

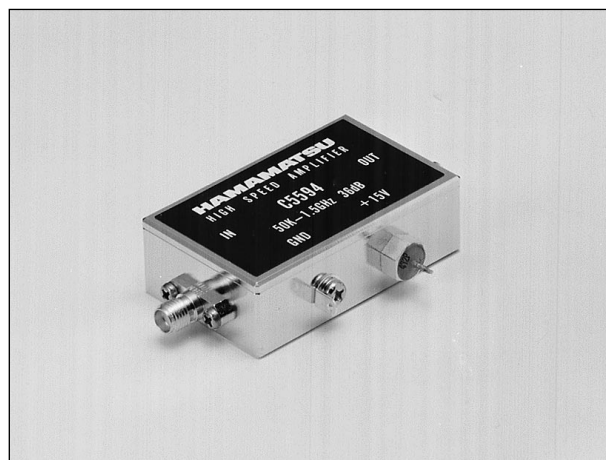
## Gain: 36 dB (Voltage Gain of $\times 63$ ) Frequency Bandwidth: 50 k to 1.5 GHz

The C5594 is designed as the most suitable amplifier unit for photomultiplier tubes and a non-inverting type amplifier.

This unit has high gain of 36 dB (voltage amplification of  $\times 63$ ) and wide frequency bandwidth of 50 kHz to 1.5 GHz, which can accurately amplitude the PMT pulse output.

Therefore it is well-matched to the application of Time Correlated Single Photon Counting (TCPC) for fluorescence life time measurement with MCP-PMT and various time response measurements with PMTs. It is possible to be operated at the applied voltage range of +12 to +16 volts.

The input and output connectors can be chosen by the combination of SMA and/or BNC.



TACCF0117

### MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Supply Voltage	Vcc	+17	V
Input Signal Power	Pin	+10	dBm
Operating Temperature	Ta	0 to +50	°C
Storage Temperature	Tstg	-40 to +60	°C

### RECOMMENDED OPERATING VOLTAGE RANGE

Parameter	Symbol	Value	Unit
Supply Voltage	Vcc	+12 to +16 <sup>(A)</sup>	V

<sup>(A)</sup> Recommended Voltage: +15V

### SPECIFICATIONS (at Vcc = +15 V/Ta = +25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Upper Cutoff Frequency	fc (HIGH)	3 dB down point from the gain at 0.1 GHz	1.2	1.5	—	GHz
Lower Cutoff Frequency	fc (LOW)		—	50	100	kHz
Gain	G	f = 0.1 GHz	34	36	—	dB
Gain Flatness	$\Delta G$	f = 200 k to 1 GHz	—	$\pm 1.0$	—	dB
Noise Figure	NF		—	5	—	dB
Input/Output Impedance	—		—	50	—	$\Omega$
Current Consumption	Icc		—	95	—	mA

