

UPC2791TB, UPC2792TB

5 V, SUPER MINIMOLD SILICON MMIC WIDEBAND AMPLIFIER

FEATURES

HIGH DENSITY SURFACE MOUNTING: 6 pin super minimold or SOT- 363 package

• SUPPLY VOLTAGE: Vcc = 4.5 to 5.5 V

• WIDEBAND RESPONSE:

UPC2791TB: fu = 1.9 GHz TYP UPC2792TB: fu = 1.2 GHz TYP

POWER GAIN:

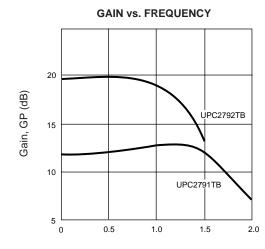
UPC2791TB: GP = 12 dB TYP UPC2792TB: GP = 20 dB TYP

DESCRIPTION

NEC's UPC2791TB and UPC2792TB are Silicon MMIC Wideband Amplifiers manufactured using NEC's 10 GHz $\rm f_{T}$ NESAT TM II silicon bipolar process. These devices are designed for use as second IF buffer amps in DBS tuners. The UPC2791/92TB are pin compatible and their performance is comparable to the larger UPC1675/76G, so they are suitable for use as a replacement to help reduce system size. These IC's are housed in a 6 pin super minimold or SOT-363 package.

NEC's stringent quality assurance and test procedure ensure the highest reliability and performance.

TYPICAL PERFORMANCE CURVES



Frequency, f (GHz)

ELECTRICAL CHARACTERISTICS (TA = +25 °C, Vcc = 5.0 V, ZL = Zs = 50 Ω)

PART NUMBER PACKAGE OUTLINE			UPC2791TB S06		UPC2792TB \$06			
SYMBOLS	SYMBOLS PARAMETERS AND CONDITIONS		MIN	TYP	MAX	MIN	TYP	MAX
Icc	Circuit Current (no signal)	mA	12	17	22	14	19	24
GP	Power Gain, f = 500 MHz	dB	10	12	14	17	20	22
fu	Upper Limit Operating Frequency (The gain at fu is 3 dB down from the gain at 100 MHz)	GHz	1.6	1.9		1.0	1.2	
Po(sat)	Maximum Output Level, f = 500 MHz, PIN = 0 dBm	dBm	+2	+4		+3	+5	
NF	Noise Figure, f = 500 MHz	dB		5.5	7.0		3.5	6
RLIN	Input Return Loss, f = 500 MHz	dB	9	12		12	15	
RLout	Output Return Loss, f = 500 MHz	dB	8	11		9	12	
ISOL	Isolation, f = 500 MHz	dB	20	24		24	28	

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

ABSOLUTE MAXIMUM RATINGS¹ ($TA = 25^{\circ}C$)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Vcc	Supply Voltage	V	6
Pin	Input Power	dBm	+10
Рт	Total Power Dissipation ²	mW	200
Тор	Operating Temperature	°C	-40 to +85
Тѕтс	Storage Temperature	°C	-55 to +150

Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- 2. Mounted on double sided copper clad 50 x 50 x 1.6 mm epoxy glass PWB ($T_A = +85^{\circ}C$).

RECOMMENDED OPERATING CONDITIONS

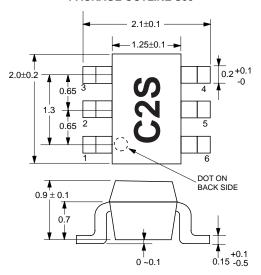
SYMBOL	PARAMETER	UNITS	MIN	TYP	MAX
Vcc	Supply Voltage	V	4.5	5.0	5.5
Тор	Operating Temperature	°C	-40	+25	+85

PIN DESCRIPTION

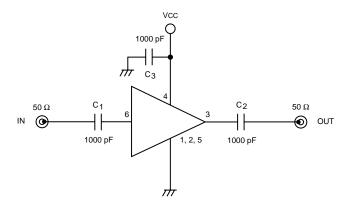
Pin No.	Pin Name	Applied Voltage (V)	Description	Internal Equivalent Circuit
1 2 5	GND	0	Ground pin. This pin should be connected to system ground with minimum inductance. Ground pattern on the board should be formed as wide as possible. All the ground pins must be connected together with wide ground pattern to minimize impedance difference.	UPC2791TB Voc
3	Output	_	Signal output pin. An internal matching circuit, configured with resistors, enables 50 Ω connection over a wide bandwidth. This pin must be coupled to the output load with a blocking capacitor.	IN GND2
4	Vcc	4.5 to 5.5	Power supply pin. This pin should be externally equipped with a bypass capacitor to minimize ground impedance.	UPC2792TB Vcc
6	Input	_	Signal input pin. An internal matching circuit, configured with resistors, enables 50 Ω connection over a wide bandwidth. A multi-feedback circuit is designed to cancel the deviations of hFE and resistance. This pin must be coupled to the signal source with a blocking capacitor.	IN GND2

OUTLINE DIMENSIONS (Units in mm)

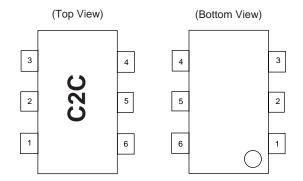
PACKAGE OUTLINE S06



TEST CIRCUIT



PIN CONNECTIONS



Marking is an example of UPC2791TB

- GND
 GND
- 4. Vcc
- GND
 Output
- GNDInput

ORDERING INFORMATION (Solder Contains Lead)

PART NUMBER	MARKING	QTY	
UPC2791TB-E3	C2S	3K/reel	
UPC2792TB-E3	C2T	3K/reel	

Note: Embossed tape, 8 mm wide. Pins 1, 2, and 3 face perforated side of tape.

ORDERING INFORMATION (Pb-Free)

	PART NUMBER	MARKING	QTY		
	UPC2791TB-E3-A	C2S	3K/reel		
UPC2792TB-E3-A		C2T	3K/reel		

Note: Embossed tape, 8 mm wide. Pins 1, 2, and 3 face perforated side of tape.

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices		
Lead (Pb)	< 1000 PPM	-A Not Detected	-AZ (*)	
Mercury	< 1000 PPM	Not Detected		
Cadmium	< 100 PPM	Not Detected		
Hexavalent Chromium	< 1000 PPM	Not Detected		
PBB	< 1000 PPM	Not Detected		
PBDE	< 1000 PPM	Not Detected		

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

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