DATA SHEET (Preliminary)

NEC
ELECTRON DEVICE

BIPOLAR DIGITAL INTEGRATED CIRCUIT
μPB595

1 GHz DIVIDE-BY-128/136 LOW POWER PRESCALER

The μPB595 is a two-modulus prescaler for TV, CATV and VTR, which adopts NEC's original pulse swallowing method, it is high sensitivity and low power prescaler.

It is possible that consists a tuning system of PLL frequency synthesizer method having a stable and high-precision fine tuning function by using with μPD1700 series, μPD17000 series (μPD17002 etc.).

Three kinds of packages are 8-pin Plastic DIP (μPB595CX), 8-pin Slim SIP (μPB595HA) and 8-pin Plastic SOP (μPB595GR).

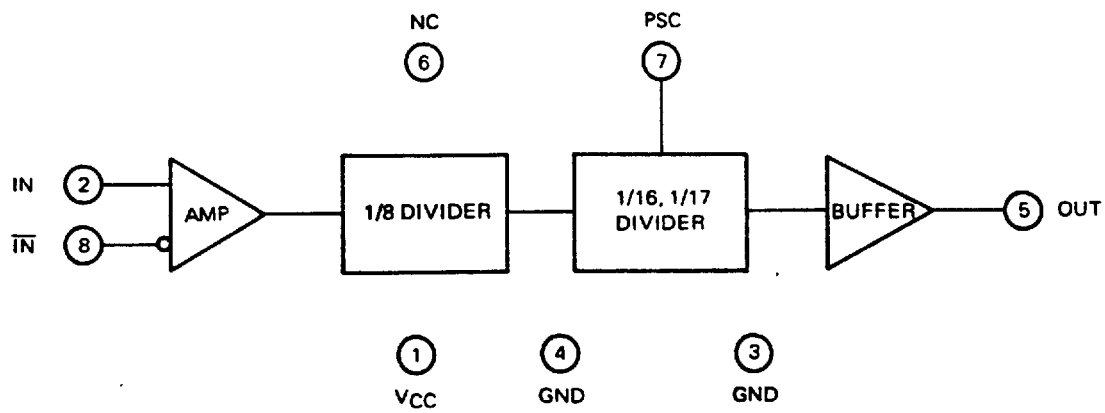
FEATURES

- High sensitivity : 60 mV_{P-P}
- Wide range, high speed : 60 to 1 150 MHz (V_{in} = 60 mV_{P-P} MIN.)
- Low supply current : 24 mA (TYP.)
- NEC's original pulse swallowing method
  128/136 ..... 1 GHz (MAX.)

ORDERING INFORMATION

Order Code	Package
μPB595CX	8 pin plastic DIP (300 mil)
μPB595GR	8 pin plastic SOP (225 mil)
μPB595HA	8 pin plastic slim SIP

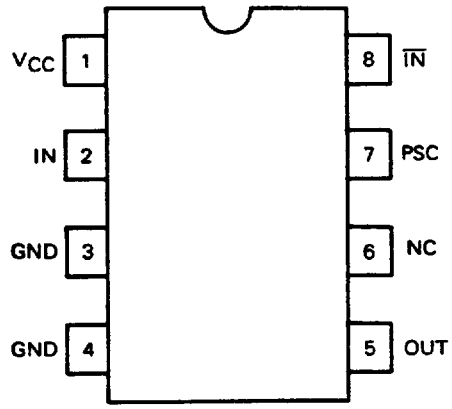
BLOCK DIAGRAM



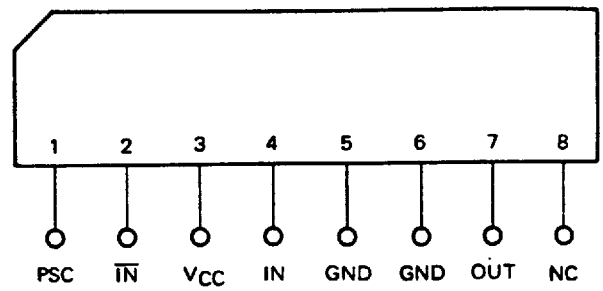
Note: This pin number is μPB595CX and μPB595GR's.
μPB595HA's pin number is different from μPB595CX and μPB595GR's.

