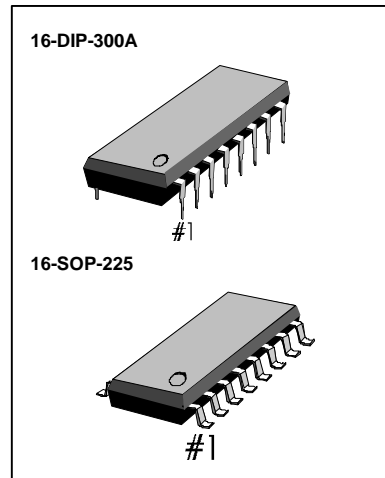


INTRODUCTION

The KS8803B/4B are designed to select 10/15 channels of cordless phone of which frequency band is 46/49MHz. It has reference frequency generator, programmable divider for transmit and receive section and phase detector.

FEATURES

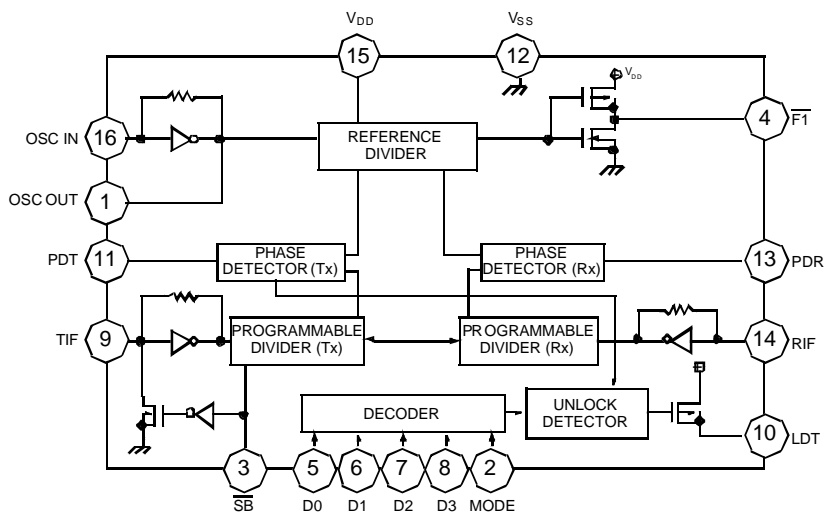
- 10 Channels selectable : KS8803B (both transmit/receive)
- 15 Channels selectable : KS8804B (both transmit/receive)
- Include oscillation circuit with external x-tal (10.24MHz)
- 5KHz output for guard tone
- Unlock detector (phase difference more than 6.25us)
- Stand-by function for power saving



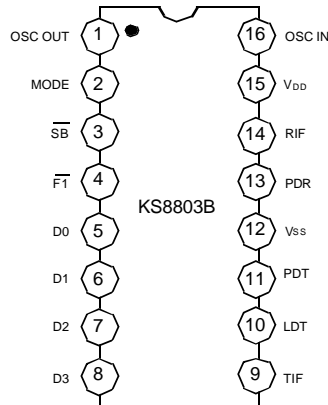
ORDERING INFORMATION

| Device | Package | Operating Temperature |
|----------|-------------|-----------------------|
| KS8803B | 16-DIP-300A | - 30°C ~ + 75°C |
| KS8803BD | 16-SOP-225 | |

BLOCK DIAGRAM



PIN CONFIGURATION



PIN DESCRIPTION

| Pin No | Symbol | Description |
|--------|---------|---|
| 1 | OSC OUT | <ul style="list-style-type: none"> This output generates reference frequency when it is connected to Pin 16 with external OSC of which frequency is 10.24MHz |
| 2 | MODE | <ul style="list-style-type: none"> Base/Remote Unit Selection Pin "High" : Base Unit "Low" : Remote Unit |
| 3 | SB | <ul style="list-style-type: none"> Stand-by pin This input controls Tx PLL for reducing the power dissipation "High" : Normal operation "Low" : Stand-by |
| 4 | F1 | <ul style="list-style-type: none"> 5KHz output |
| 5 | D0 | <ul style="list-style-type: none"> Channel selection pins |
| 6 | D1 | <ul style="list-style-type: none"> The Combinations of these inputs select one channel among the 10/15 channels |
| 7 | D2 | |
| 8 | D3 | |
| 9 | TIF | <ul style="list-style-type: none"> Input to programmable divider of Tx AC coupling with VCO In case of lager signal, It needs DC-coupling Min. input voltage is 0.1Vrms |
| 10 | LDT | <ul style="list-style-type: none"> Unlocked signal out pin (see output charateristics) |

