	Product Series Code	<b>GTHW</b>	Brand	<b>GOTREND</b>
	File Version	<b>GTHW-V3R5</b>	Editor	<b>Teddy</b>
	Established Date	<b>2009.02.24</b>	Description	<b>Common Mode Filter</b>
	Latest Edit Date	<b>2015.05.19</b>	Pages	<b>Page : 2</b>

### Features & Application:

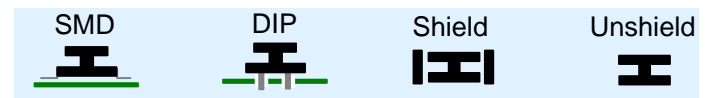
- \* Common Mode Filter for high speed signal line
- \* Fit for signal line circuit : **HDMI / USB3.0** / USB2.0 / IEEE1394
- \* To help you go pass the CE/FCC standard.
- \* Mobile Device / Handheld Device / LowProfile Device

### Part No Example:

**GTHW 3216 P B - 601 T**  
 -----  
 1        2        3        4        5        6

1. GTHW : GOTRED Series Code
2. 3216 : Length 3.2 mm X Width 1.6 mm
3. P : Pb free <1000ppm
4. [ E ][ B ][ D ] : Material Code  
 [ U ][ H ] : U : For USB3.0 ; H : For HDMI
5. 900 : Impedance [ohm] @ 100MHz = 90 ohm
6. T : Tolerance T = Typical

### Product Structure

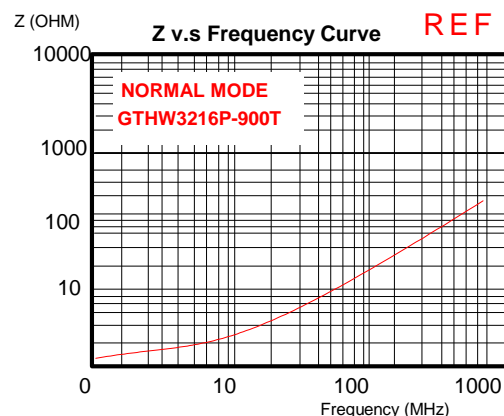
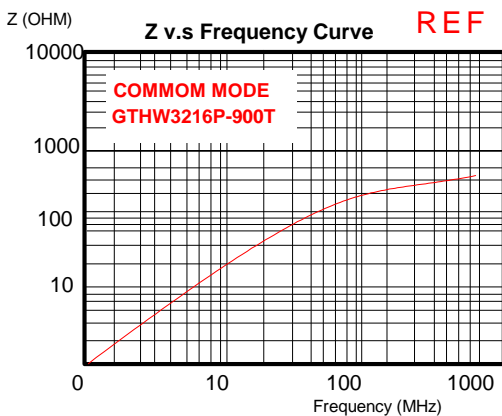


### 2005 RoHS Compliant - SGS Certified Result

鉛 Pb	鎘 Cd	汞 Hg	六價鉻 Cr+6	溴化聯苯 PBB	溴化聯苯 醃PBDE
<1000ppm	ND	ND	ND	ND	ND

### DIMENSION : [ mm ]

TYPE	A	B	C	D	E	F	G	H	I
GTHW2012	2.0+/-0.2	1.2+/-0.2	1.2+/-0.2	0.4+/-0.2	0.4+/-0.2	2.6 Typ.	0.8 Typ.	1.2 Typ.	0.4 Typ.
GTHW3216	3.2+/-0.2	1.6+/-0.2	2.0+/-0.2	0.6+/-0.2	0.6+/-0.2	3.8 Typ.	1.6 Typ.	1.8 Typ.	0.4 Typ.



### Test Equipment :

- \* HP4291A-Z, HP4284A, HP42841A- L, IDC, Q, RDC
- \* HP8753D NETWORK ANALYZER- SRF

Standard Atmospheric Conditions:

Ambient Temp: 20+/-15°C

Relative Humidity: 65+/-20%

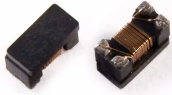
If there may be any doubt on the result, measurement shall be made within the following limits:

Ambient Temp: 25+/-5°C

Relative Humidity: 75+/-10%

### Size Code & Package Quantity:

JIS CODE	EIA CODE	PCS / REEL	REEL / BOX
2012	0805	2000	5
3216	1206	2000	5



Product Series Code	<b>GTHW</b>	Brand	<b>GOTREND</b>
File Version	<b>GTHW-V3R5</b>	Editor	<b>Teddy</b>
Established Date	<b>2009.02.24</b>	Description	<b>Common Mode Filter</b>
Latest Edit Date	<b>2015.05.19</b>	Pages	<b>Page : 3</b>

