



RACTRON
ELECTRONICS

深圳市瑞科创电子有限公司

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TCXO RTT 温补晶振 VC-TCXO RTTV 温补压控晶振 SMD14X9mm DATASHEET

1、FREQUENCY CHARACTERISTICS 频率特性

| Parameter | Min | Typ | Max | Units | Test Condition |
|--|------|-----|------|--------|--|
| Nominal Frequency 标称频率 | 1 | | 200 | MHz | |
| Frequency Tolerance 频差 | -1.0 | | +1.0 | ppm | Frequency at 25°C, after reflow |
| Frequency stability over temperature 温度稳定性 | -0.5 | | +0.5 | ppm | Referenced to the frequency at 25°C. |
| Temperature range 工作温度 | -40 | | +85 | °C | Operating temperature range over the frequency stability |
| Frequency slope of perturbations 斜率 | -0.1 | | +0.1 | ppm/°C | Minimum of 1 frequency reading every 2°C over -40°C to +85°C |
| | -0.2 | | +0.2 | ppm/°C | Minimum of 1 frequency reading every 2°C over -30°C to +85°C |
| Supply voltage stability | -0.2 | | +0.2 | ppm | Supply voltage varied $\pm 5\%$ at 25°C |
| Load sensitivity 灵敏度 | -0.2 | | +0.2 | ppm | $\pm 10\%$ load change |
| Aging 老化率 | -1.0 | | +1.0 | ppm | first year at 25°C |

2、POWER SUPPLY 电源电压

| Parameter | Min | Typ | Max | Units | Test Condition |
|---------------------|-----|-----|-----|-------|---------------------------|
| Supply voltage 工作电压 | 3.3 | | 5.0 | V | |
| Current 电流功耗 | | | 2 | mA | At maximum supply voltage |

3、CONTROL VOLTAGE 压控调整

| Parameter | Min | Typ | Max | Units | Test Condition |
|-----------------------|---------|------|-----------|-------|-----------------------------|
| Control voltage range | 0.65 | 1.65 | 2.65 | V | |
| Pulling range | ± 5 | | ± 999 | ppm | Referenced to VCON at 1.65V |

4、OSCILLATOR OUTPUT 输出

| Parameter | Min | Typ | Max | Units | Test Condition |
|-------------------------|-------------------|-----|-----|------------------|----------------|
| Output waveform 输出波形 | Clipped sine wave | | | Sine | Hcmos TTL CMOS |
| Output voltage level 电平 | 0.8 | | 2 | V _{p-p} | |
| Output load 负载 | 10Kohm//10pF | | | | |
| Start time 启动时间 | | | 2 | ms | |

5、PHASE NOISE 相位噪声

| Parameter | Min | Typ | Max | Units | Test Condition |
|---------------|-----|------|-----|--------|----------------|
| 100Hz offset | | -117 | | dBc/Hz | |
| 1KHz offset | | -137 | | dBc/Hz | |
| 10KHz offset | | -149 | | dBc/Hz | |
| 100KHz offset | | -150 | | dBc/Hz | |

6、ENVIRONMENTAL CHARACTERISTICS 环境特性

| Parameter | Reference Std. | Test Condition |
|--------------------------|---|---|
| Vibration Test 振动测试 | MIL-STD-883 2007 Condition A JESD22-B103 Condition 1 | 10~2000Hz, 1.52mm, 20G, each axis for 4 hrs |
| Thermal Shock 温度冲击 | MIL-STD-883 1010 Condition B JESD22-A104 Condition B | -55°C, +125°C soak time is 10 mins with total 200 cycles |
| Mechanical Shock 机械冲击 | MIL-STD-883 2002 Condition B JESD22-B104 Condition B | 1500G, half-sine, 0.5ms, each axis for 3 times. |
| Storage temperature 存储温度 | -55°C to +125°C | -55°C to +125°C |



