



# TouchCore Family

Application Note #042

(AN042-V1.0)

AN

## [TouchCore3.0N] PWM output level by changing Line Length

V1.0

February 2010

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# 1. Test Method

## ◆ Port Status

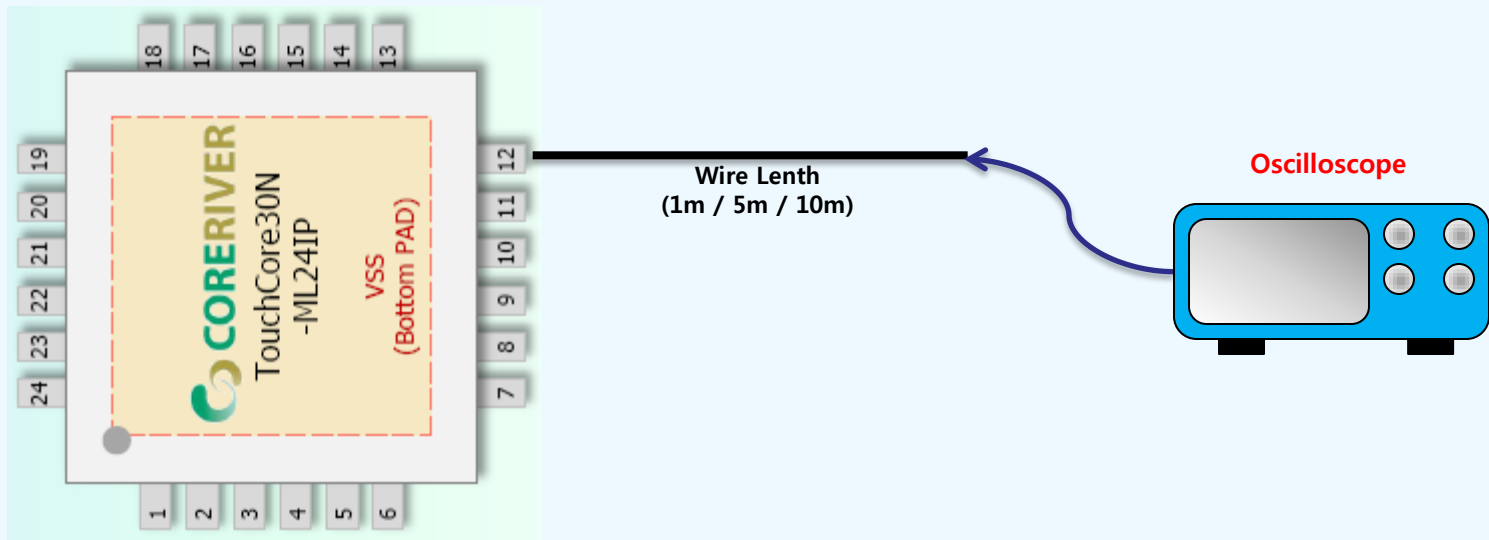
- ✓ Push-Pull Output
- ✓ High current driving On