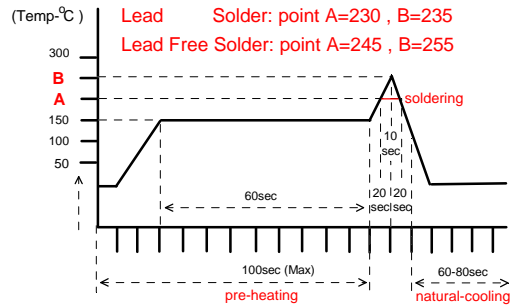
**Operating & Storage Condition:**

OPERATING TEMP:-40~+85°C  
 STORAGE TEMP:-40~+85°C  
 STORAGE LIFE TIME: 12 MONTH @25°C , RH 65%

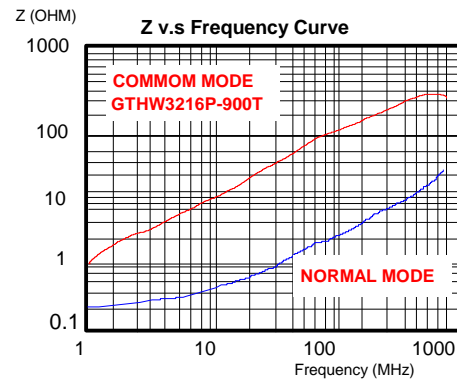
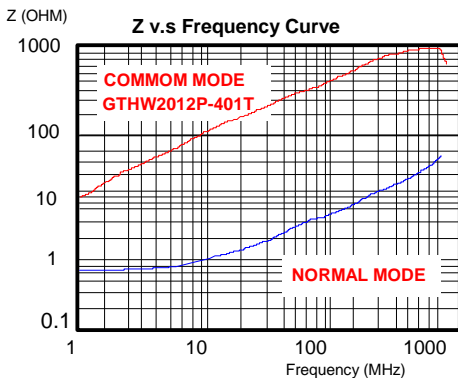
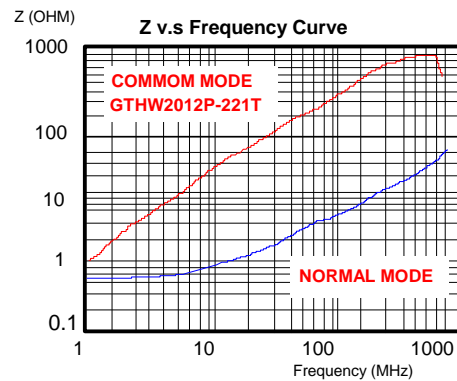
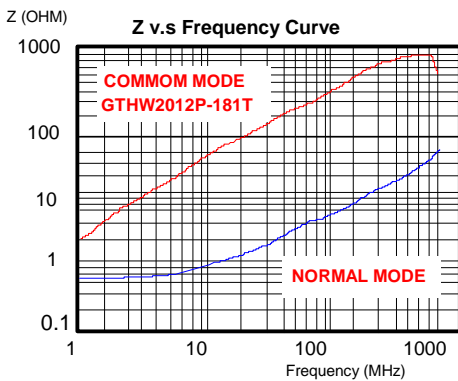
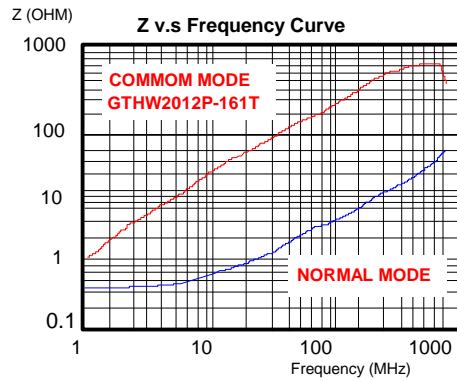
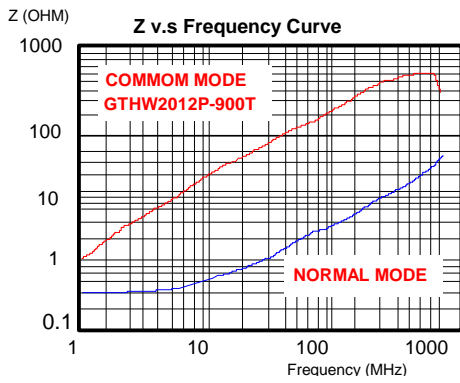
**Attention & Caution:**

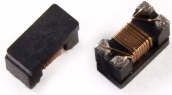
- Please avoid following matters:
- \* Splashing water or salt water
  - \* Toxic Gas (Hydrogen sulfide, Sulfurous acid, Chlorine, Ammonia)
  - \* Vibrations or shocks which exceed the specified condition
  - \* Dew condens
  - \* Please be careful for the stress to this product by board flexure or something after the mounting.

