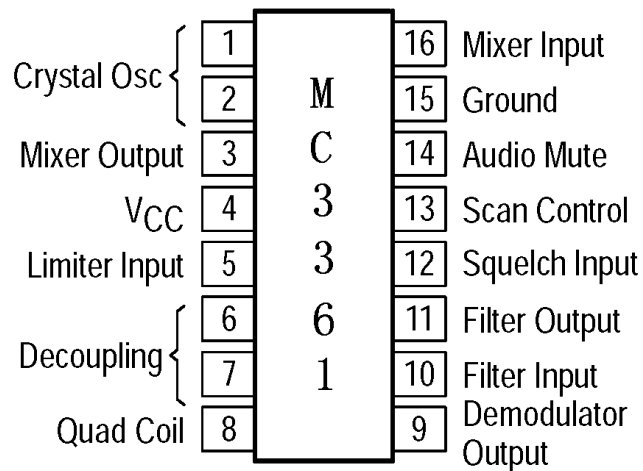
## Outline Drawing



## FEATURE

- Operating voltage range : 2.0V ~ 8.0V
- Low Current consumption  $I_{cc}=3.9\text{mA}$  Typ. ( $V_{cc}=4.0\text{V}$ )
- Excellent input sensitivity  
(-3dB Limiting = 2.6  $\mu\text{V}_{rms}$  Typ.)
- Low number of external parts required
- Operating frequency up to 60MHz
- SOP-16 package

## PIN CONFIGURATION



## MAXIMUM RATINGS (Ta=25°C)

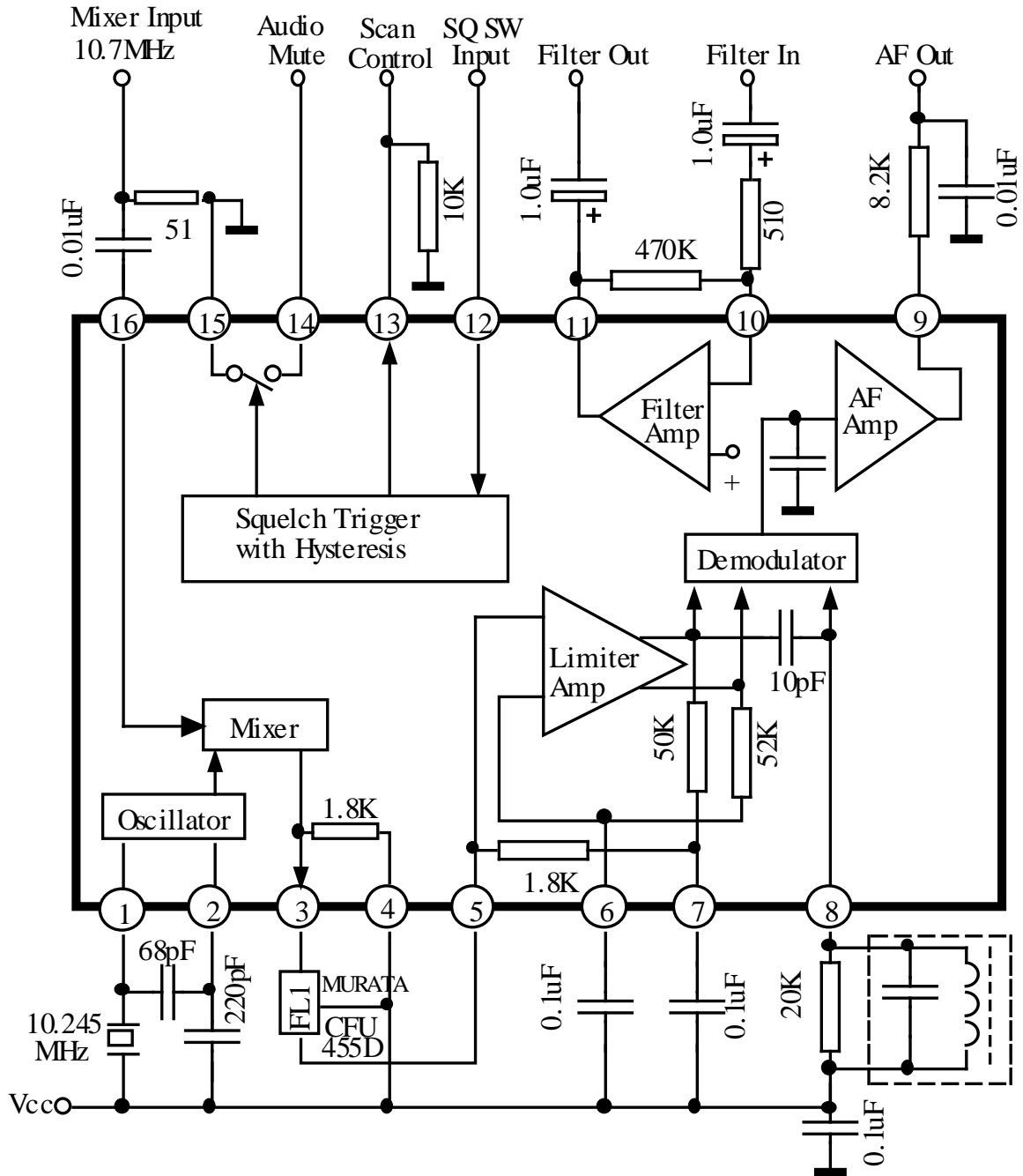
Characteristic	Pin	Symbol	Value	Unit
Supply Voltage Range	4	V <sub>CC</sub>	2.0~8.0	V
Maximum Supply Voltage	4	V <sub>CC(MAX)</sub>	10	V
Detector Input Voltage	8	V <sub>IN(DET)</sub>	1.0	V <sub>p-p</sub>
MIXER Input Voltage	16	V <sub>IN(RF)</sub>	1.0	V <sub>rms</sub>
Mute Function	14	V <sub>MUTE</sub>	-0.5~+5.0	V <sub>peak</sub>
Junction Temperature	-	T <sub>J</sub>	150	°C
Operating Temperature Range	-	T <sub>OPR</sub>	-30~+70	°C
Storage Temperature Range	-	T <sub>STG</sub>	-65~150	°C