PIN CONFIGURATION

μPB595CX, PB595GR
(Top View)



μPB595HA



PIN DESCRIPTION

PIN No.		PIN NAME	PIN DESCRIPTION
μPB595CX μPB595GR	μPB595HA		
1	3	V_{CC}	Power Supply Pin (+5 V ± 10 %)
2	4	IN	VCO Signal Input Pin
3	6	GND	Ground Pin
4	5	GND	Ground Pin
5	7	OUT	Signal Output Pin
6	8	NC	No Connection
7	1	PSC	Pulse Swallow Control (connected to PSC pin of device in μPD1700 series)
8	2	IN	Bias Pin

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	V_{CC}	−0.5 to 6.0	V
Input Voltage	V_I	−0.5 to V_{CC}+0.5	V
Output Current	I_O	−10.0	mA
Storage Temperature	T_{stg}	−55 to +125	°C

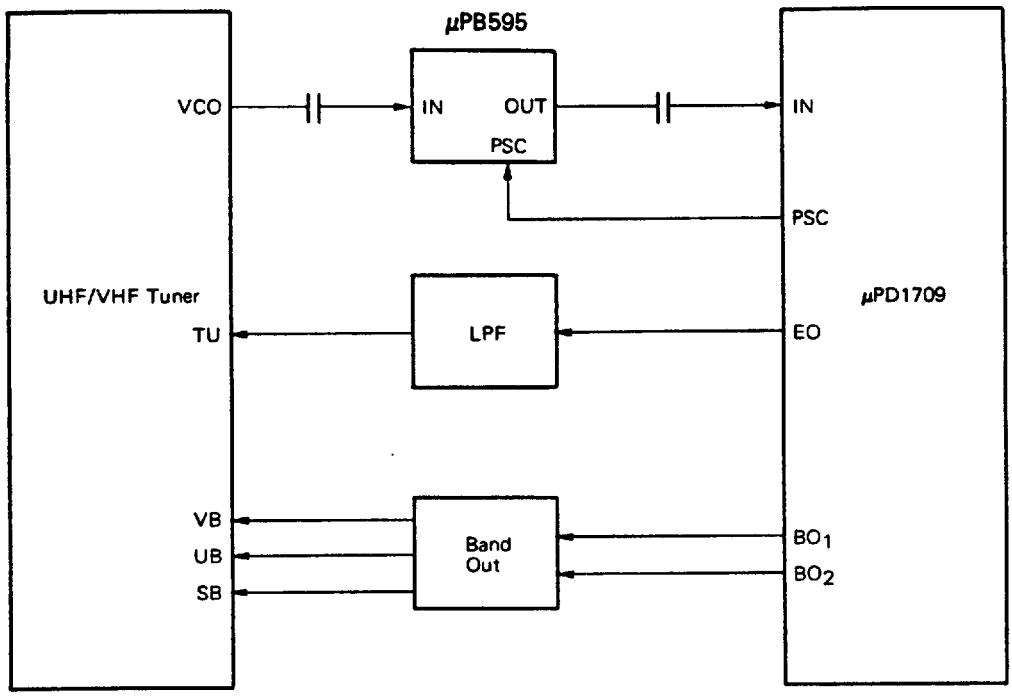
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5.0	5.5	V
Operating Temperature	T_a	−35		+75	°C
Output Load Capacitance	C_L			10	pF

