AMC8213

200MHz RGB VIDEO AMPLIFIER SYSTEM WITH OSD

ADDtek
www.addmtek.com

DESCRIPTION

The AMC8213 is a very high frequency video pre-amplifier system especially for ultra high resolution monitor applications (1280 × 1024 or higher). In addition to three matched amplifiers, the AMC8213 contains three gain adjustment circuits for white balance, three clamp gated comparators for brightness control, and the OSD mixer. Also, the AMC8213 has an internally set output DC level of 1.0V, for some applications, no external output DC level setting is required. The AMC8213 is built into a 22 pin DIP package, accommodating very compact and cost effective designs for those applications requiring OSD. All controls to AMC8213 such as contrast, gain adjustment, and fast blanking are 0V to 4V with high impedance DC inputs. This makes the system easily interfaced with 5V DACs in micro computer controlled systems. Not only working with 8V power supply, The AMC8213 can be operated directly from the heater of 6.2V, which provides very low power consumption and enhance the over all performance.

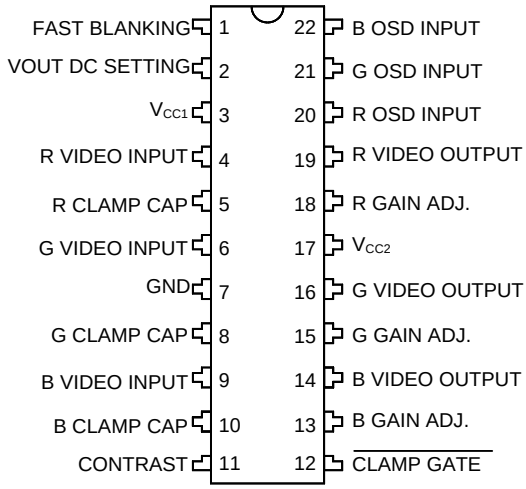
FEATURES

- **$4V_{P-P}$ output with 1.7ns T_r/T_f and low Electrical Magnetic Emission**
- **Power consumption 40% lower than 12V operated video amplifiers**
- **Can be Operated at 6.2V supply voltage for lower power consumption**
- **Fast Blanking for OSD inputs, typical 7ns**
- **Fast OSD switching time, typcial 3ns**
- **0V to 4V, high impedance DC controls for Contrast, Gain Adjustment and Output DC level setting**
- **Output stage directly drives most hybrid or discrete CRT drivers**
- **Low power ≤ 600mW; ICC1 + ICC2 Typ. 90mA at full swing**

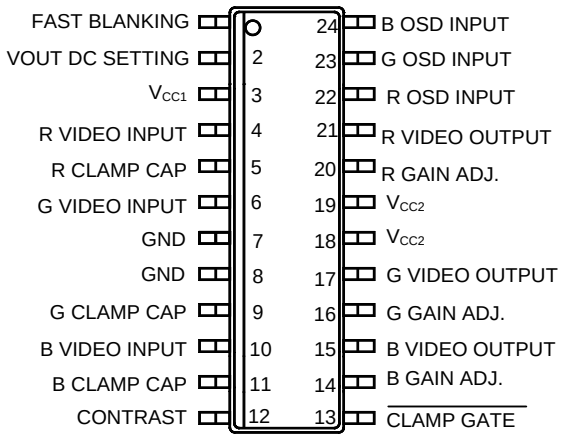
APPLICATIONS

- High Resolution Monitor
- LCD Monitor
- Video signal Processor
- HDTV
- TV Monitors

PACKAGE PIN OUT



N PACKAGE
(TOP VIEW)



DW PACKAGE
(TOP VIEW)

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ORDER INFORMATION

T_A (^{O}C)	N	Plastic DIP 22-pin	DW	Plastic SOWB 24-pin
0 to 70	**AMC8213N**		**AMC8213DW**	
0 to 70	**AMC8213NF(Lead Free)**		**AMC8213DWF(Lead Free)**	

Note: 1.All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number (i.e. AMC8213DMT).
2. The letter "F" is marked for Lead Free process.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (V_{CC1}, V_{CC2})	9.0V
Video Output Current	30mA
Voltage at Any Input Pin	$V_{CC} \geq V_{IN} \geq$ GND
Junction Temperature (T_J)	150 ^{O}C
ESD Susceptibility	3.5KV
ESD Machine Model	300V
Storage Temperature	-65 ^{O}C to 150 ^{O}C
Lead Temperature	300^{O}C

Note:
Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

THERMAL DATA

N PACKAGE:	
Thermal Resistance-Junction to Ambient, θ_{JA}	55 ^{O}C/W
Thermal Resistance-Junction to Case, θ_{JC}	30 ^{O}C/W
DW PACKAGE:	
Thermal Resistance-Junction to Ambient, θ_{JA}	80 ^{O}C/W
Thermal Resistance-Junction to Case, θ_{JC}	37^{O}C/W

Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.
The θ_{JA} numbers are guidelines for the thermal performance of the device/PC-board system.
All of the above assume no ambient airflow.