## ELECTRICAL CHARACTERISTICS

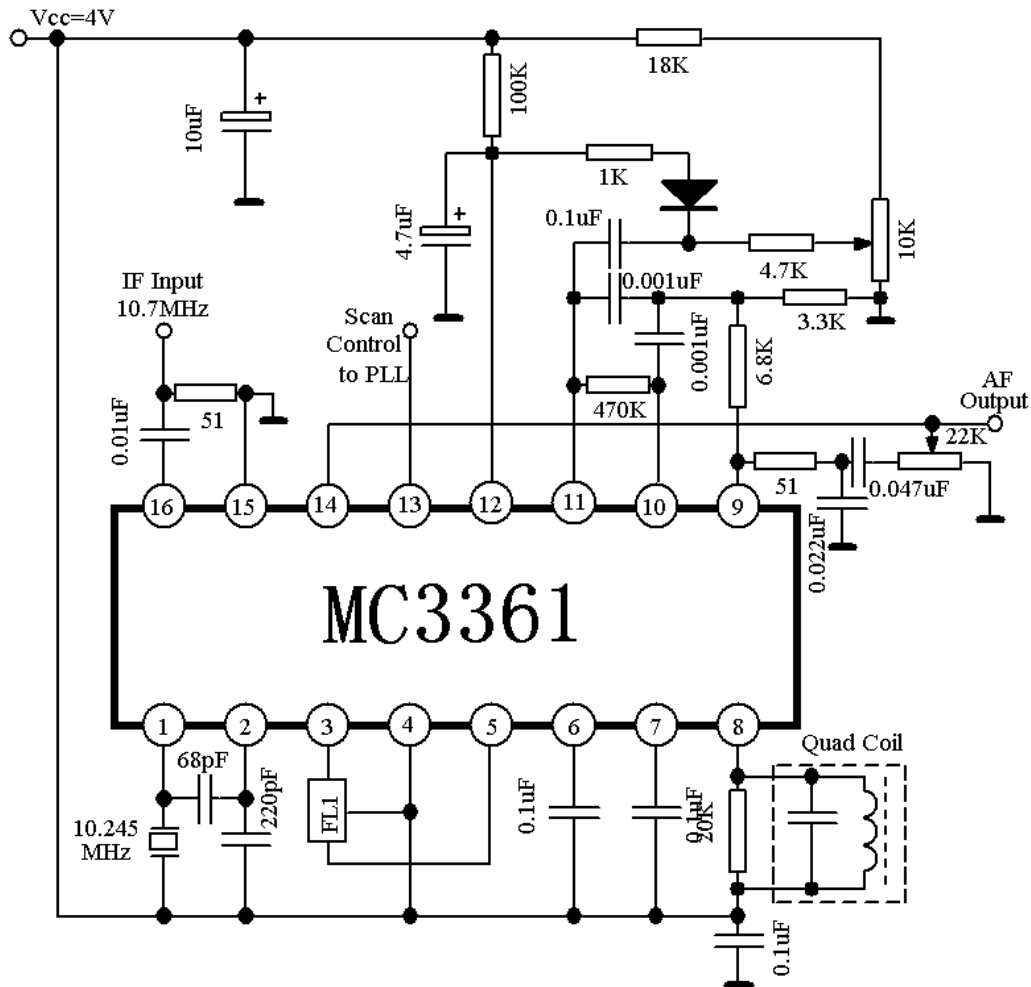
(Unless otherwise specified: Ta=25°C, V<sub>CC</sub>=4V, fo=10.7MHz, fm=1kHz, Δf=±3kHz)