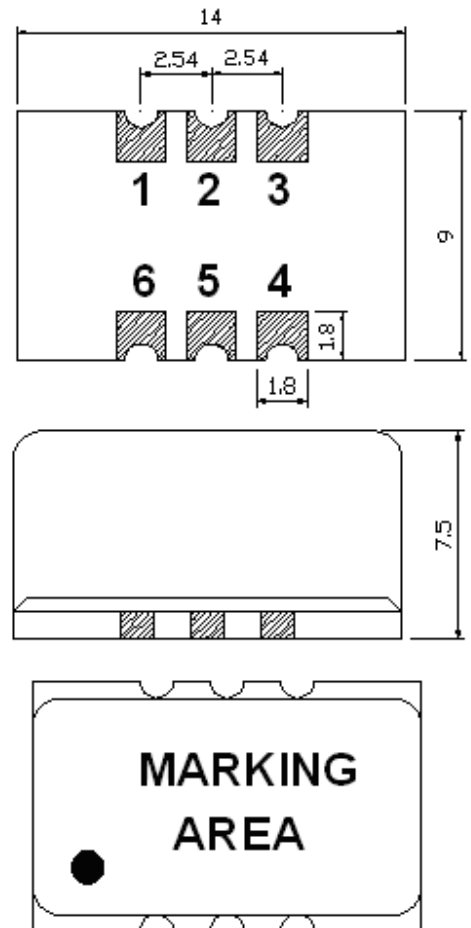
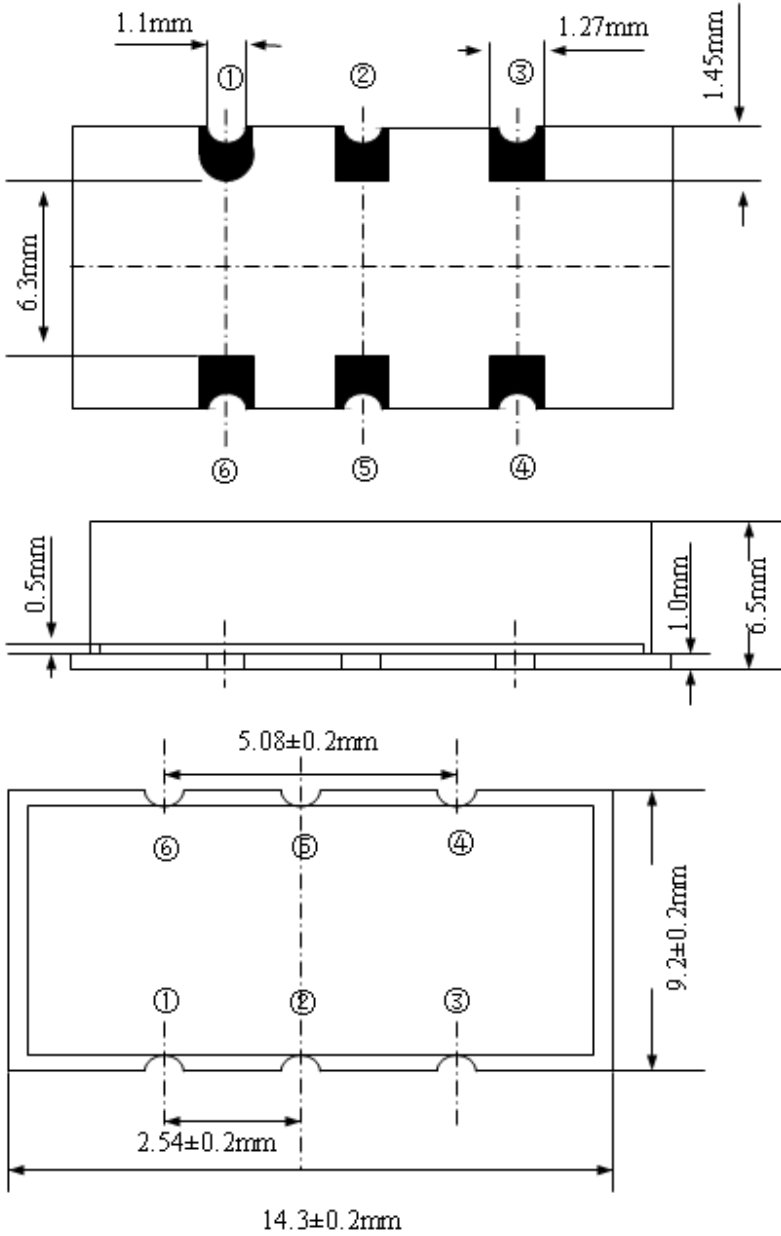
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DIMENSIONS 外形尺寸