# HIGH SPEED AMPLIFIER C5594 SERIES

Figure 1: Typical Small Signal Gain vs. Frequency

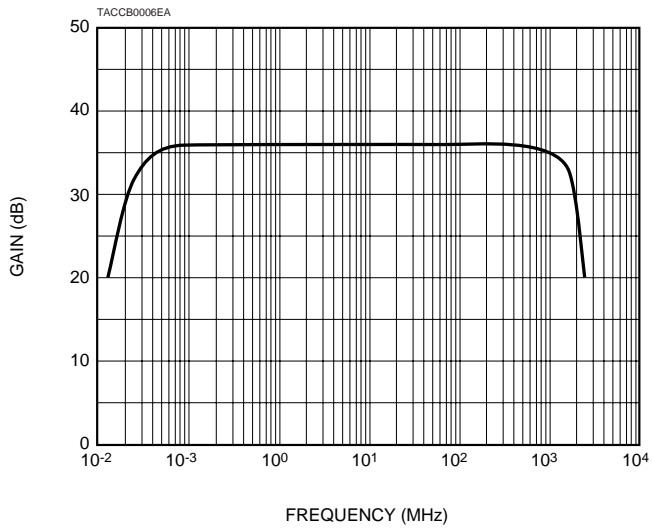


Figure 2: Typical Output Saturation

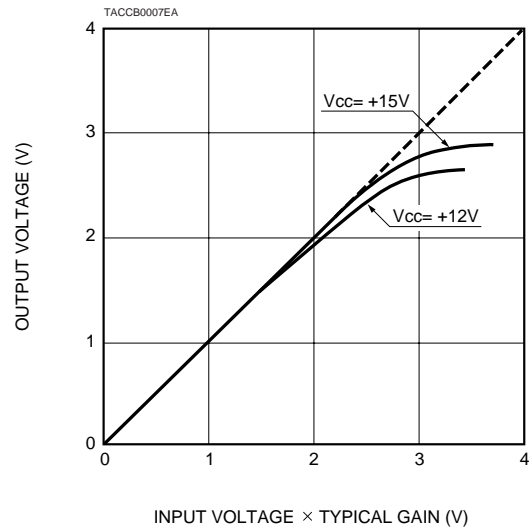
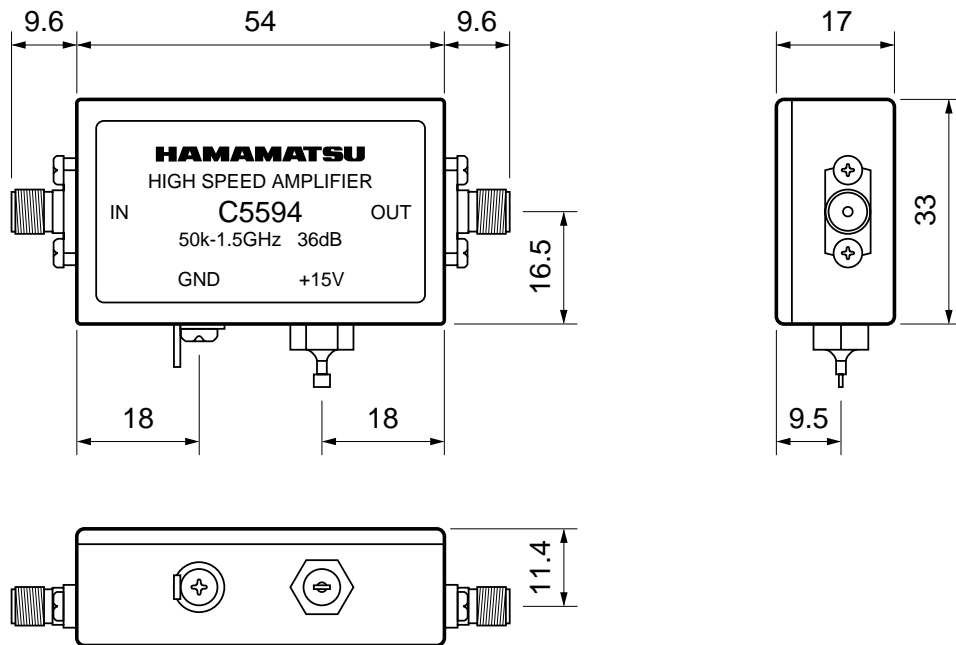


Figure 3: Dimensional Outline (C5594-22) (Unit: mm)



## MEASUREMENT EXAMPLE TTS (Transit Time Spread) of MCP-PMT R3809U-50

Figure 4: Measurement Set-up

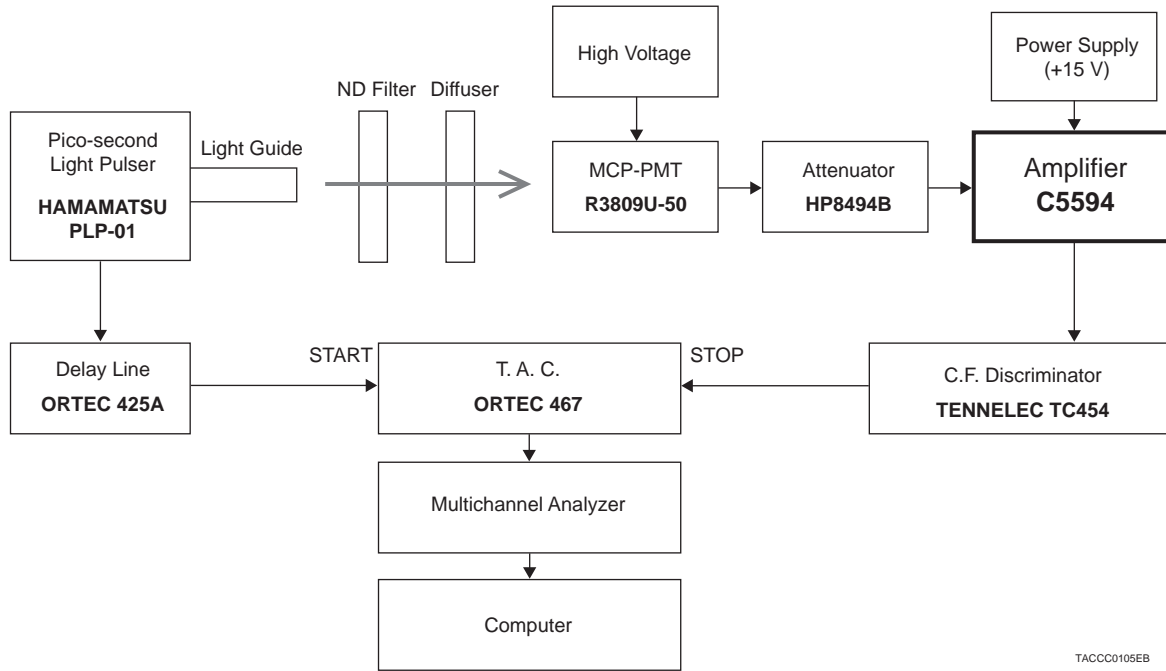
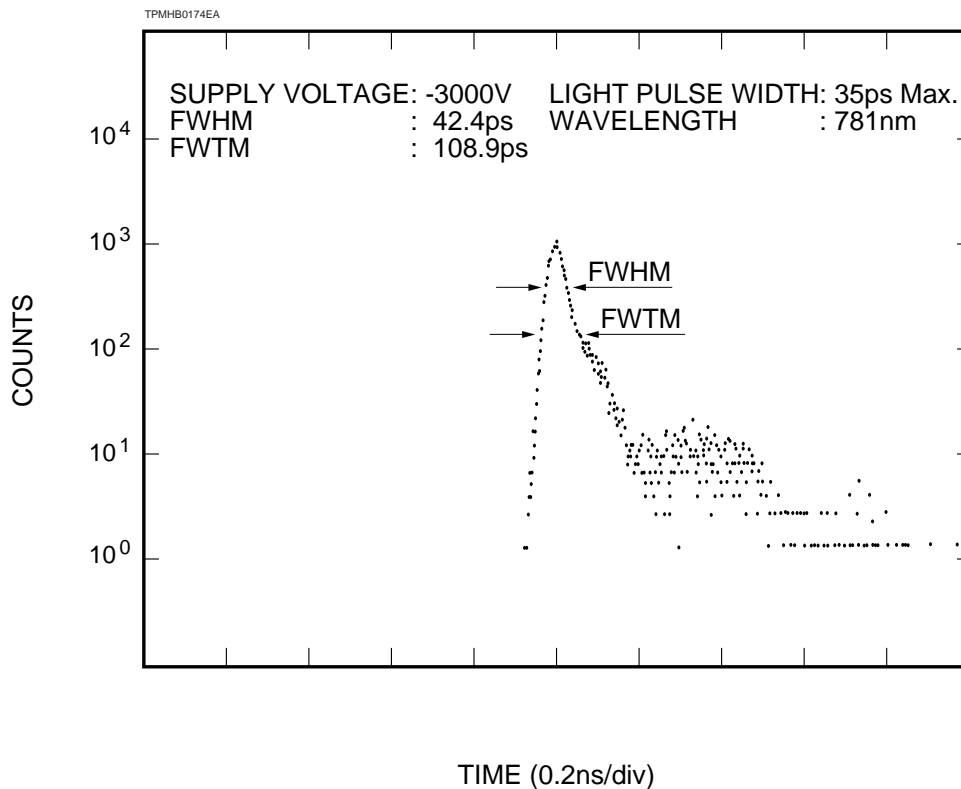