Characteristics	Pin	Symbol	Test conditions	Min	Typ	Max	Unit
Current	4	ICC1	Squelch off (V <sub>I2</sub> =2V)	2.9	3.9	4.9	mA
		ICC2	Squelch on (V <sub>I2</sub> =0V)	4.4	5.4	6.4	
Audio Output Voltage	9	V <sub>OUT</sub>	V <sub>in</sub> =10mV <sub>rms</sub>	130	160	200	mV <sub>rms</sub>
Input Limiting Voltage	16	V <sub>IN(Lim)</sub>	-3dB Limiting		2.0	6.0	μV
Total Harmonic Distortion	9	THD	V <sub>OUT</sub> =170mV <sub>rms</sub>		0.8		%
Recovered Output Noise Voltage	9	V <sub>NO</sub>	No Input Signal	60	80	250	mV <sub>rms</sub>
Drop Voltage AF Gain Loss	9	ΔG <sub>v</sub>	V <sub>CC</sub> =4V → 2V	-3	-0.6		dB
Detector Output Impedance	-	R <sub>OUT</sub>			450		Ω
Signal to Noise Ratio	9	S/N		36	67		dB
Filter Gain	-	G <sub>v</sub>	V <sub>in</sub> =5mV <sub>rms</sub> , f=10kHz	40	50		dB
Filter Output DC Voltage	11	V <sub>O(DC)</sub>		1.0	1.3	1.6	V
Mute Function Low Resistance	14	R <sub>ON(Mute)</sub>	Mute Switch-on		10		Ω
Mute Function High Resistance	14	R <sub>Off(Mute)</sub>	Mute Switch-off	1.0	10		MΩ
Scan Function Low	13	V <sub>L(Scan)</sub>	Mute off(V <sub>I2</sub> =2V)		0	0.4	V
Scan Function High	13	V <sub>H(Scan)</sub>	Mute on(V <sub>I2</sub> =0V)	3.0	3.5		V
Trigger Hysteresis	-	V <sub>TH</sub>	Squelch on/off		45	100	mV <sub>rms</sub>
Mixer Conversion Gain	3	G <sub>v(Mix)</sub>			28		dB
Mixer Input Resistance	16	R <sub>i(Mix)</sub>			3.3		kΩ
Mixer Input Capacitance	16	C <sub>i(Mix)</sub>			2.2		pF