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RECOMMENDED OPERATING CONDITIONS

Parameter	Pin	Recommended Operating Conditions			Units
		Min.	Typ.	Max.	
Power Supply Voltage (V_{CC1}, V_{CC2})	3, 17	5.7	7.0	8.4	V
Video Input Signal	4, 6, 9		0.7		V_{P-P}
Fast Blanking Signal	1		TTL		TTL
OSD Input Signal	20,21,22	0	1.8	5	V
Contrast Control Voltage	11	0		5	V
Gain Adjustment Control Voltage	13, 15, 18	0		5	V
Clamp Gate Pulse Signal Amplitude	12		TTL		TTL
Clamp Gate Pulse Signal High Voltage	12	3		5	V
Clamp Gate Pulse Signal Low Voltage	12	0		0.8	V
Clamp Gate Pulse Width	12		150		ns
Video Output DC Level Setting	2	0.6	1.0	1.1	V

ELECTRICAL CHARACTERISTICS

T_A = 25 °C; V_{CC1} = V_{CC2} = 7.0V; Contrast = 4V; R, G, B Gain Adj. = 4V; V_{OUT} DC Setting = 1V;
Fast Blanking = 0V; Clamp Gate = 0V; OSD Inputs = 0V, unless otherwise stated. (See Figure 1)

DC Parameter	Symbol	Test Conditions	AMC8213			Units
			Min.	Typ.	Max.	
Supply Current	I_S	V_{CC1} + V_{CC2}		90	100	mA
Video Input Bias Voltage	$V_{4,6,9}$		2.42	2.62	2.82	V
Clamp Cap Charge Current	I_{CHG}			+1.0		mA
Clamp Cap Discharge Current	I_{DISCHG}			-1.0		mA
Input Current for Contrast and R, G, B, Gain Adj.	$I_{11,13,15,18}$				-5	µA
Clamp Gate High Current	I_{12H}	Clamp Gate = 5V			0.1	µA
Clamp Gate Low Current	I_{12L}	Clamp Gate = 0V			-5	µA
High Video Output	V_{OH}	R, G, B Clamp Cap = V_{CC1}	5.2			V
Low Video Output	V_{OL}	R, G, B Clamp Cap = 0V		0.1		V
Blanked Video Output	V_{BLKOIT}	R, G, B Clamp Cap = V_{CC1}, Fast Blanking = 5V		0.1	0.5	V
Output Voltage Difference	$V_{O(DIFF)}$	Between Any Two Channels		±2	10	mV
Spot Killer Voltage	V_{SPOT}	Adjust V_{CC} to Active		5.0	5.5	V

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ELECTRICAL CHARACTERISTICS

T_A = 25°C; V_{CC1} = V_{CC2} = 7.0V; Contrast = 4V; R, G, B Gain Adj. = 4V; V_{OUT} DC Setting = 1V; Fast Blanking = 0V; Clamp Gate = 0V; OSD Inputs = 0V, unless otherwise stated. (see Figure 1)

AC Parameter	Symbol	Test Conditions	AMC8213			Units
			Min.	Typ.	Max.	
Video Amplifier Gain	A_{VMAX}	V_{IN} = 635mV_{PP}	6	7		V/V
Gain Adjustment Range	A_{VADJ}	$V_{13,15,18}$ = 0 to 4V	5	6		dB
Video Bandwidth	BW	V_{PP} = 4V		200		MHz
Video Output Rise Time	t_r	V_{PP} = 4V, C_{LOAD} = 7pf t_r of V_{IN} = 1.5ns		1.75	2.1	ns
Video Output Fall Time	t_f	V_{PP} = 4V, C_{LOAD} = 7pf t_f of V_{IN} = 1.5ns		1.75	2.1	ns
OSD Rise Time	t_{rOSD}	$V_{20,21,22}$ = TTL Level, V_1 = 5V		3.0	5.0	ns
OSD Fall Time	t_{fOSD}	$V_{20,21,22}$ = TTL Level, V_1 = 5V		3.0	5.0	ns
OSD Propagation Delay	t_{V-O}	See figure 2		10.0	12.0	ns

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Figure 1. AMC8213 Test Circuit