**Recomand Reflow Curve (TIME:Second)**

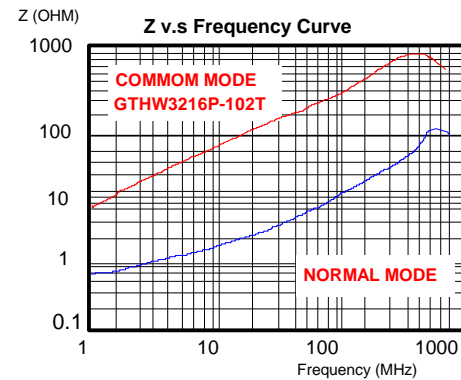
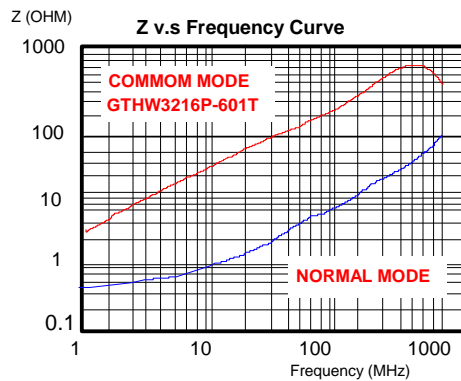
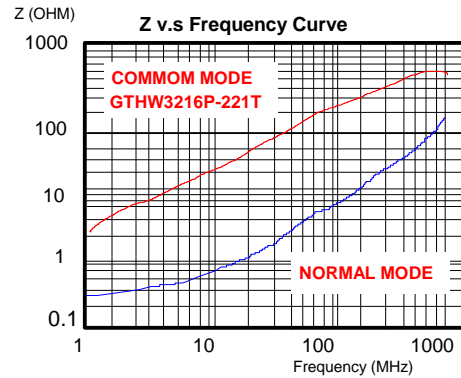
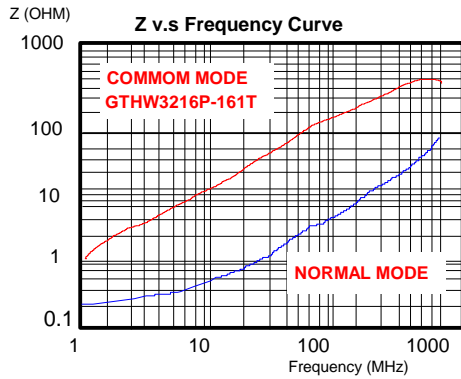


Notice: Iron Soldering: 3 Seconds Max. @260°C





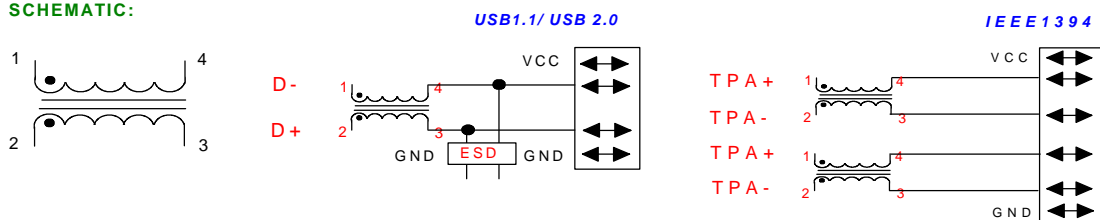
Product Series Code	<b>GTHW</b>	Brand	<b>GOTREND</b>
File Version	<b>GTHW-V3R5</b>	Editor	<b>Teddy</b>
Established Date	<b>2009.02.24</b>	Description	<b>Common Mode Filter</b>
Latest Edit Date	<b>2015.05.19</b>	Pages	<b>Page : 4</b>