Figure 5: Test Results

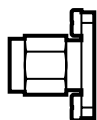


# HIGH SPEED AMPLIFIER C5594 SERIES

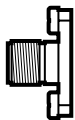
## SUFFIX NUMBER AND INPUT/OUTPUT CONNECTORS

Input Connectors	Output Connectors	
	SMA Jack ②	BNC Jack ④
SMA Plug (Male) ①	<b>C5594-12</b>	<b>C5594-14</b>
SMA Jack (Female) ②	<b>C5594-22</b>	<b>C5594-24</b>
BNC Plug (Male) ③	<b>C5594-32</b>	<b>C5594-34</b>
BNC Jack (Female) ④	<b>C5594-42</b>	<b>C5594-44</b>

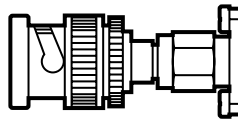
① SMA Plug (Male)



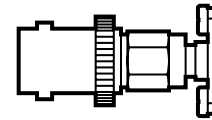
② SMA Jack (Female)



③ BNC Plug (Male)



④ BNC Jack (Female)

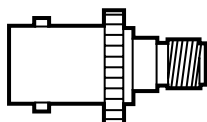


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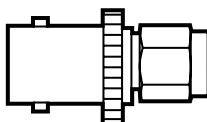
## ACCESSORIES (OPTION)

### [1] BNC-SMA Adaptors

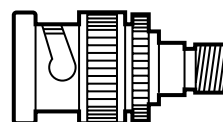
● A5059-01



● A5059-02



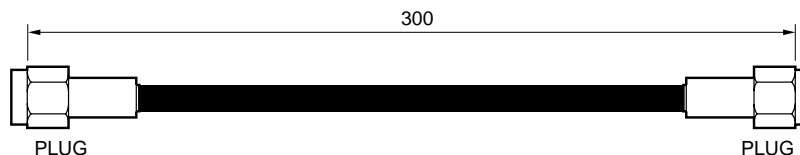
● A5059-03



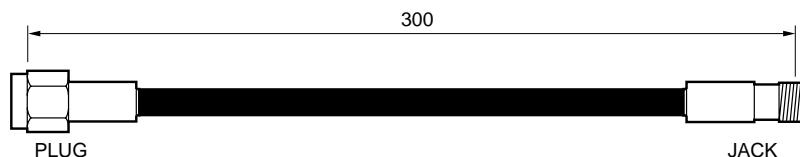
TACCC0104EA

### [2] Coaxial Cable Assemblies with SMA Connectors (Unit : mm)

● A5026



● A5026-01



TACCA0052EA

# HAMAMATSU

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