PIN DESCRIPTION

| Pin No | Symbol | Description |
|--------|-----------------|---|
| 11 | PDT | <ul style="list-style-type: none">• Phase detector output for Tx• PDT detects the phase error from Tx PLL and its output is connected to external low pass filter |
| 12 | V _{SS} | <ul style="list-style-type: none">• This pin is negative supply of the IC.• It usually grounded |
| 13 | PDR | <ul style="list-style-type: none">• Phase detector output for Rx• PDR detects the phase error from Rx PLL and its output is connected to external low pass filter |
| 14 | RIF | <ul style="list-style-type: none">• Input of programmable divider for Rx.• AC coupling with VCO• In case of lager signal (standard CMOS logic), it needs DC coupling• Min. input voltage is 0.1V_{rms} |
| 15 | V _{DD} | <ul style="list-style-type: none">• This pin is positive supply of the IC• Its reference is V_{SS}, and normally + 3.0V ~ + 5.5V more positive than V_{SS} |
| 16 | OSC IN | <ul style="list-style-type: none">• X-TAL osc connection pin• This input generates the reference frequency when it is connected to pin 1 with external osc |

ABSOLUTE MAXIMUM RATING ES (Ta = 25°C)

| Characteristic | Symbol | Value | Unit |
|-----------------------|------------------|-------------------------------|------|
| Supply voltage | V _{DD} | - 0.5 ~ 6.0 | V |
| Input Voltage | V _I | - 0.3 ~ V _{DD} + 0.5 | V |
| Power Dissipation | P _D | 350 | mW |
| Operating Temperature | T _{OPR} | - 30 ~ + 75 | °C |
| Storage Temperature | T _{STG} | - 40 ~ + 125 | °C |

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{DD} = 5V, unless otherwise specified)

| Characterostoc | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------------|----------------------|-----------------------------------|--------------------|-------|--------------------|------|
| Supply Voltage | V _{DD} | - | 3 | - | 5.5 | V |
| Input Voltage | V _{IH1} | D0 - D3, \overline{SB} | 0.7V _{DD} | - | V _{DD} | V |
| | V _{IL1} | D0 - D3, \overline{SB} | - | - | 0.3V _{DD} | V |
| | V _{IH2} | MODE | 0.9V _{DD} | - | V _{DD} | V |
| | V _{IL2} | MODE | - | - | 0.1V _{DD} | V |
| Input Frequency | f _{I1} | V _{TIF} = 0.15Vrms | 10 | - | 52 | MHz |
| | f _{I2} | V _{RIF} = 0.15Vrms | 30 | - | 42 | MHz |
| | f _{I3} | OSC _{IN} = 0.3Vrms | 5 | 10.24 | 11 | MHz |
| Input Amplitude | V _{I(AMP)1} | f _{TIF} = 52MHz | 0.1 | - | 0.3V _{DD} | Vrms |
| | V _{I(AMP)2} | f _{RIF} = 42MHz | 0.1 | - | 0.3V _{DD} | Vrms |
| | V _{I(AMP)3} | OSC _{IN} = 11MHz | 0.3 | - | 0.3V _{DD} | Vrms |
| Input Current | I _{IH} | V _{IN} = V _{DD} | - | - | 40 | μA |
| | I _{IL} | V _{IN} = V _{SS} | - | - | 40 | μA |

