

HAMAMATSU

DEC. 2000

DA-TYPE SOCKET ASSEMBLIES C7246 SERIES

PATENT

The C7246 series is a DA type socket assembly designed for 28 mm (1-1/8 inch) diameter side-on and head-on photomultiplier tubes. The C7246 series socket assembly incorporates a voltage-divider circuit and a current-to-voltage conversion circuit along with an amplifier that has a narrow but practical bandwidth (0 kHz to 20 kHz) to improve the effective S/N ratio.

The C7246 series converts the low-level, high-impedance current of a photomultiplier tube into a low-impedance voltage output by a factor of 0.3 V/μA.

Since the C7246 series employs an active voltage-divider circuit, it ensures an excellent DC linearity at low power consumption and a gain adjustment function that does not affect the frequency bandwidth of the amplifier.

FEATURES

- Low power consumption
- Low offset voltage
- Adjustable gain function
- Compact and light weight

SPECIFICATIONS

Parameter	C7246	C7246-01	Unit
Applicable Photomultiplier Tubes	28 mm Dia. Head-on R374, R2228, R5929, R6095, etc	28 mm Dia. Side-on R928, R3788, R3896, R4220, etc	—

MAXIMUM RATINGS

Parameter	Value	Unit
Input Voltage for Amplifier	±18	V dc
Supply Voltage for Divider	-1500	V dc
Operating Temperature	0 to +40	°C
Storage Temperature	-15 to +60	°C

GENERAL

Parameter	C7246	C7246-01	Unit
Input Voltage for Amplifier	±12 to ±15 ^{a)}		V dc
Input Current for Amplifier (at ±15 V)	530		μA Typ.
Recommended Supply Voltage for Divider ^{b)}	-400 to -1000	-300 to -1000	V dc
Divider Current (at HV=-1000 V, VR=MIN) ^{c)}	174	211	μA Typ.
Current to Voltage Conversion Factor	0.3		V/μA
Maximum Output Voltage (with no load resistor)	10		V
Output Voltage (with 50 Ω load resistor)	0.9		V
Maximum Input Signal Current (at 10 V output, HV=-1000 V with no load resistor)	DC	33	μA
	Pulse	33	μA
Frequency Bandwidth (-3 dB)	0 Hz to 20 kHz		—
Output Impedance	50		Ω
Offset Voltage	±0.3		mV Max.
Output Noise Voltage	0.09		mV rms. Typ.
Adjustable Gain Range	10	30	dB Min.
Total Power Consumption (at ±15 V, HV=-1000 V, VR=MIN)	190	227	mW Typ.
Weight	55	50	g Typ.

^{a)} To be also practicable even with ±5 V of input supply voltage except for narrow output range (2 V max).

^{b)} Use more than 600 V at negative high voltage input from view-points of output linearity, when giving more than 10 μA at signal input (anode out).

^{c)} "VR = MIN." means that the PMT gain is set to minimum gain.



