

Head-On Type Photomultiplier Tubes

A Type No.	Remarks	Spectral Response			Photo-cathode Material	Window Material	C Out-line No.	D Dynode Structure No. of Stages	E Socket	F Maximum Ratings		
		B Curve Code	Range (nm)	Peak Wave-length (nm)						Anode to Cathode Voltage (Vdc)	Anode to Last Dynode Voltage (Vdc)	G Average Anode Current (mA)

1-1/8 inch (28 mm) Dia. Types

R1459 *	For VUV detection, MgF ₂ window, Cs-I photocathode	100M	115 ~ 200	140	Cs-I	MgF ₂	1	Box/11	E678-14C *	2500	350	0.01
R1460 *	Variant of R1459 with Cs-Te photocathode	200M	115 ~ 320	210	Cs-Te	MgF ₂	1	Box/11	E678-14C *	1500	250	0.01
R431S	Solar blind response, Cs-Te photocathode, short length	200S	160 ~ 320	210	Cs-Te	Fused silica	2	Box/11	E678-14C *	1500	250	0.01
R268	Bialkali photocathode, visible response, 11-stage				Bialkali	Borosilicate	1	Box/11	E678-14C *	1500	250	0.01
R1355 *	For scintillation counting, small TTS				Bialkali	Borosilicate	3	Line/10	E678-14C *	1900	300	0.2
R434	For scintillation counting, 9-stage	400K	300 ~ 650	420	Bialkali	Borosilicate	4	Box/9	E678-14C *	1250	250	0.1
R1759 *	Variant of R434 with 7-stage dynodes				Bialkali	Borosilicate	4	Box/7	E678-14C *	1250	250	0.1
R1569 *	Compact size, mesh dynodes, temporary base				Bialkali	Borosilicate	5	Mesh/7	E678-12A *	2000	300	0.1
R269	Variant of R268 with UV glass window				Bialkali	UV glass	1	Box/11	E678-14C *	1500	250	0.01
R1398 *	Variant of R1355 with UV glass window	400U	185 ~ 650	420	Bialkali	UV glass	3	Line/10	E678-14C *	1900	300	0.2
R292	Variant of R268 with fused silica window				Bialkali	Fused silica	1	Box/11	E678-14C *	1500	250	0.01
R1668 *	Variant of R1355 with fused silica window	400S	160 ~ 650	420	Bialkali	Fused silica	3	Line/10	E678-14C *	1900	300	0.2
R1282	High temp. bialkali photocathode, ruggedized type	401K	300 ~ 650	375	High temp. bialkali	Borosilicate	2	Box/11	E678-14H *	2500	500	0.1
R374	Wide spectral response, multialkali photocathode				Multialkali	UV glass	1	Box/11	E678-14C *	1500	250	0.01
R1104	High gain variant of R374	500U	185 ~ 850	420	Multialkali	UV glass	1	Box/11	E678-14C *	1500	250	0.01
R453	General purpose type of R374 with relaxed dark spec				Multialkali	UV glass	1	Box/11	E678-14C *	1500	250	0.01
R376	Variant of R374 with fused silica window				Multialkali	Fused silica	1	Box/11	E678-14C *	1500	250	0.01
R457	General purpose type of R376 with relaxed dark spec	500S	160 ~ 850	420	Multialkali	Fused silica	1	Box/11	E678-14C *	1500	250	0.01
R712	Extended red multialkali photocathode	501U	185 ~ 900	650	Multialkali	UV glass	1	Box/11	E678-14C *	1500	250	0.01
R316	For red to IR detection, S-1 response	700K (S-1)	400 ~ 1200	800	Ag-O-Cs	Borosilicate	1	Box/11	E678-14C *	1500	250	0.01
R316-02*	High red-sensitivity variant of R316, QE 0.08% at 1.06 μ m				Ag-O-Cs	Borosilicate	1	Box/11	E678-14C *	1500	250	0.01

A *: Newly listed in this catalog.

B Typical spectral response characteristics are shown on pages 53 and 54.

C Basing diagram symbols are explained on page 11.

D Dynode structure

Line: Linear focused

Box: Box-and-grid

Mesh: Newly designed mesh dynode

E *: A socket will be supplied with a tube.

F The maximum ambient temperature range is -80 to +50°C except high temperature bialkali photocathode types which withstand up to 175°C.

G Averaged over any interval of 30 seconds maximum.

H Measured using a red filter Toshiba R-68.

I At the wavelength of peak response.

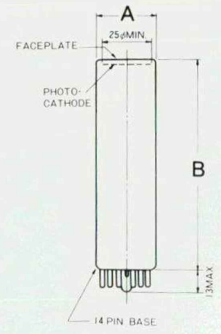
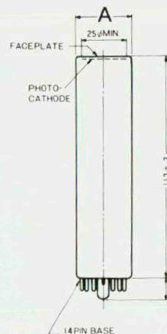
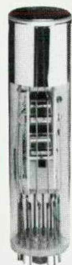
K Voltage distribution ratios used to measure characteristics are shown on page 40.

a: At 122 nm.
b: At 254 nm.
c: At 1000A/lm.

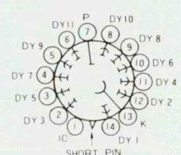
d: Measured using a red filter Toshiba IR-D80A.
e: At 4A/lm.

