

SPECIAL QUALITY PENTODE

E280F

Special quality high slope pentode for use as a wideband amplifier where stability of characteristics and long life are required.

This data should be read in conjunction with GENERAL NOTES—SPECIAL QUALITY VALVES which precede this section of the handbook, and the index numbers are used to indicate where reference should be made to a specific note.

HEATER

Suitable for parallel operation, a.c. or d.c.

V_h^1	6.3	V
I_h	315	mA

The maximum variation of heater current at $V_h = 6.3V$ is $\pm 16mA$.

CAPACITANCES²

	Minimum	Average	Maximum	
Unshielded				
C_{a-g1}	—	—	35	mpF
C_{in}	8.3	9.3	10.3	pF
$C_{in(w)} (I_k = 26mA)$	—	15.5	—	pF
C_{out}	2.3	2.6	2.9	pF
Shielded				
C_{a-g1}	—	—	30	mpF
C_{in}	8.4	9.4	10.4	pF
$C_{in(w)} (I_k = 26mA)$	—	15.6	—	pF
C_{out}	3.2	3.6	4.0	pF

CHARACTERISTICS³

Pentode connected

V_a	180	V
V_{g3}	0	V
V_{g2}	150	V
V_{g1}	-1.6	V
I_a	20	mA
I_{g2}	6.0	mA
g_m	26	mA/V
μ_{g1-g2}	60	
r_a	100	k Ω

Triode connected

(g_2 to a, g_3 to k)

V_a	150	V
V_{g1}	-1.8	V
I_a	24.5	mA
g_m	33	mA/V
r_a	1.8	k Ω

CHARACTERISTIC RANGE VALUES FOR EQUIPMENT DESIGN

Anode current	Average 20	Initial range 18.8 to 21.2	End of Life* > 17	mA
$V_{a-e} = 190V, V_{g2-e} = 160V,$ $V_{g1-e} = +8V, R_k = 370\Omega$				
Screen-grid current	6.0	5.3 to 6.7	—	mA
$V_{a-e} = 190V, V_{g2-e} = 160V,$ $V_{g1-e} = +8V, R_k = 370\Omega$				
Mutual conductance	26	22 to 30	> 17.5	mA/V
$V_{a-e} = 190V, V_{g2-e} = 160V,$ $V_{g1-e} = +8V, R_k = 370\Omega$				
Negative control-grid current	—	< 0.3	< 1.0	μA
$V_{a-e} = 190V, V_{g2-e} = 160V,$ $V_{g1-e} = +8V, R_k = 370\Omega$				

*To allow for valve deterioration during life, circuits should be designed to function with a valve in which one or more of the characteristics have changed to the values stated.

OPERATING CONDITIONS AS R.F. AMPLIFIER (pentode connected)

V_{a-e}	190		190	190	V
V_{g3}	0		0	0	V
V_{g2-e}	160		160	120	V
V_{g1-e}	+8.0		+9.0	+8.0	V
R_k	370	500	780	630	730 Ω
I_a	20	15	10	13.5	10 mA
I_{g2}	6.0	4.5	3.0	4.0	2.8 mA
g_m	26	23	19	22	20 mA/V
μ_{g1-g2}	60	58	56	58	56
r_a	100	120	155	130	155 k Ω
* r_{g1} (f = 100Mc/s)	1.4	1.5	1.7	1.6	1.6 k Ω
R_{eq}	220	230	250	240	220 Ω
** $C_{in(w)}$	15.5	15	14.3	14.8	14.8 pF
†GB	180	162	138	156	142 Mc/s

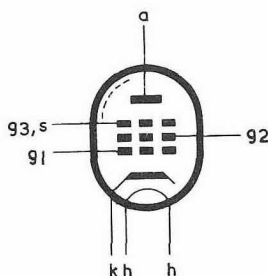
*Pins 1 and 3 strapped together.

**Measured without external shield.

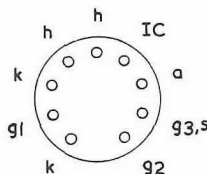
†Gain bandwidth product = $\frac{g_m}{2\pi(C_{in(w)} + C_{out} + 5pF)}$

ABSOLUTE MAXIMUM RATINGS⁴

$V_{a(b)}$ max.	400	V
V_a max.	220	V
p_a max.	4.0	W
$V_{g2(b)}$ max.	400	V
V_{g2} max.	180	V
p_{g2} max.	1.1	W
$-V_{g1}$ max.	50	V
$+V_{g1}$ max.	2.0	V
I_{g1} max.	5.0	mA
I_k max.	30	mA
R_{g1-k} max.	500	$k\Omega$ ←
V_{h-k} (k positive) max.	120	V
V_{h-k} (k negative) max.	60	V
T_{pub} max.	180	°C
V_h max.	6.6	V
V_h min.	6.0	V



B 563



B9A Base

