

ML-8454 Direct-View Storage Tube

DESCRIPTION

The Machlett Type ML-8454 is a 5-inch diameter direct-view storage tube that is capable of bright visual displays of half-tone images. The tube features a high-resolution electrostatically focused tetrode-type write gun and a flood (viewing) gun. The write beam is deflected magnetically. The useful storage time for written information is approximately one minute. The erasure of information can be gradual or can be accomplished instantaneously.

The ML-8454 incorporates a magnetic shield to minimize magnetic fields which might affect the low-velocity flood-gun electrons. The tube is potted in this shield making it suitable for high-altitude operation, as well as sea-level applications.

PERFORMANCE

Values given are for typical tube unless otherwise specified.

Writing Speed (10 μ A beam current).....	100000	in/sec.
Light Output, <u>minimum</u> (8 kV screen voltage).....	1400	ftL
Written Resolution (10 μ A beam current).....	60 to 80	lines/in
Erase Time (single-pulse erasure).....	50 to 250	ms
Half Tones, <u>minimum</u>	5	

GENERAL CHARACTERISTICS

Optical

Phosphor Type.....	P20 Aluminized
Fluorescence.....	Green-Yellow
Phosphorescence.....	Green-Yellow
Faceplate.....	Flat, Optical-Quality Glass

Mechanical

Overall Length.....	10-3/4	in
Maximum Diameter.....	5-7/8	in
Useful Screen Diameter.....	4	in
Neck Length.....	4-1/4	in
Bases:		
Flood gun (Miniature 7-pin).....	JEDEC	E7-1
Write gun (8-pin).....	JEDEC	B7-183
Mounting Position.....	Any	
Outline.....	See Drawing No. ED-28322	
Pin Connections.....	Per Table "A"	
Dimensions.....	Per Table "B"	

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Electrical

Flood and Write Guns:

Heater voltage, (AC or DC).....	6.3	V
Heater current.....	.6 ± 10%	A

Write Gun:

Focusing.....	Electrostatic
Deflection.....	Magnetic

RATINGS

All values are absolute maximum unless otherwise specified.

All voltages are referenced to fk unless otherwise specified.

vs Voltage.....	11000	Vdc
vs Dissipation.....	10	W
be Voltage.....	0 to + 200	Vdc
cc Voltage.....	250	Vdc
fg4 Voltage.....	250	Vdc
fg3, wg3 & wg5 Voltage.....	200	Vdc
fg2 Voltage.....	150	Vdc
fg1 Voltages:		
Negative-bias value.....	200	Vdc
Positive-bias value.....	0	V
Positive-peak value.....	2	v
wg1 Voltages:		
Negative-bias*.....	150	Vdc
Positive-bias*.....	0	V
Positive-peak*.....	2	v
wh Peak Voltages:		
wh negative*.....	125	v
wh positive*.....	125	v
wg4 Voltage.....	-3600	Vdc
wk Voltage.....	-3000	Vdc
wg2 Voltage.....	800	Vdc

TYPICAL OPERATING CONDITIONS

All voltages are referenced to fk unless otherwise specified.

Viewing Section

vs Voltage.....	-10000	Vdc
be Voltage.....	5	Vdc
ce Voltage.....	120	Vdc

Flood Gun

fk Voltage.....	0	Vdc
fg1 Voltage:		
Operating value.....	0 to -30	Vdc
Cut-off value.....	-60 to -120	Vdc
fg2 Voltage.....	80	Vdc
fg3, wg3 & wg5 Voltage.....	10 to 30	Vdc
fg4 Voltage.....	35 to 80	Vdc

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Write Gun

wk Voltage.....	-2000	Vdc
wg1 Voltage*.....	-20 to -50	Vdc
wg2 Voltage*.....	200	Vdc
wg3, wg5.....	(I.C. to fg3)	
wg4 Voltage*.....	-100 to -350	Vdc

* Referenced to wk

Currents

vs.....	0 to 500	μAdc
be.....	-15 to 75	μAdc
ce.....	0.6 to 0.9	mAdc
fg4.....	0.05 to 0.09	mAdc
fg3, wg3 & wg5.....	0.3 to 0.5	mAdc
fg2.....	0.03 to 0.2	mAdc
fk.....	0 to 2	mAdc
wg4.....	<1	μAdc
wk.....	0 to 1	mAdc

TABLE A
TUBE CONNECTIONS

<u>SYMBOL</u>	<u>CONNECTION</u>	<u>BASE*</u>	<u>ELECTRODE</u>
fh	Pin 3	F	flood-gun heater
fh	Pin 4	F	flood-gun heater
fk	Pin 7	F	flood-gun cathode
fg1	Pin 2	F	flood-gun control grid
fg2	Pin 1	F	flood-gun first anode
fg3	Pin 6	F	flood-gun second anode †
fg4	Lead 4	--	flood-gun third anode (collimator)
vs	Lead 1	--	view screen
be	Lead 2	--	backing electrode (storage mesh)
ce	Lead 3	--	collector electrode
ss	N. C.	N.C.	storage surface
wh	Pin 1	W	write-gun heater
wh	Pin 8	W	write-gun heater
wk	Pin 7	W	write-gun cathode
wg1	Pin 2 & 6	W	write-gun control grid
wg2	Pin 3	W	write-gun grid No. 2
wg3	Pin 6	F	write-gun second anode †
wg4	Pin 4	W	write-gun first anode (focus)
wg5	Pin 6	F	write-gun third anode †
--	Pin 5	F	I. C. Do not use.
--	Pin 5	W	vacant position

* F denotes flood-gun JEDEC E7-1 base.

W denotes write-gun JEDEC B7-183 base.

† fg3, wg3 and wg5 internally connected.

TABLE B

DIMENSIONS FOR OUTLINE DRAWING NO. ED-28322

<u>REF.</u>	<u>INCHES (OR DEGREES)</u>			<u>NOTES</u>
	<u>MIN.</u>	<u>NOM.</u>	<u>MAX.</u>	
A	—	—	5.88	8
B	4.00	—	—	
C	10.50	10.75	11.00	
D	6.28	6.31	6.34	
E	3.72	3.75	3.78	
F	1.47	1.50	1.53	
G	0.48	0.50	0.52	
J	0.943	0.948	0.948	
K	.970	1.000	1.030	
L	1.44	1.50	1.56	
M	1.32	1.38	1.44	
P	1.13	1.16	1.19	
Q	—	—	1.30	
S	6.00	6.31	6.62	
T	.282	.312	.342	
V	0.200	0.250	0.250	
a	44°	45°	46°	
b	44°	45°	46°	
c	119°	120°	121°	
d	119°	120°	121°	

NOTES FOR OUTLINE DRAWING NO. ED-28322 & TABLE B

1. No. 8-32 UNC-2A threads; 3 studs.
2. Write-gun small-button eightpin 7-pin base, JEDEC B7-183. (Refer to Table A for pin connections.)
3. Three flexible leads; lengths as specified by customer. (Refer to Table A for lead connections.)
4. AMP No. 835835 flexible high-voltage lead and connector; length as specified by customer.
5. Flood-gun miniature 7-pin base, JEDEC E7-1. (Refer to Table A for pin connections.)
6. No. 8-32 UNC-2A threads; 8 studs.
7. Netic Co-Netic shield.
8. Dimension represents minimum useful screen diameter.