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$, unless otherwise specified)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------------|------------|--------------------------------------|--------------|------|-----|---------------|
| Output Voltage | V_{OH1} | PDT, RDR : $I_O = 0.5\text{mA}$ | $V_{DD}-1.0$ | - | - | V |
| | V_{OL1} | PDT, RDR : $I_O = 0.5\text{mA}$ | - | - | 1.0 | V |
| | V_{OH2} | LDT : $I_O = 1\text{mA}$ | $V_{DD}-1.0$ | - | - | V |
| | V_{OL2} | $\overline{F1}$: $I_O = 1\text{mA}$ | - | - | 1.0 | V |
| Output OFF Leakage Current | I_{LKG1} | PDT, PDR : $V_O = V_{DD}/V_{SS}$ | - | 0.01 | 1.0 | μA |
| | I_{LKG2} | LDT : $V_O = V_{SS}$ | - | - | 5.0 | μA |
| Stand-by Current | I_{SB1} | $V_{DD} = 3\text{V}$ (Note 2) | - | 1.0 | 2.0 | mA |
| | I_{SB2} | $V_{DD} = 3\text{V}$ (Note 2) | 3.5 | 4.0 | - | mA |
| Operating Current | I_{DD1} | $V_{DD} = 3\text{V}$ (Note 1) | - | 2.0 | 3.0 | mA |
| | I_{DD2} | $V_{DD} = 5\text{V}$ (Note 1) | - | 6.0 | 7.0 | mA |

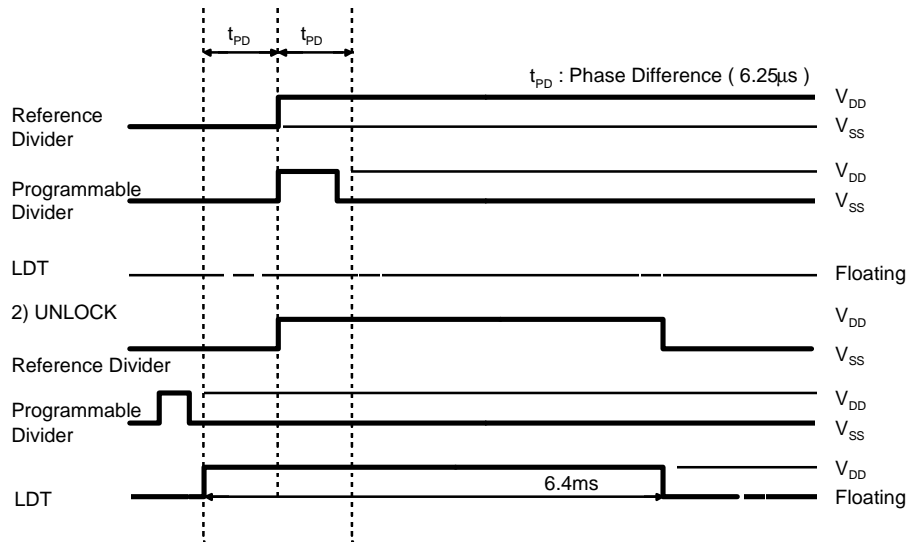
- NOTE 1) OSC_{IN} : 10.24MHz X-tal Connection
TIF : 27MHz 150mVrms
RIF : 42MHz 150mVrms
MODE : V_{DD} , SB = V_{DD} , others are opened

- NOTE 2) OSC_{IN} : 10.24MHz X-tal Connection
TIF : 27MHz 150mVrms
RIF : 42MHz 150mVrms
MODE : V_{DD} , SB = V_{SS} , others are opened

