CEL

MC-7834-KC

870 MHz GaAs CATV 20 dB PUSH-PULL AMPLIFIER

FEATURES

- **GaAs ACTIVE DEVICES**
- **LOW DISTORTION**
- **HIGH LINEAR GAIN:**
  MC-7834-KC - GL = 21 dB MIN at f = 870 MHz
- **LOW RETURN LOSS**
- **LOW GAIN CHANGE OVER TEMPERATURE**
- **SPECIFIED FOR 79, 110, and 132 CHANNELS PERFORMANCE**
- **HIGH RELIABILITY AND RUGGEDNESS:**
 Withstands environmental extremes as well as Silicon devices (Surge, ESD, Etc.)

DESCRIPTION

The MC-7834-KC is a GaAs Multi-Chip Module designed for use as input stages in CATV applications up to 870 MHz. Because this unit is a GaAs device, it has low distortion, low noise figure, and low return loss across the entire frequency band. The MC-7834-KC is similar to the standard push-pull devices, but with the higher current allows better distortion performance, especially X-Mod.

Like the previous generation of products, these devices survive such hazards as surge and ESD as well as their silicon competitors, but deliver superior performance with low DC current required.

All devices are assembled and tested using fully automated equipment to maximize consistency in part to part performance, and reliability is assured by stringent quality and process control procedures. These parts come in industry compatible hybrid packages.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE H02
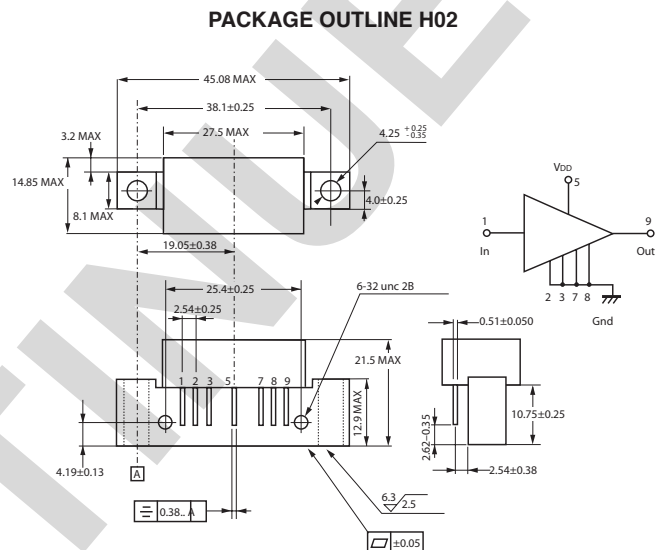
APPLICATIONS

- **CATV HEADEND SYSTEMS**
- **CATV OPTICAL NODES**
- **CATV DISTRIBUTION AMPS**

ELECTRICAL CHARACTERISTICS (TA = 30±5 °C, VDD = 24 V, ZS = ZL = 75 Ω)

PART NUMBER			MC-7834-KC			TEST CONDITIONS
SYMBOLS	CHARACTERISTICS	UNITS	MIN	TYP	MAX	
BW	Frequency Range	MHz	50	–	870	
GL	Linear Gain	dB	20.0	–	21.0	f = 870 MHz
S	Gain Slope	dB	0.2	–	1.0	f = 40 to 870 MHz
Gf	Gain Flatness	dB	–	–	0.7	40 to 870 MHz; Peak to Valley
NF	Noise Figure 1	dB	–	–	6.5	f = 50 MHz
	Noise Figure 2		–	–	7.0	f = 870 MHz
RL	Input/Output Return Loss	dB	20.0	–	–	40 to 160MHz
			19.0	–	–	160 to 320 MHz
			17.5	–	–	320 to 640 MHz
			16.0	–	–	640 to 870 MHz
IDD	Operating Current	mA	180	–	325	RF OFF
CTB	Composite Triple Beat	dBc	–	–	-59	f = 40 to 870 MHz; 110 Channels,
XMod	Cross Modulation	dBc	–	–	-52	VOUT = 44 dBmV, Flat
CSO	Composite Second Order	dBc	–	–	-59	

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ABSOLUTE MAXIMUM RATINGS[1] (T$_{CASE}$= 30 °C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V$_{DD}$	Supply Voltage	V	30
V$_I$	Input Voltage[2]	dBmV	65
T$_C$	Operating Case Temperature	°C	-30 to +100
T$_{STG}$	Storage Temperature	°C	-40 to +100

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Maximum single channel power applied to the input for 1 minute with no measurable degradation in performance.

RECOMMENDED OPERATING CONDITIONS (Zs = ZL = 75Ω)

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V$_{DD}$	Supply Voltage MC-7834-KC	V	23.5	24.0	24.5
V$_i$	Input Voltage[1] MC-7834-KC	dBmV	–	21.0	27.5
T$_C$	Operating Case Temperature MC-7834-KC	°C	-30	+25	+85

Note:

1. Test Conditions: 110 Channels, Flat

ORDERING INFORMATION

PART NUMBER	PACKAGE	QUANTITY
MC-7834-KC-AZ	7-pin special with heatsink (Pb-Free)	25 pcs max/ Tray

NOTES ON CORRECT USE

1. The space between PC board and root of the lead should be kept more than 1 mm to prevent undesired stress on the lead and also should be kept less than 4 mm to prevent undesired parasitic inductance.

   Recommended space is 2.0 to 3.0 mm typical.

2. Recommended torque strength of the screw is 59 to 78 Ncm.

3. Form the ground pattern as wide as possible to minimize ground impedance. (to prevent undesired oscillation)

   All the ground pins must be connected together with wide ground pattern to decrease impedance difference.

RECOMMENDED SOLDERING CONDITIONS

This product should be soldered in the following recommended conditions. Other soldering methods and conditions than the recommended conditions are to be consulted with our sales representatives.

Soldering Method	Soldering Conditions	Condition Symbol
Pin Part Heating	Pin area temperature: less than 260°C[1] Hour: Within 2 sec./pin	–

Note.

1. The point of pin part heating must be kept at a distance of more than 1.2 mm from the root of lead.