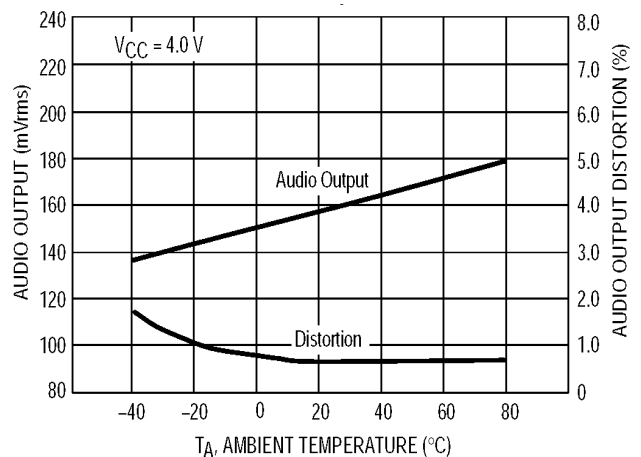
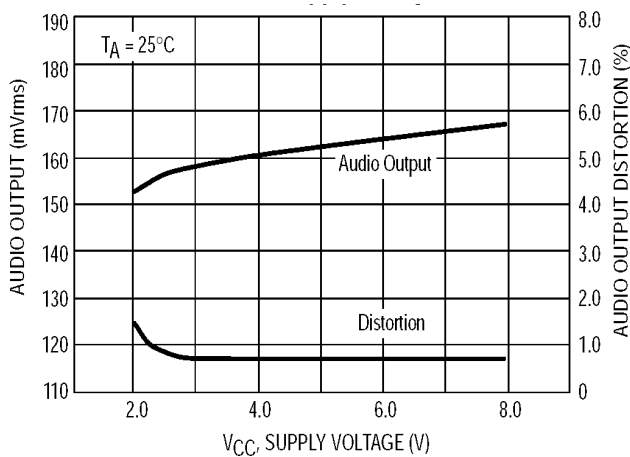
## BLOCK DIAGRAM AND TEST CIRCUIT

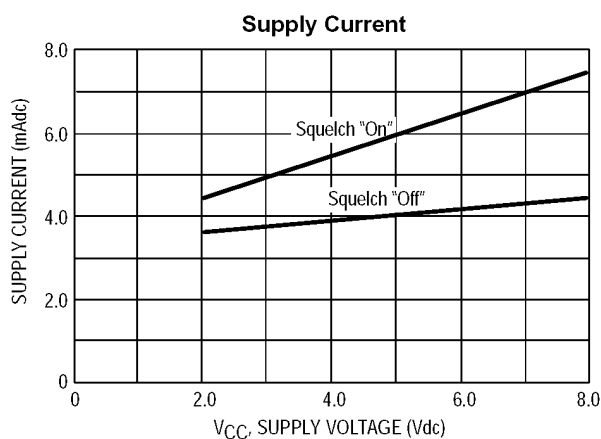