Actual Size 实物图



| 序号 | 功能 | 序号 | 功能 |
|----|------|----|--------|
| 1 | VCon | 4 | OUTPUT |
| 2 | NC | 5 | NC |
| 3 | GND | 6 | VDD |

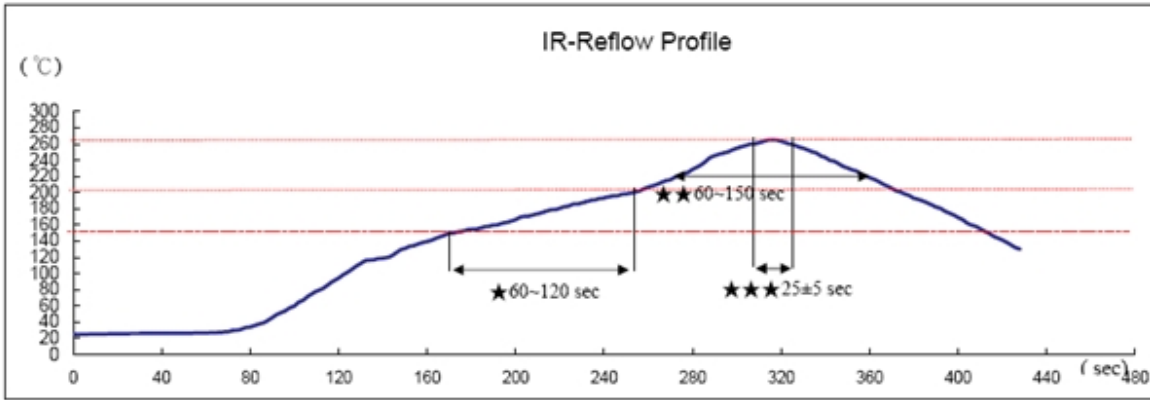


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无铅陶瓷贴片产品回流焊温度曲线



Reference Standard: JEDEC-STD 020

Test conditions: ★Pre-heating : 150°C to 200°C, 60~120secs.
 ★★Heating : 217°C, 60~150sec.
 ★★★Peak temperature : 260±5°C, 25±5sec.

10MHz 20MHz 电性能测试数据

THE TESTING DATA OF ELECTRICAL CHARACTERISTICS

TEST DATE:01/16/2012

PART NO. :

FREQUENCY:10.000MHZ

ORDER NO. :

| NO | FREQUENCY @ 25 °C (HZ) | OFFSET 0.45 -0.45 (PPM) | ICC 2 (mA) | PULL_H 12 (PPM) | PULL_L -4 -12 (PPM) | FREQ_V_H 0.2 (V) | FREQ_V_L 0.2 -0.2 (V) | START_T 2 (mS) | LINE 10 % | P_P 0.8 (V) |
|----|------------------------------|----------------------------------|------------------|-----------------------|------------------------------|------------------------|--------------------------------|----------------------|-----------------|-------------------|
| 1 | 10000000.40 | 0.04 | 1.10 | 6.73 | -6.44 | 0.01 | -0.01 | 0.16 | 0.79 | 1.25 |
| 2 | 10000000.00 | 0.00 | 1.00 | 6.15 | -5.89 | 0.01 | 0.00 | 0.14 | 0.70 | 1.24 |
| 3 | 10000000.20 | 0.02 | 1.15 | 6.40 | -6.13 | 0.02 | 0.00 | 0.14 | 0.72 | 1.24 |
| 4 | 10000000.60 | 0.06 | 1.10 | 6.40 | -6.09 | 0.01 | 0.00 | 0.14 | 0.77 | 1.24 |
| 5 | 9999999.80 | -0.02 | 1.10 | 6.51 | -6.21 | 0.01 | 0.00 | 0.19 | 0.84 | 1.24 |
| 6 | 10000000.60 | 0.06 | 1.15 | 6.73 | -6.35 | 0.02 | 0.00 | 0.19 | 0.83 | 1.26 |
| 7 | 10000000.60 | 0.06 | 1.05 | 6.42 | -6.05 | 0.02 | 0.01 | 0.13 | 0.82 | 1.25 |
| 8 | 10000000.50 | 0.05 | 1.10 | 6.21 | -5.94 | 0.02 | 0.00 | 0.18 | 0.71 | 1.23 |
| 9 | 10000000.20 | 0.02 | 1.10 | 6.89 | -6.53 | 0.01 | 0.00 | 0.22 | 0.84 | 1.25 |
| 10 | 10000001.10 | 0.11 | 1.10 | 6.73 | -6.38 | 0.01 | 0.00 | 0.15 | 0.81 | 1.24 |
| | OK_QTY | AVG: | 0.04 | 1.10 | 6.52 | -6.20 | 0.01 | 0.16 | 0.78 | 1.24 |
| | 10.00 | STD: | 0.04 | 0.04 | 0.25 | 0.22 | 0.01 | 0.03 | 0.06 | 0.01 |
| | | GA: | 8.89 | **** | -37.08 | 44.98 | 7.00 | **** | **** | **** |
| | | CP: | 4.05 | 6.86 | 5.44 | 6.14 | 13.33 | 20.40 | 55.86 | 18.50 |
| | | CPK: | 3.69 | 6.86 | 3.42 | 3.38 | 13.33 | 20.40 | 55.86 | 18.50 |