1 R1459, R268 etc.

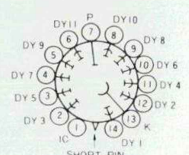
2 R431S, R1282



	Fused Silica, MgF ₂ Window	Others
A	28.2 ϕ ± 0.8	28.5 ϕ ± 0.5



	R431S	R1282
A	28.2 ϕ ± 0.8	28.5 ϕ ± 0.5
B	92 ± 2	97 ± 2



Cathode Sensitivity					Anode to Cathode Supply Voltage (Vdc)	Anode Sensitivity			Current Amplification Typ.	Anode Dark Current			Time Response		Type No.
Luminous		Blue Typ. ($\mu\text{A/lm-b}$)	Red/White Ratio Typ.	Radiant Typ. (mA/W)		Luminous		Radiant Typ. (A/W)		After 15 hrs Typ. (nA)	After 5 sec.		Rise Time Typ. (ns)	Electron Transit Time Typ. (ns)	
Min. ($\mu\text{A/lm}$)	Typ. ($\mu\text{A/lm}$)					Min. (A/lm)	Typ. (A/lm)				Typ. (nA)	Max. (nA)			

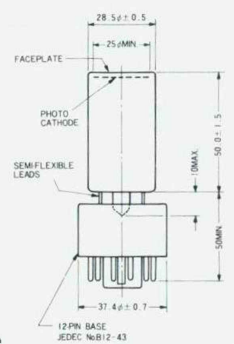
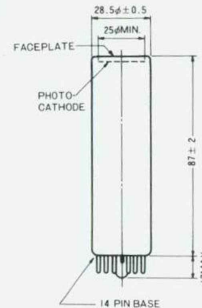
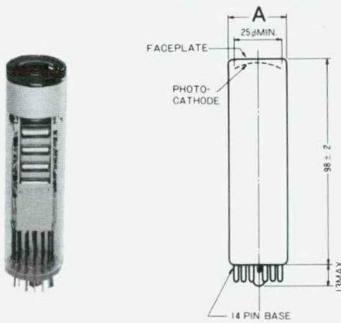
—	—	—	—	9.8 ^a	2000 (17)	—	—	980 ^a	1.0x10 ⁵	—	0.03	0.05	—	—	R1459 ★
—	—	—	—	20 ^b	1000 (17)	—	—	2.0x10 ^{4b}	1.0x10 ⁶	—	0.3	0.5	—	—	R1460 ★
—	—	—	—	20 ^b	1000 (17)	—	—	4.0x10 ^{3b}	2.0x10 ⁵	0.05	0.1	0.5	—	—	R431S
60	95	11.5	—	90	1000 (17)	50	200	1.9x10 ⁵	2.1x10 ⁶	0.2	2	20	12	60	R268
70	95	11.5	—	90	1500 (16)	100	500	4.8x10 ⁵	5.3x10 ⁶	—	30	200	2.0	29	R1355 ★
50	95	11.5	—	90	1000 (9)	10	60	5.7x10 ⁴	6.3x10 ⁵	—	2	15	12	76	R434
50	95	11.5	—	90	800 (5)	0.5	3	2.9x10 ³	3.2x10 ⁴	—	0.2	2	—	—	R1759 ★
50	90	11.0	—	85	1500 (6)	0.25	0.5	4.8x10 ³	5.6x10 ³	—	0.3	3	—	—	R1569 ★
40	95	11.5	—	90	1000 (17)	50	200	1.9x10 ⁵	2.1x10 ⁶	0.2	2	20	12	60	R269
70	95	11.5	—	90	1500 (16)	100	500	4.8x10 ⁵	5.3x10 ⁶	—	30	200	2.0	29	R1398 ★
40	95	11.5	—	90	1000 (17)	50	200	1.9x10 ⁵	2.1x10 ⁶	0.2	2	20	12	60	R292
70	95	11.5	—	90	1500 (16)	40	200	1.9x10 ⁵	2.1x10 ⁶	—	30	200	2.0	29	R1668 ★
30	40	6.0	—	50	2000 (17)	50	300	3.4x10 ⁵	7.5x10 ⁵	—	5	100	9.5	60	R1282
80	150	—	0.2	64	1000 (17)	20	80	3.4x10 ⁴	5.3x10 ⁵	0.5	2	5	15	60	R374
80	150	—	0.2	64	1000 (17)	500	3000	1.3x10 ⁶	2.0x10 ⁷	5 ^c	25 ^c	50 ^c	15	60	R1104
80	120	—	0.1	51	1000 (17)	20	80	3.4x10 ⁴	6.7x10 ⁵	3	10	50	15	60	R453
80	150	—	0.2	64	1000 (17)	20	80	3.4x10 ⁴	5.3x10 ⁵	0.5	2	5	15	60	R376
80	120	—	0.1	51	1000 (17)	20	80	3.4x10 ⁴	6.7x10 ⁵	3	10	50	15	60	R457
100	200	—	0.3	40	1000 (17)	20	150	3.0x10 ⁴	7.5x10 ⁵	1	5	20	15	60	R712
10	25	—	0.1 ^d	2.4	1250 (17)	5	10	950	4.0x10 ⁵	1000 ^e	1000 ^e	3000 ^e	10	50	R316
10	25	—	0.14 ^d	2.4	1250 (17)	5	10	950	4.0x10 ⁵	1500 ^e	1500 ^e	5000 ^e	10	50	R316-02 ★

Unit: mm

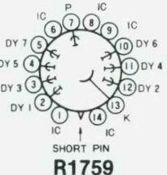
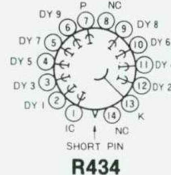
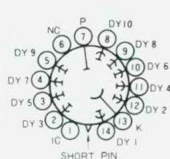
③ R1355, R1398, R1668

④ R434, R1759

⑤ R1569



	R1668	R1355 R1398
A	28.5φ ± 0.8	28.5φ ± 0.5



Temporary Base Removed