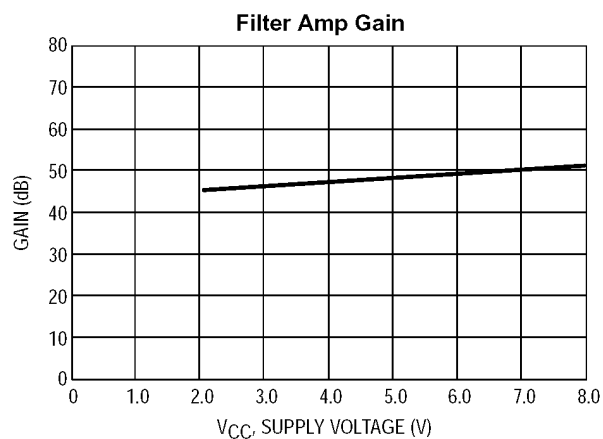
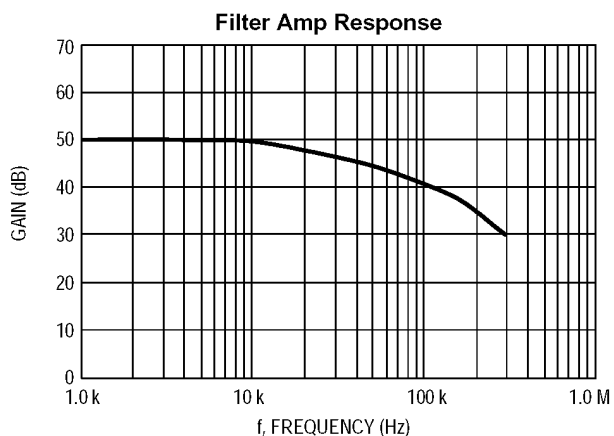
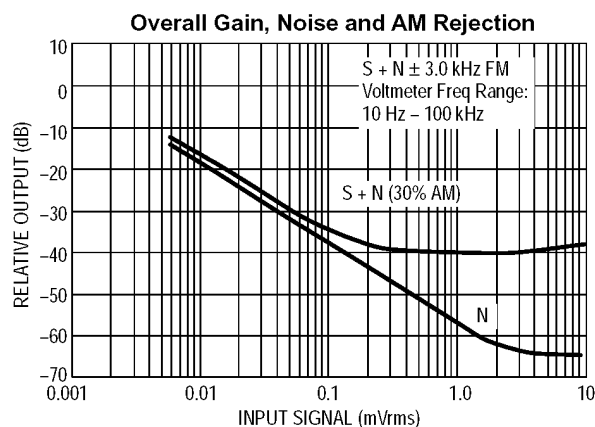
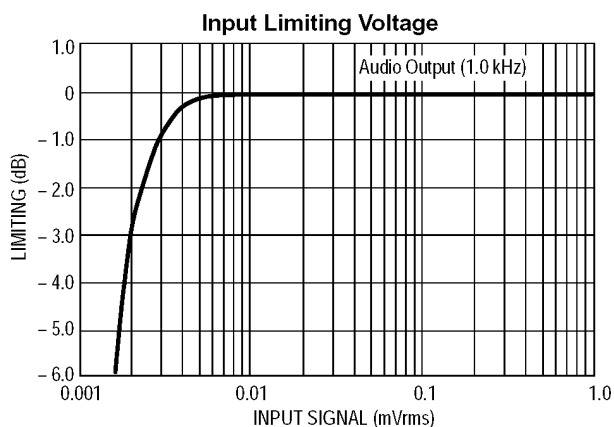