INSPECTOR: KELLA
 SUPERVISOR: MILLER



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THE TESTING DATA OF ELECTRICAL CHARACTERISTICS

TEST DATE:01/26/2013

PART NO. :

FREQUENCY:20.000MHZ

ORDER NO. :

| NO | FREQUENCY @ 25 °C (MHZ) | OFFSET 0.45 -0.45 (PPM) | ICC 2 (mA) | V Ver 0.2 -0.2 (PPM) | START_T 2 (mS) | PULL_H 999 (PPM) | PULL_L -5 (PPM) | VP_P 1 (V) | VC L 10 | | |
|----|-------------------------------|----------------------------------|------------------|-------------------------------|----------------------|------------------------|-----------------------|------------------|------------|-----|----|
| 1 | 20 | 0 | 1.7 | -0.001 | 0 | 0.001 | 6.5 | -6.5 | 1.22 | 0.7 | OK |
| 2 | 20 | -0.02 | 1.7 | -0.001 | -0.004 | 0.001 | 6.3 | -6.5 | 1.24 | 0.5 | OK |
| 3 | 20 | 0.01 | 1.8 | 0.002 | -0.002 | 0.003 | 6.5 | -6.5 | 1.22 | 0.5 | OK |
| 4 | 20 | 0.01 | 1.8 | 0.001 | -0.002 | 0.001 | 6.3 | -6.5 | 1.22 | 0.4 | OK |
| 5 | 20 | 0.01 | 1.7 | 0.002 | 0.001 | 0.02 | 6.5 | -6.7 | 1.24 | 0.6 | OK |
| 6 | 20.000001 | 0.03 | 1.8 | 0.002 | 0.003 | 0.02 | 6.9 | -6.9 | 1.25 | 0.6 | OK |
| 7 | 19.999999 | -0.04 | 1.8 | 0.002 | 0 | 0.002 | 6.5 | -7 | 1.24 | 0.4 | OK |
| 8 | 20.000001 | 0.05 | 1.8 | 0.002 | 0.003 | 0.02 | 6.9 | -7 | 1.22 | 0.5 | OK |
| 9 | 19.999999 | -0.03 | 1.7 | 0.001 | -0.001 | 0.002 | 6.8 | -7.1 | 1.22 | 0.4 | OK |
| 10 | 20 | 0 | 1.7 | 0.002 | 0.003 | 0.02 | 6.4 | -6.7 | 1.24 | 0.6 | OK |
| 11 | 20.000001 | 0.04 | 1.8 | 0.001 | 0.001 | 0.001 | 6.7 | -6.9 | 1.22 | 0.5 | OK |
| 12 | 19.999999 | -0.04 | 1.7 | 0 | 0.002 | 0.02 | 6.5 | -6.5 | 1.22 | 0.7 | OK |
| 13 | 19.999999 | -0.03 | 1.7 | 0.003 | 0.003 | 0.002 | 6.8 | -7 | 1.22 | 0.5 | OK |
| 14 | 19.999999 | -0.05 | 1.8 | 0.003 | 0.005 | 0.001 | 6.9 | -6.9 | 1.24 | 0.5 | OK |
| 15 | 19.999999 | -0.05 | 1.7 | 0.005 | 0.001 | 0.001 | 6.5 | -7 | 1.22 | 0.5 | OK |
| 16 | 20 | 0.02 | 1.7 | 0.002 | 0.02 | 0.02 | 6.5 | -7 | 1.22 | 0.6 | OK |
| 17 | 20.000001 | 0.04 | 1.8 | 0.003 | 0.001 | 0.001 | 6.8 | -6.8 | 1.22 | 0.4 | OK |
| 18 | 20 | 0.02 | 1.7 | 0.006 | 0.002 | 0.002 | 6.5 | -7 | 1.22 | 0.5 | OK |
| 19 | 20 | 0.02 | 1.8 | 0.004 | 0.007 | 0.002 | 6.7 | -6.5 | 1.22 | 0.5 | OK |
| 20 | 19.999999 | -0.07 | 1.8 | 0.004 | 0.004 | 0.02 | 6.5 | -6.6 | 1.22 | 0.6 | OK |
| | AVG: | 0.0 | 1.7 | 0.0 | 0.0 | 0.0 | 6.6 | -6.8 | 1.2 | 0.5 | |
| | STD: | 0.0 | 0.0 | 0.0 | **** | 0.0 | 0.2 | 0.2 | 0.0 | 0.1 | |
| | GA: | -1.0 | | | | | | | | | |
| | CP: | 4.4 | | | | | | | | | |
| | | 116 | | | | | | | | | |
| | CPK: | 4.4 | | | | | | | | | |
| | | 116 | | | | | | | | | |