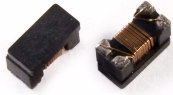


### GTHW-XXXX-X-XXXT Common Mode Choke for USB2.0 / IEEE1394

Part No.	Common Mode (Min.)impedance (Ohm)@100MHz	Common Mode (Typ.)impedance (Ohm)@100MHz	Rated Voltage / Withstanding Voltage V(DC)	DCR (Ohm) (max)	Rated Current (mA) (max)	Insulation Res. Min. (M Ohm)
GTHW2012P-670T	30	67	50 / 125	0.25	400	10
GTHW2012P-900T	60	90	50 / 125	0.30	400	10
GTHW2012P-121T	95	120	50 / 125	0.30	370	10
GTHW2012P-161T	115	160	50 / 125	0.35	330	10
GTHW2012P-181T	135	180	50 / 125	0.35	330	10
GTHW2012P-221T	145	220	50 / 125	0.35	330	10
GTHW2012P-361T	200	360	50 / 125	0.40	280	10
GTHW2012P-401T	320	400	50 / 125	0.40	50	10
GTHW3216P-900T	60	90	50 / 125	0.30	370	10
GTHW3216P-121T	90	120	50 / 125	0.30	370	10
GTHW3216P-161T	115	160	50 / 125	0.40	340	10
GTHW3216P-221T	145	220	50 / 125	0.50	310	10
GTHW3216P-601T	425	600	50 / 125	0.80	260	10
GTHW3216P-102T	700	1000	50 / 125	1.00	230	10
GTHW3216P-222T	1560	2200	50 / 125	1.20	200	10

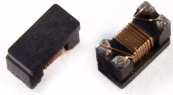
#### SCHEMATIC:



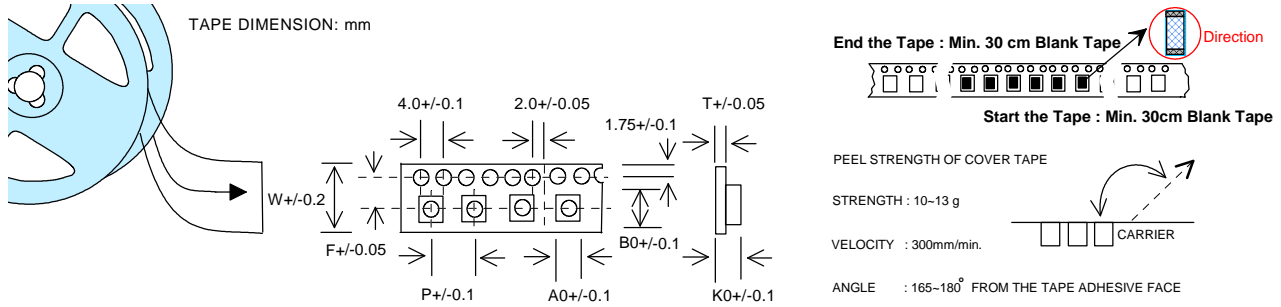


Product Series Code	<b>GTHW</b>	Brand	<b>GOTREND</b>
File Version	<b>GTHW-V3R5</b>	Editor	<b>Teddy</b>
Established Date	<b>2009.02.24</b>	Description	<b>Common Mode Filter</b>
Latest Edit Date	<b>2015.05.19</b>	Pages	<b>Page : 5</b>