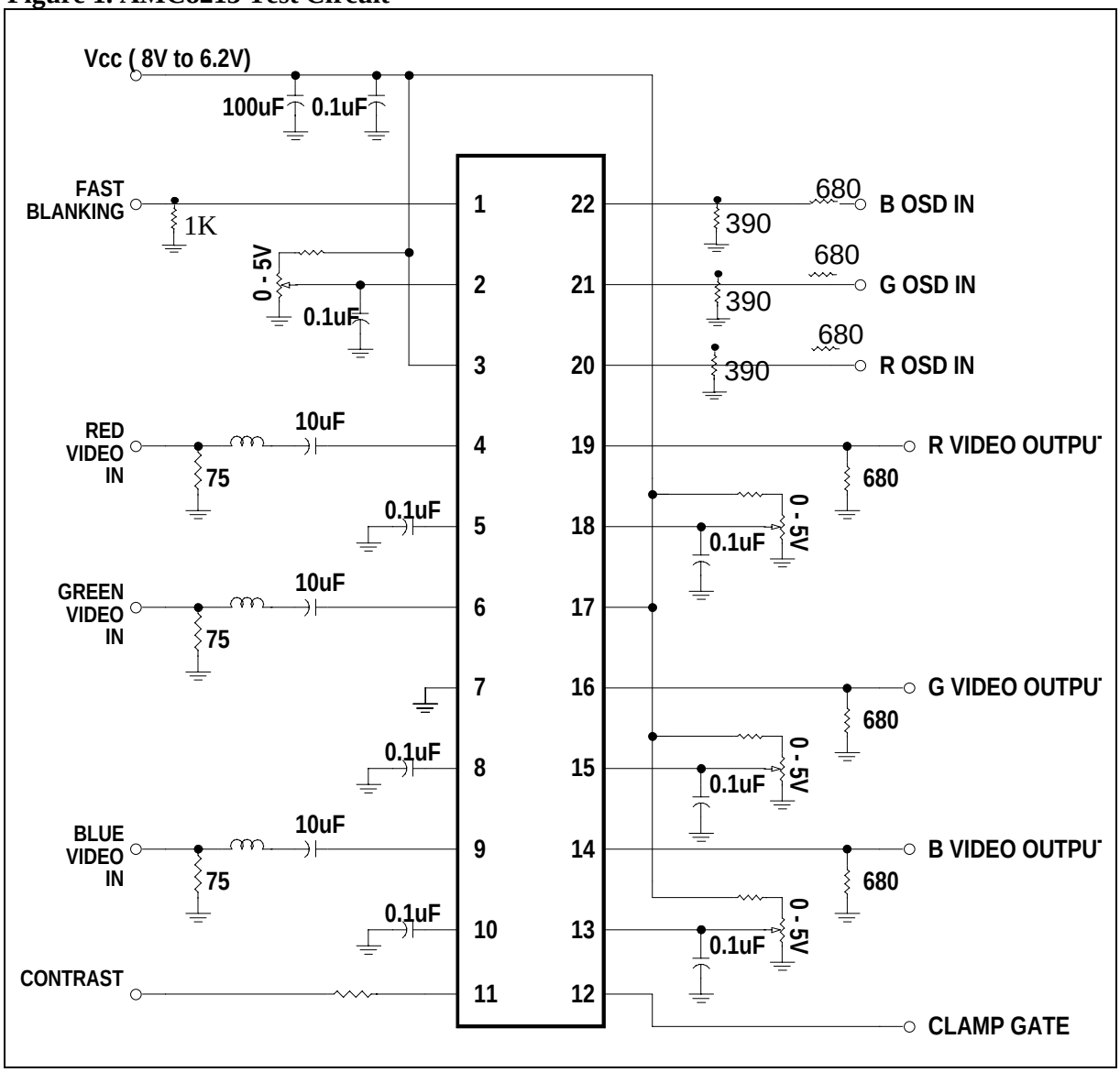

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Figure 2. Timing Diagram for Video Input, Clamp Gate, Fast Blanking and OSD Input.