TEST_QTY: 20

OK_QTY: 20

NG_QTY: 0

INSPECTOR: KELLA

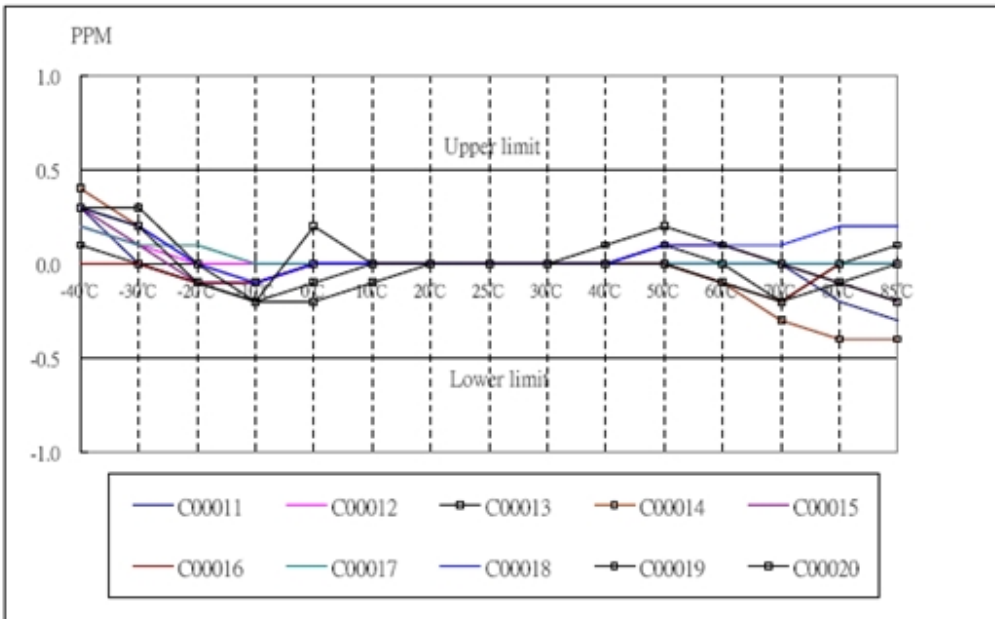
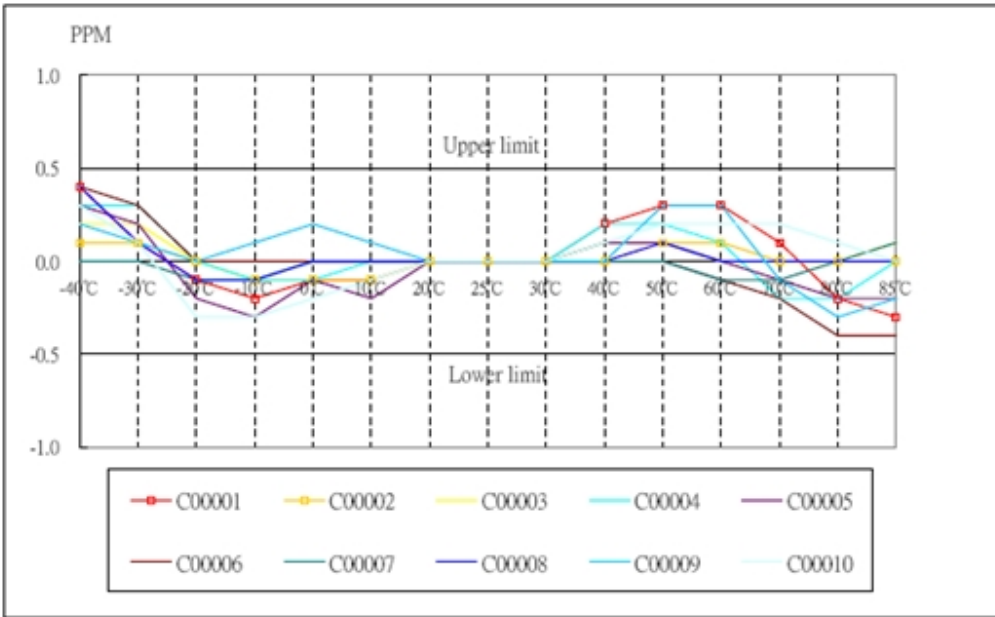
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10MHz 20MHz 相位噪声测试数据



