

860 MHz, 20 dB gain push-pull amplifier

MZC8620F

FEATURES

- Excellent linearity
- High reliability
- Extremely low noise
- Excellent return loss properties.

APPLICATIONS

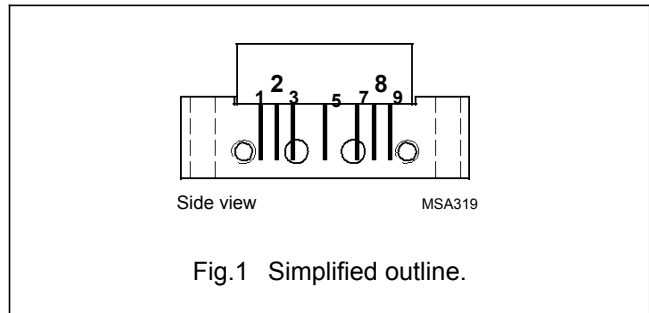
Single module line extender in CATV systems operating over a frequency range of 40 to 860 MHz.

DESCRIPTION

Hybrid high dynamic range amplifier module operating with a voltage supply of 24 V in a SOT115J package. The high gain module consists of two cascaded stages both in cascode configuration.

PINNING SOT115J

PIN	DESCRIPTION
1	input
2, 3	common
5	+V <sub>B</sub>
7, 8	common
9	output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 50 MHz	20	21.5	dB
		f = 860 MHz	21	-	dB
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	210	245	mA

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 0134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V <sub>B</sub>	Supply voltage	-	25	V
V <sub>i</sub>	RF input voltage	-	46	dBmV
T <sub>stg</sub>	storage temperature	-30	+100	°C
T <sub>mb</sub>	operating mounting base temperature	-20	+100	°C

## 860 MHz, 20 dB gain push-pull amplifier

**MZC8620F****CHARACTERISTICS**Bandwidth 40 to 860 MHz;  $V_B = 24\text{ V}$ ;  $T_{\text{case}} = 30\text{ }^\circ\text{C}$ ;  $Z_S = Z_L = 75\ \Omega$ 

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$G_p$	power gain	f = 50 MHz	20	20.8	21.5	dB
		f = 860 MHz	21	21.5	-	dB
SL	slope cable equivalent	f = 40 to 860 MHz	0.5	1.1	2.0	dB
FL	flatness of frequency response	f = 40 to 860 MHz	-	$\pm 0.2$	$\pm 0.5$	dB
$S_{11}$	input return losses	f = 40 to 80 MHz	20	28	-	dB
		f = 80 to 160 MHz	18	28	-	dB
		f = 160 to 320 MHz	18	28	-	dB
		f = 320 to 700 MHz	18	20	-	dB
		f = 700 to 860 MHz	16	18	-	dB
$S_{22}$	output return losses	f = 40 to 80 MHz	16	20	-	dB
		f = 80 to 160 MHz	16	26	-	dB
		f = 160 to 320 MHz	16	26	-	dB
		f = 320 to 700 MHz	16	26	-	dB
		f = 700 to 860 MHz	16	20	-	dB
$S_{21}$	phase response	f = 50 MHz	135	-	225	deg
CTB	composite triple beat	60 channels flat; $V_O = 44\text{ dBmV}$ ; measured at 543.25 MHz	-	-63	-61	dB
$X_{\text{mod}}$	cross modulation	60 channels flat; $V_O = 44\text{ dBmV}$ ; measured at 55.25 MHz	-	-62	-60	dB
CSO	composite second order distortion	60 channels flat; $V_O = 44\text{ dBmV}$ ; measured at 544.5 MHz	-	-64	-62	dB
$d_2$	second order distortion	note 1	-	-74	-65	dB
$V_O$	output voltage	$d_{\text{im}} = -60\text{ dB}$ ; note 2	58	60	-	dBmV
F	noise figure	f = 50 MHz	-	4	4.5	dB
		f = 550 MHz	-	-	5	dB
		f = 600 MHz	-	-	5	dB
		f = 650 MHz	-	-	5.5	dB
		f = 750 MHz	-	-	6	dB
		f = 860 MHz	-	5.5	7	dB
$I_{\text{tot}}$	total current consumption (DC)	note 3	-	210	245	mA

**Notes**

- $f_p = 55.25\text{ MHz}$ ;  $V_p = 44\text{ dBmV}$ ;  $f_q = 805.25\text{ MHz}$ ;  $V_q = 44\text{ dBmV}$ ;  
measured at  $f_p + f_q = 860.5\text{ MHz}$ .
- Measured according to DIN45004B:  
 $f_p = 851.25\text{ MHz}$ ;  $V_p = V_O$ ;  
 $f_q = 858.25\text{ MHz}$ ;  $V_q = V_O - 6\text{ dB}$ ;  $f_r = 860.25\text{ MHz}$ ;  $V_r = V_O - 6\text{ dB}$ ; measured  
at  $f_p + f_q - f_r = 849.25\text{ MHz}$ .
- The module normally operates at  $V_B = 24\text{ V}$ , but is able to withstand supply transients up to 29 V.