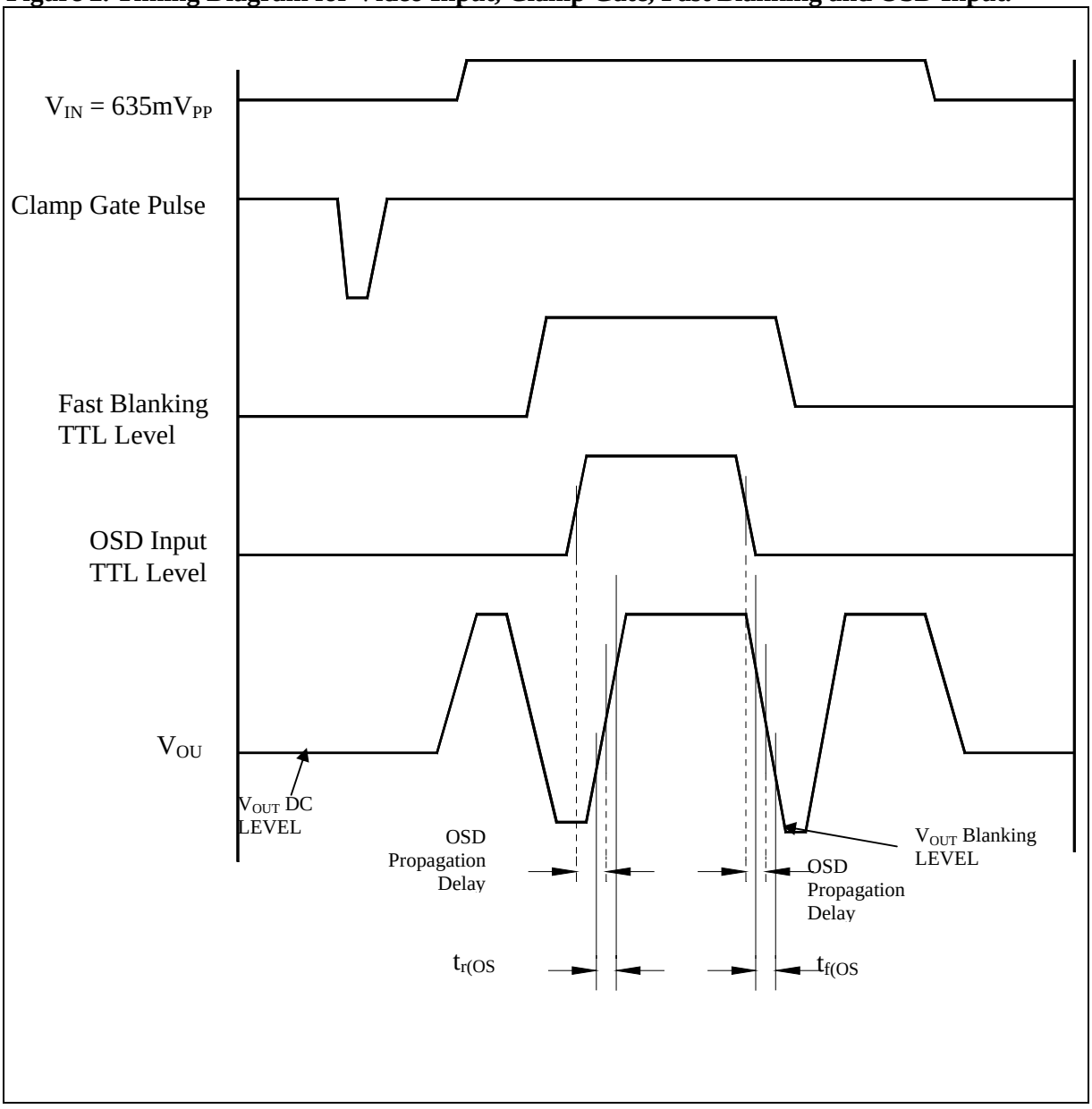

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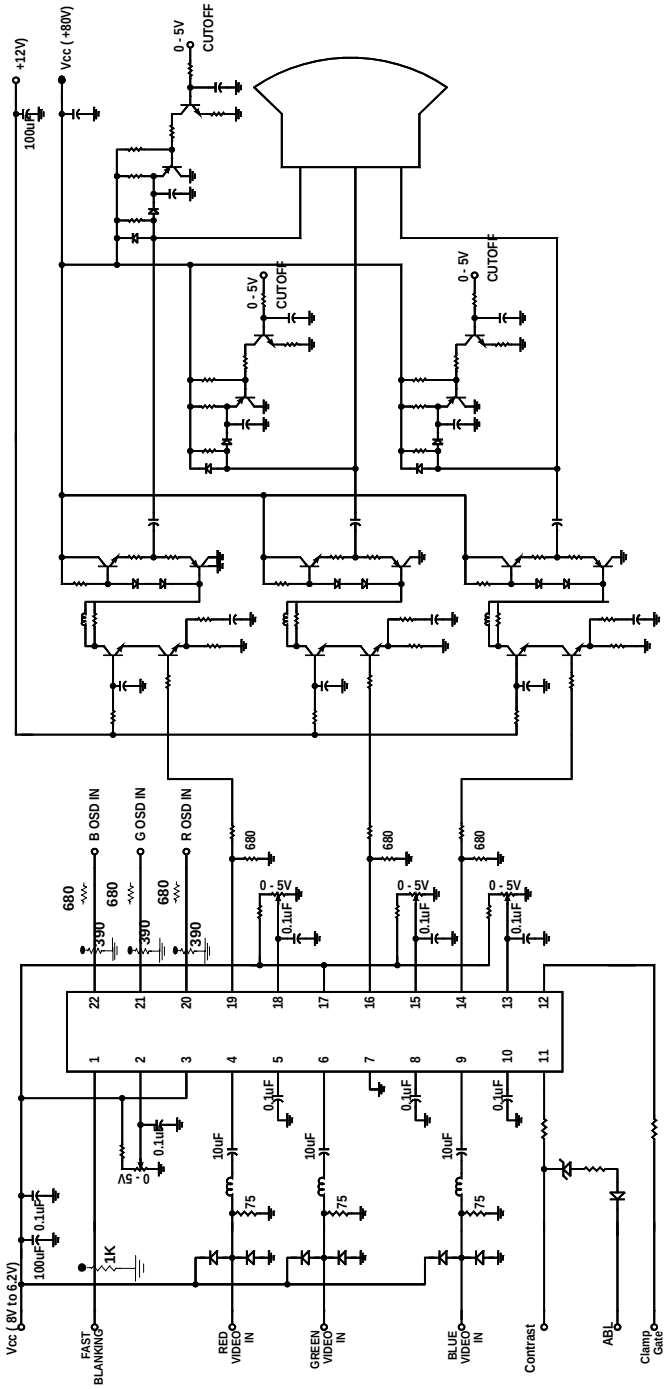
Figure 3. Simplified Monitor Application Circuit



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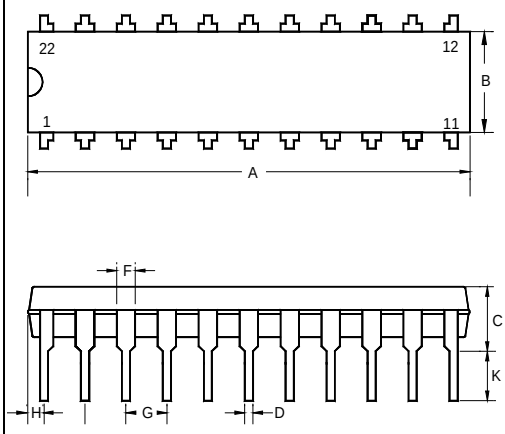
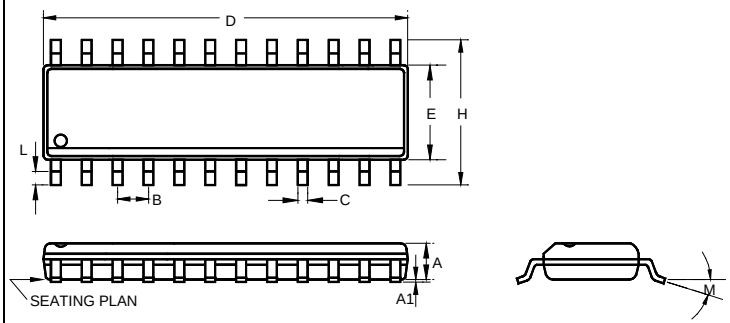
PACKAGE

22-Pin Plastic DIP



	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	1.020	1.030	1.060	25.91	26.16	26.92
B	0.245	0.250	0.255	6.22	6.35	6.48
C	-	-	0.210	-	-	5.33
D	-	0.018	-	-	0.46	-
F	-	0.060	-	-	1.52	-
G	-	0.100	-	-	2.54	-
H	0.030	-	0.070	0.76	-	1.78
J	0.008	-	0.015	0.20	-	0.38
K	0.115	0.130	0.150	2.92	3.30	3.81
L	0.300 BSC.			7.62 BSC.		
M	-	7º	15º	-	7º	15º

24-Pin SOWB (300 mil)



	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.093	-	0.104	2.36	-	2.64
A1	0.004	-	0.012	0.10	-	0.30
B	-	0.050	-	-	1.27	-
C	-	0.016	-	-	0.41	-
D	0.496	-	0.508	12.60	-	12.90
E	0.291	-	0.299	7.39	-	7.59
H	0.394	-	0.419	10.00	-	10.64
L	0.016	-	0.050	0.41	-	1.27
M	-	-	8º	-	-	8º

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