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Figure 1. Schematic Diagram

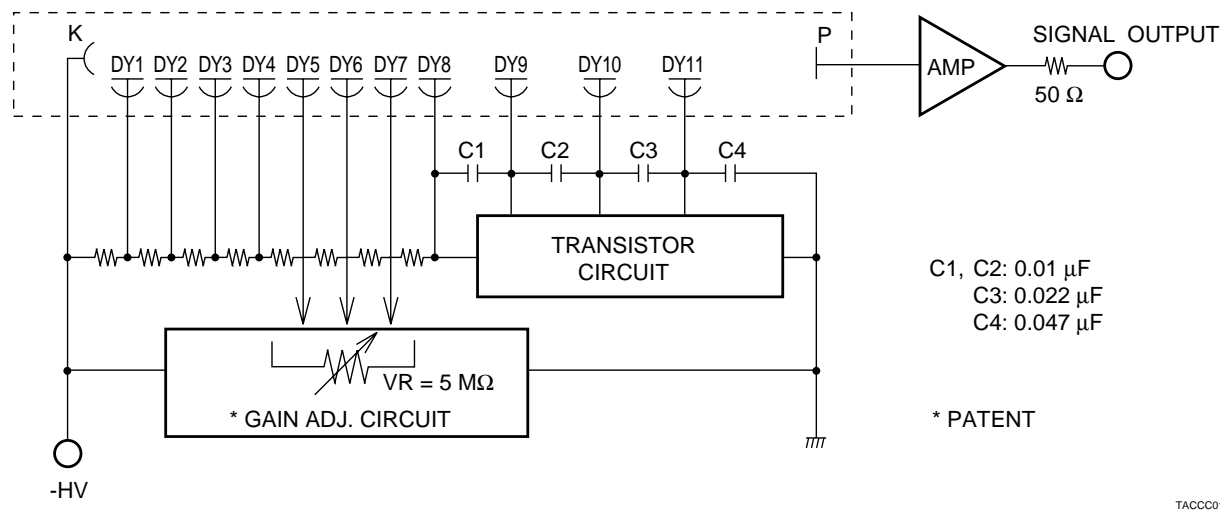


Figure 2. Frequency Response