## APPLICATION CIRCUIT



## TYPICAL PERFORMANCE CHARACTERISTICS



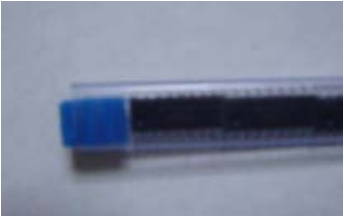








## PACKING

### 1. SOP Tube Packing Process:

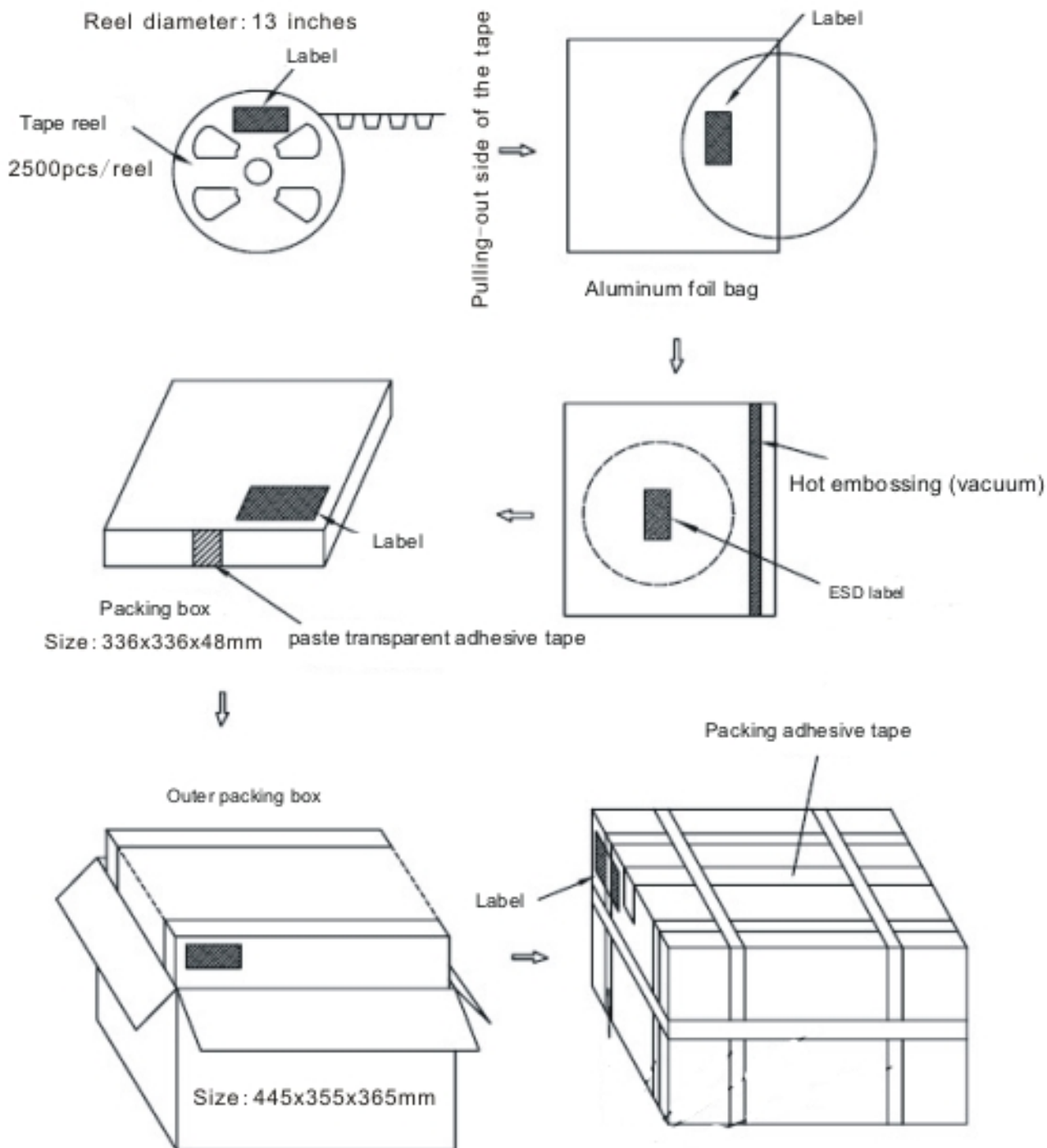
Packing Type	Pcs/ Tube	Pcs /Box	Pcs / Case
SOP16 (Tube)	50	10,000	50,000

No.	Packing Example	Packing Description
1		<ol style="list-style-type: none"> <li>1. Make the first pin toward the non-white cork (the other side of the tube is white cork).</li> <li>2. The direction is as Figure 1, please make the direction of all products the same.</li> <li>3. 50pcs chips in each tube.</li> </ol>
2		<ol style="list-style-type: none"> <li>1. Tie plastic tubes with the same direction.</li> <li>2. 20 tubes for each bundle, 1000pcs chips altogether.</li> </ol>
3		<ol style="list-style-type: none"> <li>1. Place tubes in small packaging boxes.</li> <li>2. 10,000pcs chips in each box.</li> </ol>
4		<ol style="list-style-type: none"> <li>1. Cover small boxes, and stick the product label in the middle of right side.</li> <li>2. Box size: 545x127x55mm</li> </ol>
5		Place small boxes with the same direction in cartoon boxes.
6		<ol style="list-style-type: none"> <li>1. Cover cartoon boxes, and seal with transparent adhesive tape.</li> <li>2. Stick product label in top left corner of cartoon boxes.</li> <li>3. 50,000pcs chips in each box.</li> <li>4. Carton size:565x360x145mm</li> </ol>
7		Product label on cartoon boxes

## 2. SOP Tape Packing Process:

Packing Type	Pcs/ Reel	Pcs /Box	Pcs / Case
SOP16 (Tape)	2,500	5,000	50,000





## Important Notice

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MC Devices warrants performance of its products to the specifications applicable at the time of sale in accordance with MC Devices' standard warranty. Testing and other quality control techniques are also support this warrant.

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