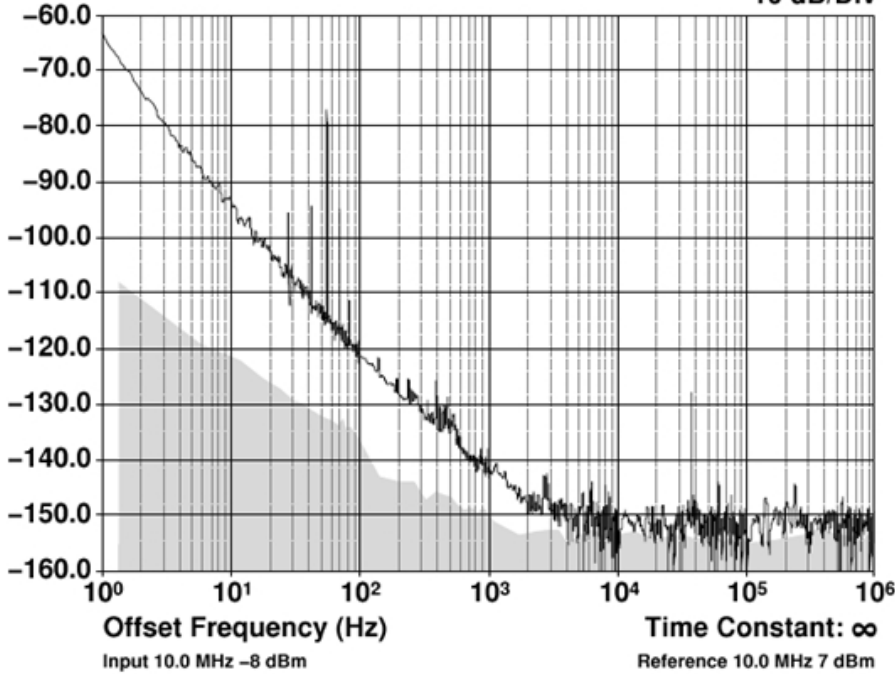
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$\mathcal{L}(f)$ Phase Noise at 10.0 MHz (dBc/Hz)

10 dB/Div



$\mathcal{L}(f)$ Phase Noise at 20.0 MHz (dBc/Hz)

10 dB/Div