of Built-in Amplifier

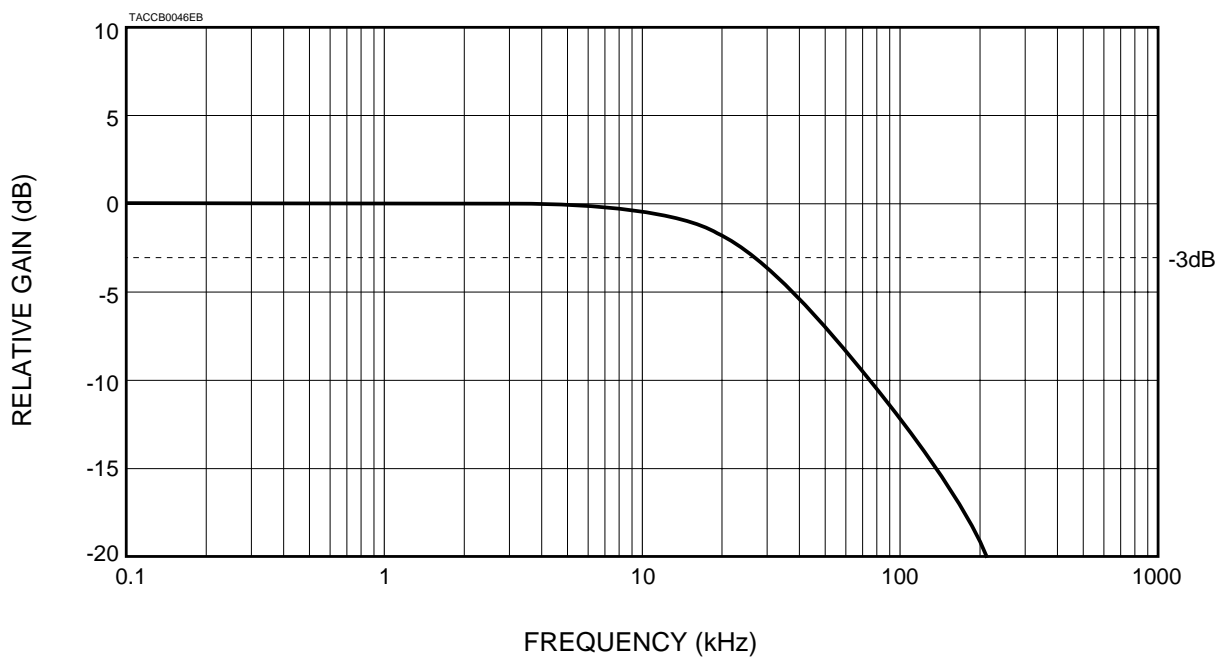
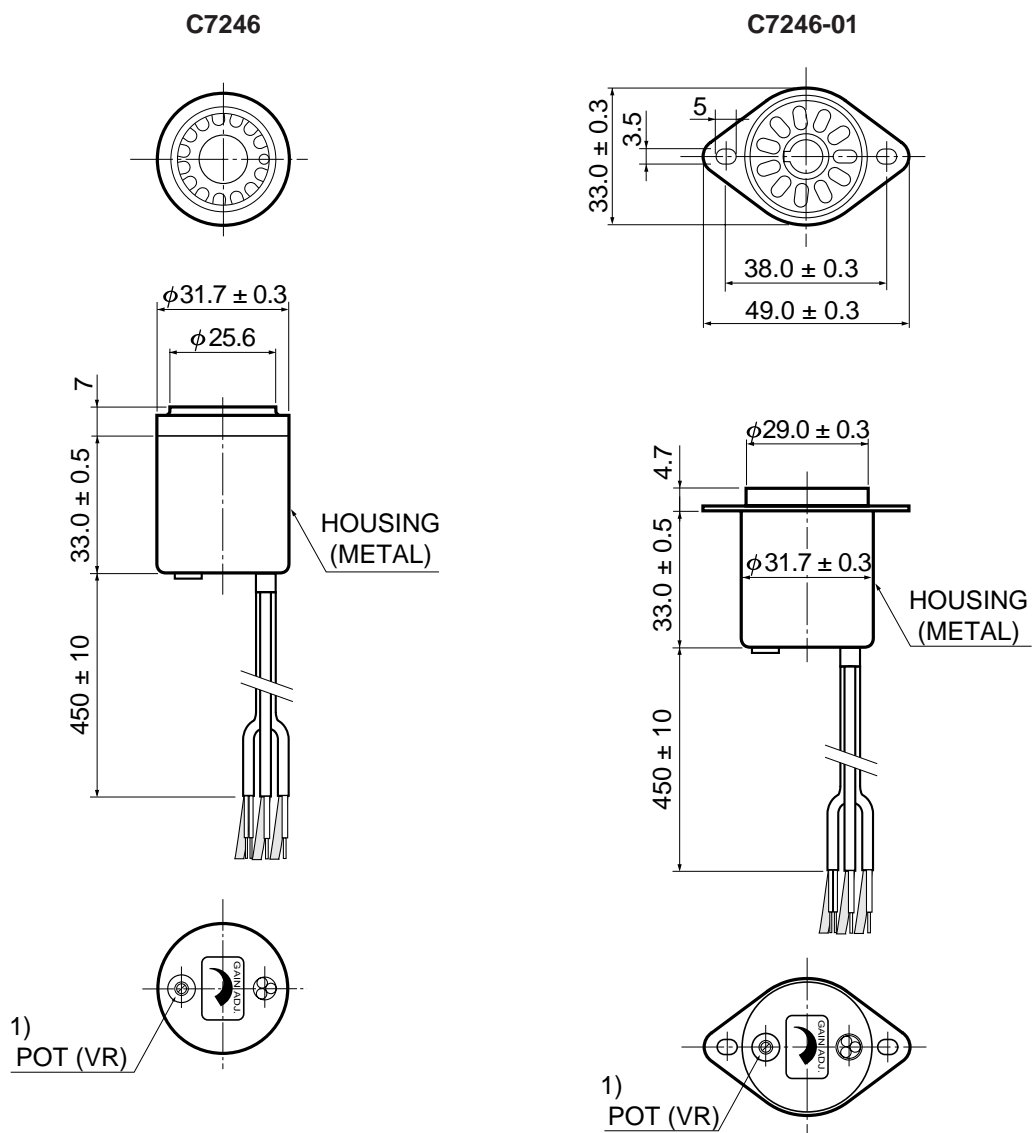


Figure 3. Dimensional Outline (Unit: mm)