- Capacitor more than 2000pF should be connected between V_{DD} & V_{SS}

OUTPUT CHARACTERISTICS

1) LOCK



**TABLE 1. Channel & Frequency table to Base/Remote input data for KS8803B (10CH)
BASE (MODE = 1)**

| INPUT | | | | | Rx (f _{REF} = 5KHz) | | | Tx (f _{REF} = 5KHz) | | |
|-------|----|----|----|----|------------------------------|------------------------|------|------------------------------|------------------------|------|
| D0 | D1 | D2 | D3 | CH | f _{RX} (MHz) | f _{VCO} (MHz) | N | f _{TX} (MHz) | f _{VCO} (MHz) | N |
| 1 | 0 | 0 | 0 | 1 | 49.670 | 38.975 | 7795 | 46.610 | 46.610 | 9322 |
| 0 | 1 | 0 | 0 | 2 | 49.845 | 39.150 | 7830 | 46.630 | 46.630 | 9326 |
| 1 | 1 | 0 | 0 | 3 | 49.860 | 39.165 | 7833 | 46.670 | 46.670 | 9334 |
| 0 | 0 | 1 | 0 | 4 | 49.770 | 39.075 | 7815 | 46.710 | 46.710 | 9342 |
| 1 | 0 | 1 | 0 | 5 | 49.875 | 39.180 | 7836 | 46.730 | 46.730 | 9346 |
| 0 | 1 | 1 | 0 | 6 | 49.830 | 39.135 | 7827 | 46.770 | 46.770 | 9354 |
| 1 | 1 | 1 | 0 | 7 | 49.890 | 39.195 | 7839 | 46.830 | 46.830 | 9366 |
| 0 | 0 | 0 | 1 | 8 | 49.930 | 39.235 | 7847 | 46.870 | 46.870 | 9374 |
| 1 | 0 | 0 | 1 | 9 | 49.990 | 39.295 | 7859 | 46.930 | 46.930 | 9386 |
| 0 | 1 | 0 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 1 | 1 | 0 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 0 | 0 | 1 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 1 | 0 | 1 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 0 | 1 | 1 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 1 | 1 | 1 | 1 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 0 | 0 | 0 | 0 | 10 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |

REMOTE (MODE = 0)

| INPUT | | | | | Rx (f _{REF} = 5KHz) | | | Tx (f _{REF} = 5KHz) | | |
|-------|----|----|----|----|------------------------------|------------------------|------|------------------------------|------------------------|------|
| D0 | D1 | D2 | D3 | CH | f _{RX} (MHz) | f _{VCO} (MHz) | N | f _{RX} (MHz) | f _{VCO} (MHz) | N |
| 1 | 0 | 0 | 0 | 1 | 46.610 | 35.915 | 7183 | 49.670 | 49.670 | 9934 |
| 0 | 1 | 0 | 0 | 2 | 46.630 | 35.935 | 7187 | 49.845 | 49.845 | 9969 |
| 1 | 1 | 0 | 0 | 3 | 46.670 | 35.975 | 7195 | 49.860 | 49.860 | 9972 |
| 0 | 0 | 1 | 0 | 4 | 46.710 | 36.015 | 7203 | 49.770 | 49.770 | 9954 |
| 1 | 0 | 1 | 0 | 5 | 46.730 | 36.035 | 7207 | 49.875 | 49.875 | 9975 |
| 0 | 1 | 1 | 0 | 6 | 46.770 | 36.075 | 7215 | 49.830 | 49.830 | 9966 |
| 1 | 1 | 1 | 0 | 7 | 46.830 | 36.135 | 7227 | 49.890 | 49.890 | 9978 |
| 0 | 0 | 0 | 1 | 8 | 46.870 | 36.175 | 7235 | 49.930 | 49.930 | 9986 |
| 1 | 0 | 0 | 1 | 9 | 46.930 | 36.235 | 7247 | 49.990 | 49.990 | 9998 |
| 0 | 1 | 0 | 1 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 1 | 1 | 0 | 1 | 10 | 46.970 | 36.275 | 7555 | 49.970 | 49.970 | 9994 |
| 0 | 0 | 1 | 1 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 1 | 0 | 1 | 1 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 0 | 1 | 1 | 1 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 1 | 1 | 1 | 1 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 0 | 0 | 0 | 0 | 10 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |