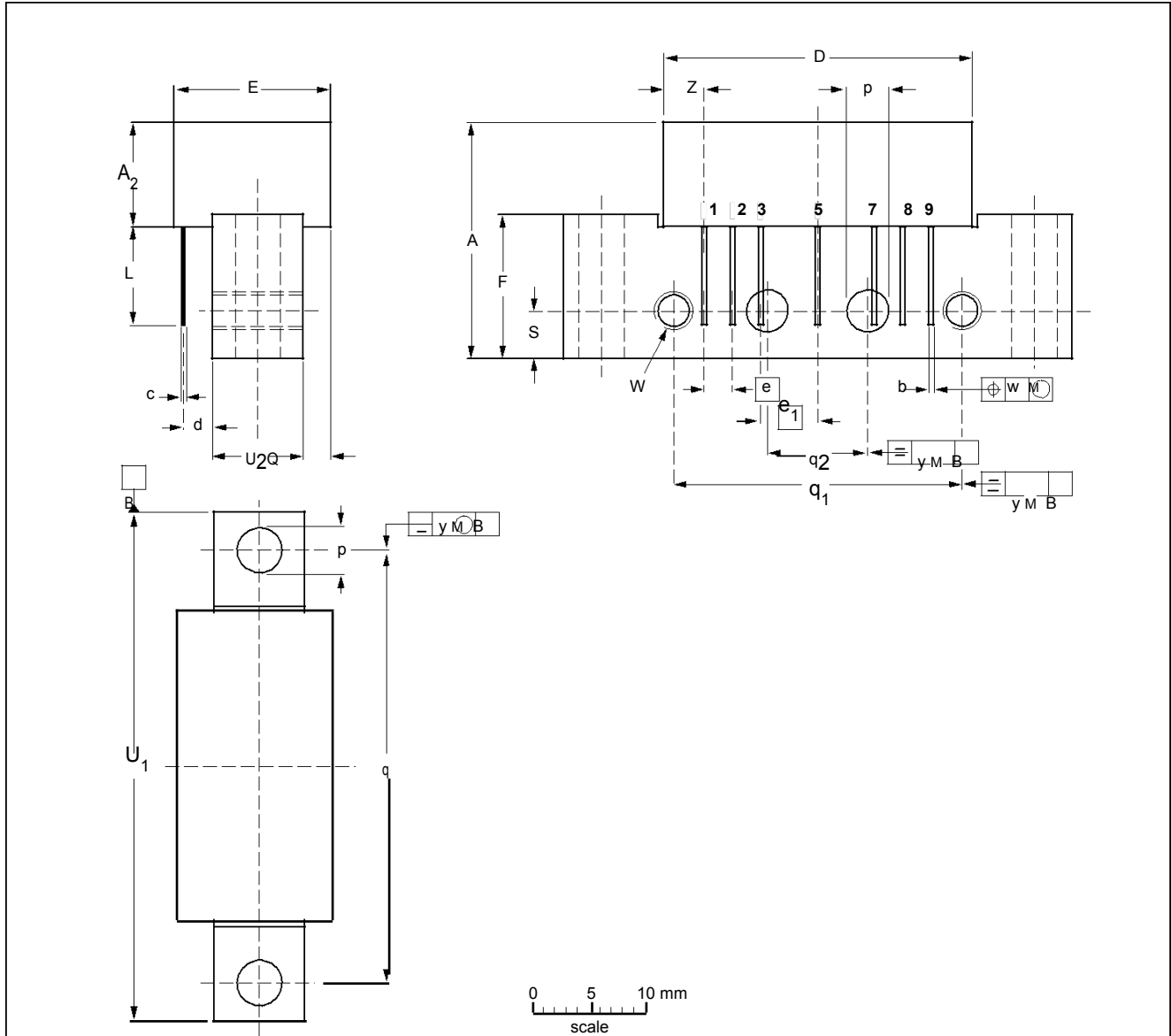
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PACKAGE OUTLINE

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads

SOT115J



DIMENSIONS (mm are the original dimensions)

	A	A <sub>2</sub>	b	c	D	d	E	e	e <sub>1</sub>	F	L	p	Q	q	q <sub>1</sub>	q <sub>2</sub>	s	U <sub>1</sub>	U <sub>2</sub>	W	w	y	Z
UNIT	max.	max.			max.	max.	max.				min.		max.					max.					max.
mm	21	9.1	0.52 0.38	0.25	27.2	3.5	13.7 5	2.54	5.08	12.7	8.2	4.2 3.85	2.4	38.1	25.4	10.2	4.2	45.2	8	6-32 UNC	0.25	0.1	3.9

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115J						