## ◆ PWM (Pulse Width Modulation) Initialization

- ✓ 187.5kHz (Max. Speed : 48MHz/256)
- ✓ 50% duty

## ◆ Measurement

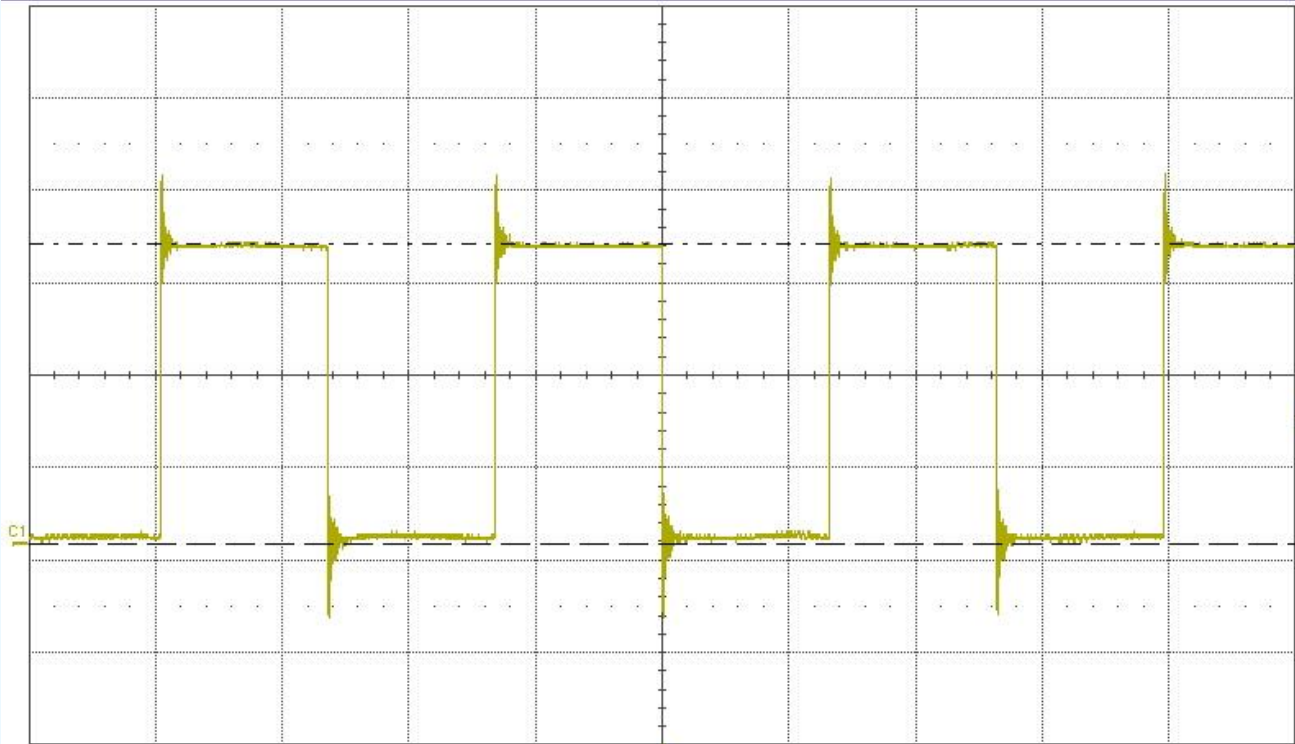
- ✓ Measure the waveforms at PWM port by changing the wire length.



## 2. Result (1/4)

### ◆ At no wire

파일 수직 타임베이스 트리거 디스플레이 커서측정 파라메터 연산 분석 유틸리티 도움말



C1 BwL DC1M  
1.00 V/div  
-1.820 V ofst  
----- 3.24 V  
----- 0.00 V  
Δy -3.24 V

타임베이스 0.00 μs 트리거 C1 DC  
2.00 μs/div 오토 1.37 V  
40.0 kS 2.0 GS/s Edge 하강

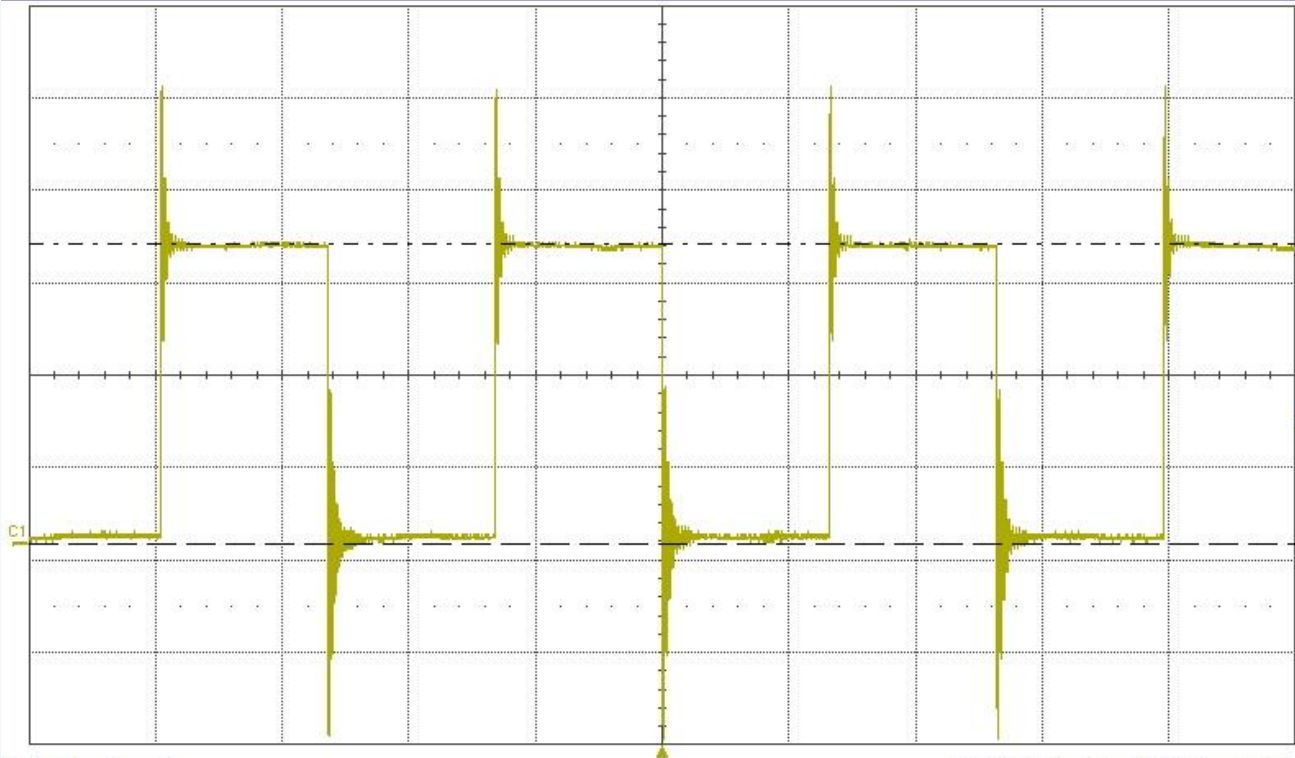
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## 2. Result (2/4)