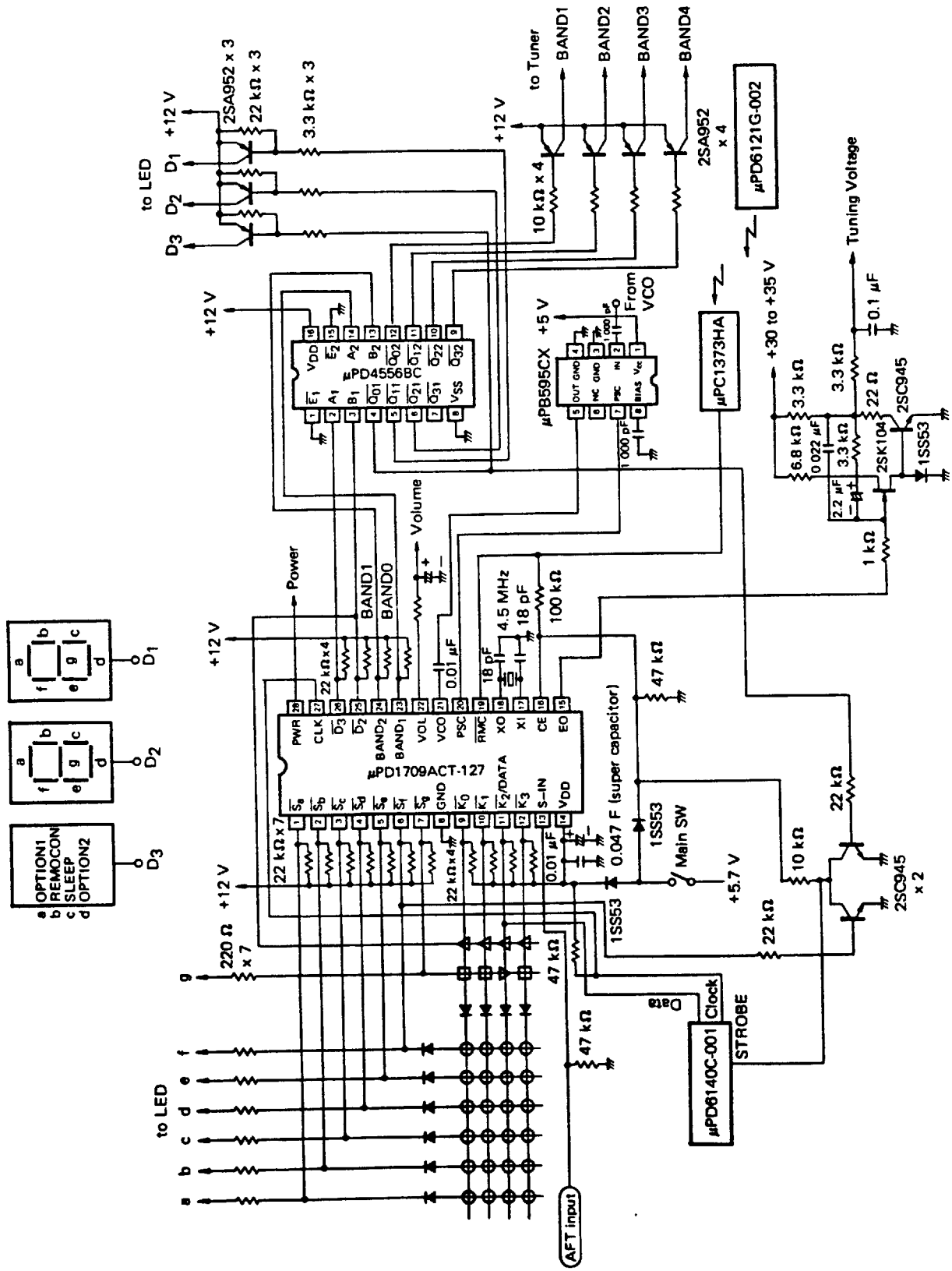
ELECTRICAL CHARACTERISTICS (V_{CC} = 5 V ± 10 %, T_a = −35 to +75 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Supply Current	I_{CC}	16	24	33	mA	V_{CC} = 5.0 V, T_a = 25 °C
Output Oscillation Voltage	V_O	0.9	1.2		V_{P-P}	OUT pin, C_L = 10 pF
Input Oscillation Voltage	V_{in}	0.06		1.5	V_{P-P}	IN pin
High Level Input Voltage	V_{IH}	0.7 V_{CC}			V	PSC pin
Low Level Input Voltage	V_{IL}			0.3 V_{CC}	V	PSC pin
High Level Input Current	I_{IH}			50	μA	PSC pin, V_I = 5 V
Operating Frequency	f_{in}	60		1 150	MHz	IN pin, $V_{in} \geqq$ 60 mV_{P-P} sine wave
Low Level Input Current	I_{IL}			150	μA	PSC pin, V_I = 0

APPLICATION



APPLICATION CIRCUIT

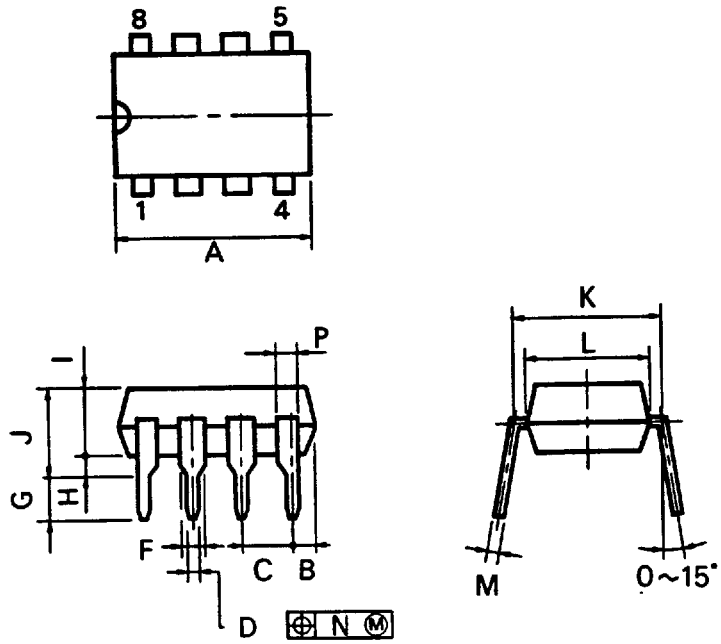


The application circuits and circuit constants used in this document do not represent values suitable for mass production where production deviation and temperature characteristics have been taken into account. Also not that the manufacturer bears no responsibility in respect to patents related to these circuits.