**TABLE 2. Channel & Frequency table to Base/Remote input data for KS8804B (15CH)
BASE (MODE = 1)**

| INPUT | | | | | Rx (f _{REF} = 5KHz) | | | Tx (f _{REF} = 5KHz) | | |
|-------|----|----|----|----|------------------------------|------------------------|------|------------------------------|------------------------|------|
| D0 | D1 | D2 | D3 | CH | f _{RX} (MHz) | f _{VCO} (MHz) | N | f _{TX} (MHz) | f _{VCO} (MHz) | N |
| 1 | 0 | 0 | 0 | 1 | 49.695 | 39.000 | 7800 | 46.510 | 46.510 | 9302 |
| 0 | 1 | 0 | 0 | 2 | 49.710 | 39.015 | 7803 | 46.530 | 46.530 | 9306 |
| 1 | 1 | 0 | 0 | 3 | 49.725 | 39.030 | 7806 | 46.550 | 46.550 | 9310 |
| 0 | 0 | 1 | 0 | 4 | 49.740 | 39.045 | 7809 | 46.570 | 46.570 | 9314 |
| 1 | 0 | 1 | 0 | 5 | 49.755 | 39.060 | 7812 | 46.590 | 46.590 | 9318 |
| 0 | 1 | 1 | 0 | 6 | 49.670 | 38.975 | 7795 | 46.610 | 46.610 | 9322 |
| 1 | 1 | 1 | 0 | 7 | 49.845 | 39.150 | 7830 | 46.630 | 46.630 | 9326 |
| 0 | 0 | 0 | 1 | 8 | 49.860 | 39.165 | 7833 | 46.670 | 46.670 | 9334 |
| 1 | 0 | 0 | 1 | 9 | 49.770 | 39.075 | 7815 | 46.710 | 46.710 | 9342 |
| 0 | 1 | 0 | 1 | 10 | 49.875 | 39.180 | 7836 | 46.730 | 46.730 | 9346 |
| 1 | 1 | 0 | 1 | 11 | 49.830 | 39.135 | 7827 | 76.770 | 46.770 | 9354 |
| 0 | 0 | 1 | 1 | 12 | 49.890 | 39.195 | 7839 | 46.830 | 46.830 | 9366 |
| 1 | 0 | 1 | 1 | 13 | 49.930 | 39.235 | 7847 | 46.870 | 46.870 | 9374 |
| 0 | 1 | 1 | 1 | 14 | 49.990 | 39.295 | 7859 | 46.930 | 46.930 | 9386 |
| 1 | 1 | 1 | 1 | 15 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |
| 0 | 0 | 0 | 0 | 15 | 49.970 | 39.275 | 7855 | 46.970 | 46.970 | 9394 |

REMOTE (MODE = 0)

| INPUT | | | | | Rx (f _{REF} = 5KHz) | | | Tx (f _{REF} = 5KHz) | | |
|-------|----|----|----|----|------------------------------|------------------------|------|------------------------------|------------------------|------|
| D0 | D1 | D2 | D3 | CH | f _{RX} (MHz) | f _{VCO} (MHz) | N | f _{RX} (MHz) | f _{VCO} (MHz) | N |
| 1 | 0 | 0 | 0 | 1 | 46.510 | 35.815 | 7163 | 49.695 | 49.695 | 9939 |
| 0 | 1 | 0 | 0 | 2 | 46.530 | 35.835 | 7167 | 49.710 | 49.710 | 9942 |
| 1 | 1 | 0 | 0 | 3 | 46.550 | 35.855 | 7171 | 49.725 | 49.725 | 9945 |
| 0 | 0 | 1 | 0 | 4 | 46.570 | 35.875 | 7175 | 49.740 | 49.740 | 9948 |
| 1 | 0 | 1 | 0 | 5 | 46.590 | 35.895 | 7179 | 49.755 | 49.755 | 9951 |
| 0 | 1 | 1 | 0 | 6 | 46.610 | 35.915 | 7183 | 49.670 | 49.670 | 9934 |
| 1 | 1 | 1 | 0 | 7 | 46.630 | 35.935 | 7187 | 49.845 | 49.845 | 9969 |
| 0 | 0 | 0 | 1 | 8 | 46.670 | 35.975 | 7195 | 49.860 | 49.860 | 9972 |
| 1 | 0 | 0 | 1 | 9 | 46.710 | 36.015 | 7203 | 49.770 | 49.770 | 9954 |
| 0 | 1 | 0 | 1 | 10 | 46.730 | 36.035 | 7207 | 49.875 | 49.875 | 9975 |
| 1 | 1 | 0 | 1 | 11 | 76.770 | 36.075 | 7215 | 49.830 | 49.830 | 9966 |
| 0 | 0 | 1 | 1 | 12 | 46.830 | 36.135 | 7227 | 49.890 | 49.890 | 9978 |
| 1 | 0 | 1 | 1 | 13 | 46.870 | 36.175 | 7235 | 49.930 | 49.930 | 9986 |
| 0 | 1 | 1 | 1 | 14 | 46.930 | 36.235 | 7247 | 49.990 | 49.990 | 9998 |
| 1 | 1 | 1 | 1 | 15 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |
| 0 | 0 | 0 | 0 | 15 | 46.970 | 36.275 | 7255 | 49.970 | 49.970 | 9994 |

APPLICATION CIRCUIT