### ◆ At 1m Wire

파일 수직 타임베이스 트리거 디스플레이 커서측정 파라미터 연산 분석 유틸리티 도움말



C1 BwL DC1M  
1.00 V/div  
-1.820 V ofst  
----- 3.24 V  
----- 0.00 V  
Δy -3.24 V

타임베이스 0.00 μs 트리거 C1 DC  
2.00 μs/div 오토 1.37 V  
40.0 kS 2.0 GS/s Edge 하강

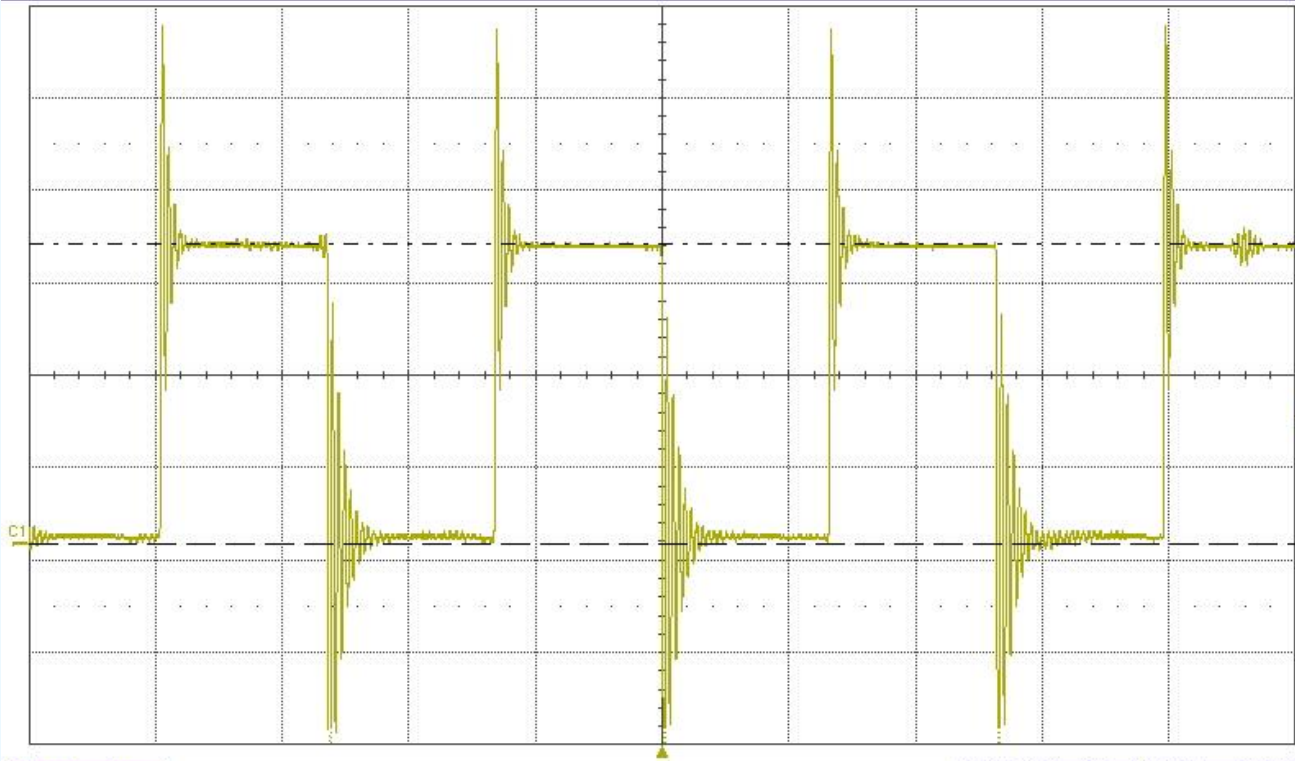
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## 2. Result (3/4)