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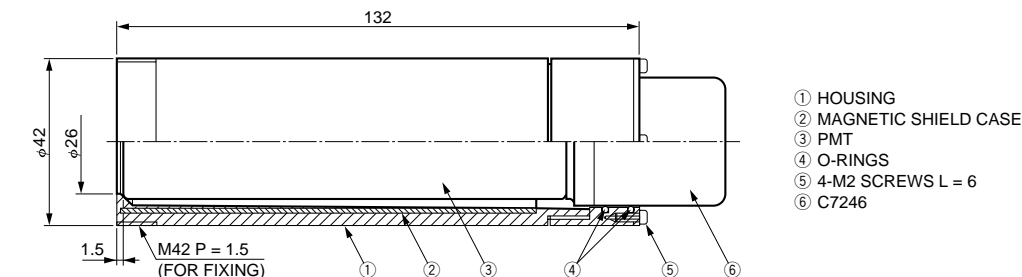
-HV	SHIELD CABLE ²⁾	RED
SIGNAL OUTPUT	COAX RG-174/U	BLACK
±15 V	SHIELDED CABLE (COVERING TWISTED PAIR) ³⁾	GRAY

- NOTES: 1) Turning this pot clockwise increases the PMT gain. (25 turns max.)
 2) At the end of HV cable, it's possible to attach SHV connector fitting RG-174/U.
 3) Connect as follows.
 Orange Lead +15 V
 White Lead -15 V
 Shield GND

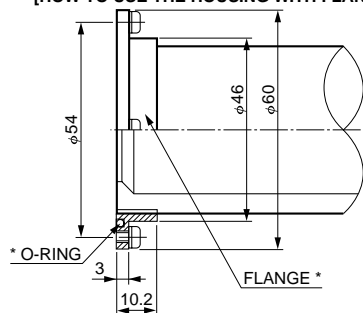
DA-TYPE SOCKET ASSEMBLIES C7246 SERIES

OPTIONS

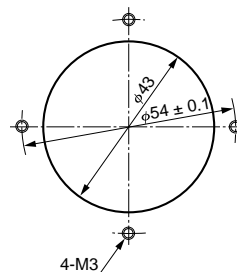
●HOUSING E7718 FOR C7246 (INCLUDING PART #①, ②, ④ AND ⑤) (Unit: mm)



[HOW TO USE THE HOUSING WITH FLANGE]



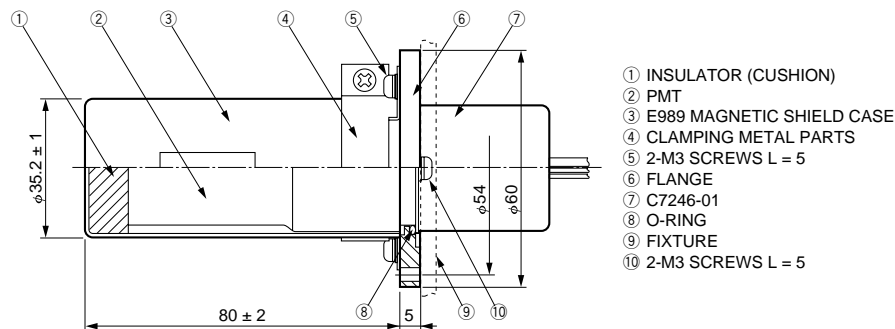
[SUGGESTED FIXTURE LAYOUT FOR THE FLANGE]



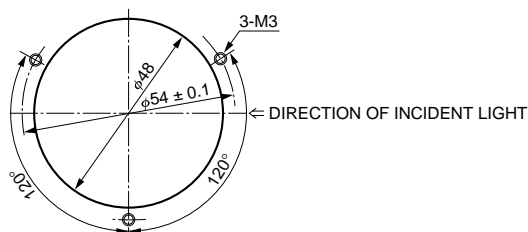
* THE FLANGE AND O-RING ARE AVAILABLE TO ORDER SEPARATELY AS P/N: A7719.

TACCA0195EA

●FLANGE SET A7709 FOR C7246-01 (INCLUDING PART #①, ④, ⑤, ⑥, ⑧ AND ⑩) (Unit: mm)



[SUGGESTED FIXTURE LAYOUT FOR THE FLANGE]



TACCA0196EA

* PATENT: JAPAN 1 [No.2963393], USA 1 [No.5880457]

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