Reliability Test Result :																			
NO	ITEM	TEST CONDITIONS	REMARKS																
1	Thermal Shock (Temperature Cycle) 溫度循環試驗	Temperature: -40 ° C / +85 ° C kept stabilized for 30 minutes each  Cycle: 100 Cycles	Inductance value shall be within $\pm 10\%$ of the initial value. Q-factor shall be within $\pm 30\%$ of the initial value. Impedance shall be within $\pm 20\%$ of the initial value. DCR value shall be within $\pm 20\%$ of the initial value.																
2	Humidity Resistance 耐濕試驗	Humidity: 90%~ 95% RH Temperature: 40 $\pm$ 2 ° C Test Time: 1000 $\pm$ 12 Hours	■NO.1~4 Measurement: After placing for 24 hours (min.)																
3	High Temperature 耐熱試驗	Temperature: 85 $\pm$ 2 ° C Humidity: 20% Testing Time: 1000 $\pm$ 12 Hours	■NO.2~3 Applied current(spec): Rated current(maximum value)																
4	Low Temperature 耐寒試驗	Temperature: -40 $\pm$ 2 ° C Time: 1000 $\pm$ 12 Hours																	
5	Temperature and Humidity Cycle 溫/濕度循環試驗	<table border="1"> <thead> <tr> <th>Step</th> <th>Temp</th> <th>Humidity</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25<math>\pm</math> 2 ° C</td> <td>95~100%RH</td> <td>3.0Hr</td> </tr> <tr> <td>2</td> <td>55<math>\pm</math> 2 ° C</td> <td>95~96%RH</td> <td>9.5Hr</td> </tr> <tr> <td>3</td> <td>25<math>\pm</math> 2 ° C</td> <td>95~100%RH</td> <td>9.5Hr</td> </tr> </tbody> </table>	Step	Temp	Humidity	Time	1	25 $\pm$ 2 ° C	95~100%RH	3.0Hr	2	55 $\pm$ 2 ° C	95~96%RH	9.5Hr	3	25 $\pm$ 2 ° C	95~100%RH	9.5Hr	■NO.5 Cycle: 5 cycles
Step	Temp	Humidity	Time																
1	25 $\pm$ 2 ° C	95~100%RH	3.0Hr																
2	55 $\pm$ 2 ° C	95~96%RH	9.5Hr																
3	25 $\pm$ 2 ° C	95~100%RH	9.5Hr																
6	Vibration 振動性試驗	Frequency: 10Hz~55Hz Amplitude: 1.5mm Direction: X,Y,Z Time: 2 Hours each																	
7	IR Reflow Soldering 焊錫性試驗	Solder: H63A(eutectic solder) Solder Temp.: 230 $\pm$ 5 ° C Time: 6 minutes Cycles: x 1	Impedance(inductance) shall be within $\pm 20\%$ of the initial value. DCR value shall be within $\pm 20\%$ of the initial value.																
8	Soldering Heat Resistance 耐熱 焊性試驗	Preheat: 120 ~ 150 ° C (60 sec) Solder: H63A(eutectic solder) Solder Temp.: 260 $\pm$ 5 ° C Flux: Rosin Dip time: 10 $\pm$ 1 seconds	The chip must have no cracks. More than 75% of the terminal electrode must be covered with solder.																
9	Bending Strength 折斷力試驗		The terminal electrode and the ferrite must not be damaged by the forces applied on the test conditions.  2012 : $\geq 1.0\text{kg}$ 3216 : $\geq 1.5\text{kg}$																
10	Flexure Strength 彎曲試驗		No mechanical damage shall be noticed even when the board is bent 2 mm																
11	Terminal Strength 拉力試驗		The terminal electrode and the ferrite must not be damaged by the forces applied on the test conditions.  2012 : $\geq 1.0\text{ kg}$ 3216 : $\geq 1.5\text{ kg}$																

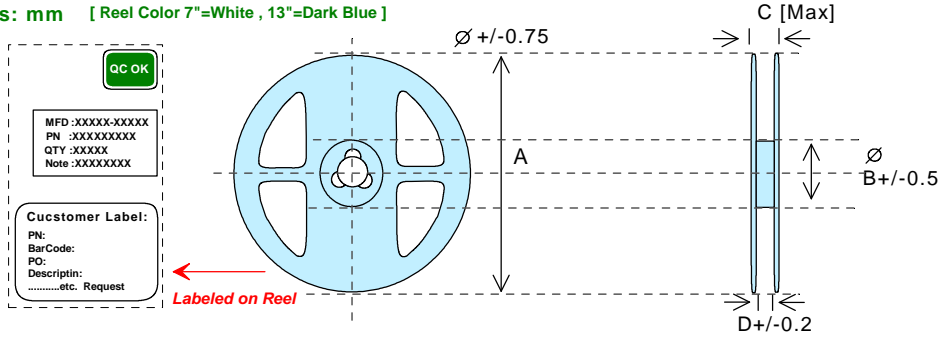


Product Series Code	<b>GTHW</b>	Brand	<b>GOTREND</b>
File Version	<b>GTHW-V3R5</b>	Editor	<b>Teddy</b>
Established Date	<b>2009.02.24</b>	Description	<b>Common Mode Filter</b>
Latest Edit Date	<b>2015.05.19</b>	Pages	<b>Page : 6</b>



SIZE/mm	W	P	A0	B0	K0	T	F
<b>2012</b>	8.00	4.00	1.54	2.32	1.35	0.23	3.50
<b>3216</b>	8.00	4.00	1.94	3.54	2.10	0.30	3.50

**Reel Dimensions: mm** [ Reel Color 7"=White , 13"=Dark Blue ]



SIZE / mm	A	B	C	D	QTY/REEL
<b>2012</b>	178	60	12	1.5	2K
<b>3216</b>	178	60	12	1.5	2.5K

**BOX Package: cm**