PACKAGE DIMENSIONS (Unit: mm)

8-pin Plastic DIP (300 mil)

μPB595CX



P8C-100-300B,C

NOTES

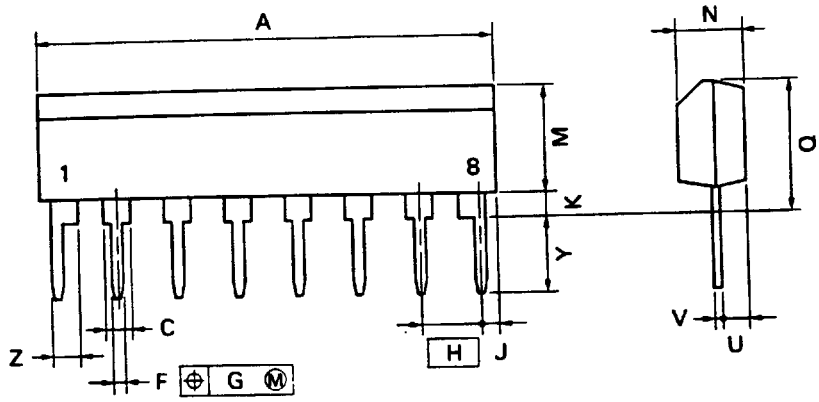
1) Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition.

2) Item "K" to center of leads when formed parallel.

ITEM	MILLIMETERS	INCHES
A	10.16 MAX.	0.400 MAX.
B	1.27 MAX.	0.050 MAX.
C	2.54 (T.P.)	0.100 (T.P.)
D	$0.50^{+0.10}$	$0.020^{+0.004}_{-0.006}$
F	1.4 MIN.	0.055 MIN.
G	$3.2^{+0.3}$	$0.126^{+0.012}$
H	0.51 MIN.	0.020 MIN.
I	4.31 MAX.	0.170 MAX.
J	5.08 MAX.	0.200 MAX.
K	7.62 (T.P.)	0.300 (T.P.)
L	6.4	0.252
M	$0.25^{+0.10}_{-0.05}$	$0.010^{+0.004}_{-0.003}$
N	0.25	0.01
P	0.9 MIN.	0.035 MIN.

8-pin Plastic Slim SIP

μPB595HA



P8HA-254B

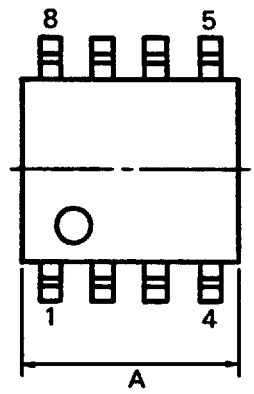
NOTE

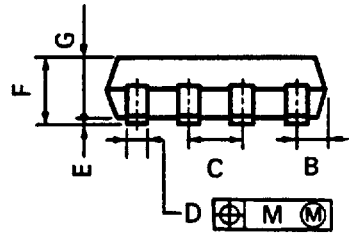
Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition.

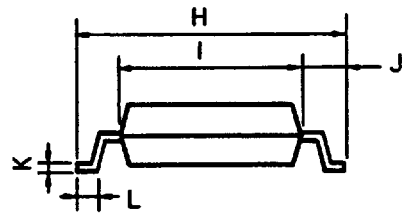
ITEM	MILLIMETERS	INCHES
A	20.32 MAX.	0.8 MAX.
C	1.1 MIN.	0.043 MIN.
F	$0.5^{\pm 0.1}$	$0.02^{+0.004}_{-0.005}$
G	0.25	0.01
H	2.54	0.1
J	1.27 MAX.	0.05 MAX.
K	0.51 MIN.	0.02 MIN.
M	5.08 MAX.	0.2 MAX.
N	$2.8^{\pm 0.2}$	$0.11^{+0.008}_{-0.009}$
Q	5.75 MAX.	0.227 MAX.
U	1.5 MAX.	0.059 MAX.
V	$0.25^{+0.10}_{-0.05}$	$0.01^{+0.004}_{-0.003}$
Y	$3.2^{\pm 0.5}$	$0.126^{\pm 0.02}$
Z	1.1 MIN.	0.043 MIN.

8-pin Plastic SOP (225 mil)

μPB595GR







S8GM-50-225B-1

ITEM	MILLIMETERS	INCHES
A	5.37 MAX.	0.212 MAX.
B	0.78 MAX.	0.031 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	$0.40^{+0.10}_{-0.05}$	$0.016^{+0.004}_{-0.003}$
E	0.1 ± 0.1	0.004 ± 0.004
F	1.8 MAX.	0.071 MAX.
G	1.49	0.059
H	6.5 ± 0.3	0.256 ± 0.012
I	4.4	0.173
J	1.1	0.043
K	$0.15^{+0.10}_{-0.05}$	$0.006^{+0.004}_{-0.002}$
L	0.6 ± 0.2	$0.024^{+0.008}_{-0.009}$
M	0.12	0.005

NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.