### ◆ At 5m Wire

파일 수직 타임베이스 트리거 디스플레이 커서측정 파라미터 연산 분석 유틸리티 도움말



C1 BwL DC1M  
1.00 V/div  
-1.820 V ofst  
----- 3.24 V  
----- 0.00 V  
Δy -3.24 V

타임베이스 0.00 μs 트리거 C1 DC  
2.00 μs/div 오토 1.37 V  
40.0 kS 2.0 GS/s Edge 하강

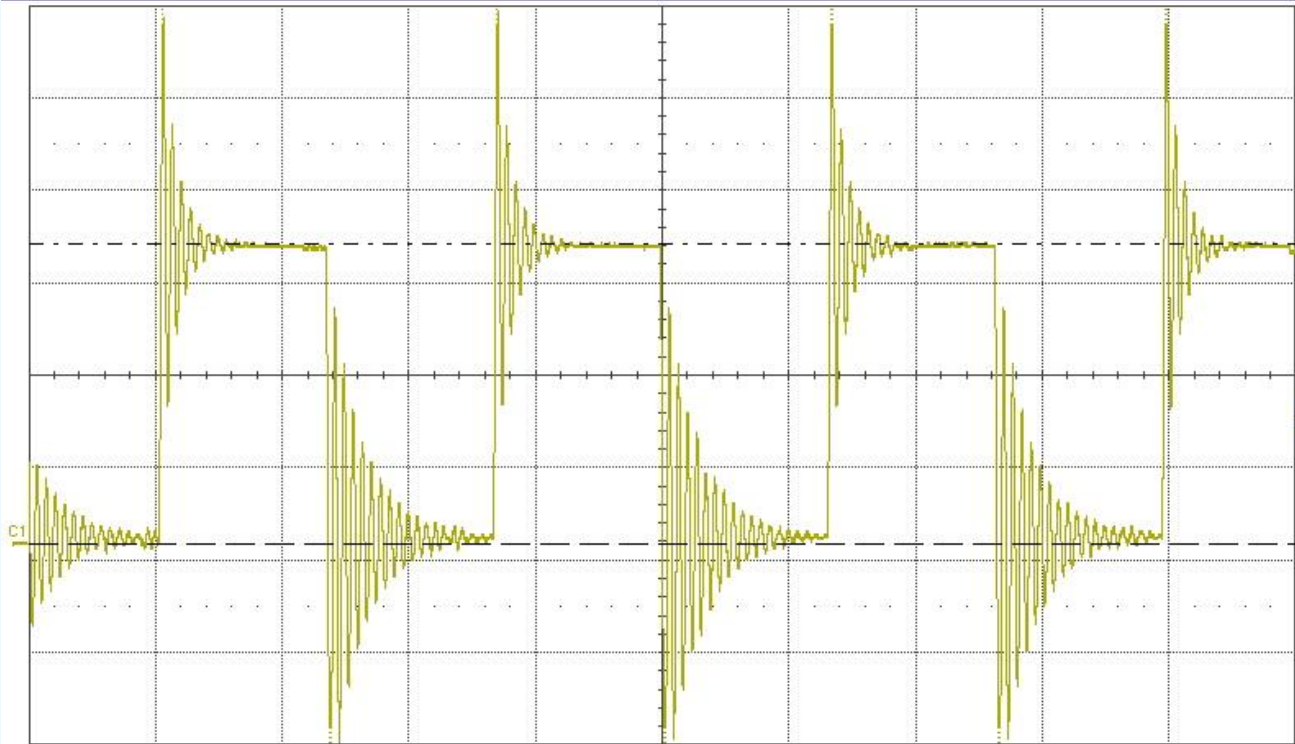
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## 2. Result (4/4)

### ◆ At 10m Wire

파일 수직 타임베이스 트리거 디스플레이 커서측정 파라미터 연산 분석 유틸리티 도움말



C1 BwL DC1M  
1.00 V/div  
-1.820 V ofst  
---- 3.24 V  
----- 0.00 V  
Δy -3.24 V

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타임베이스 0.00 μs 트리거 C1 DC  
2.00 μs/div 오토 1.37 V  
40.0 kS 2.0 GS/s Edge 하강

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## 3. Conclusion

- ◆ When PWM is on/off, the noise level is increased by longer wire.
- ◆ But, the difference in the waveform level is little by changing the wire length.