Ordering number: EN 1197F

CMOS IC

LC7265

Received Frequency Display for Radio Receivers

Features

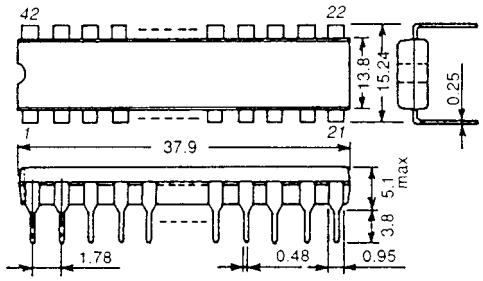
- Displays received frequency of each band of FM, MW, LW (LED static display).
- Counts local oscillation frequency and displays received frequency.
- Number of display digits : FM-5 digits, MW-4 digits, LW-3 digits.
- Covers intermediate frequencies shown below.
  FM : +10.700, +10.725, +10.750, +10.675 MHz
  –10.700, –10.725, –10.675, –10.650 MHz
  MW, LW : +450 kHz : 10 kHz step display
  +450 kHz : 1 kHz step display
  +455 kHz : 1 kHz step display
  +469 kHz : 1 kHz step display
- Contains blanking circuit to turn off display.
- Contains hold circuit to hold display contents.
- Uses crystal resonator having 7.2 MHz reference frequency.
- Uses LB3500 (÷8 prescaler) jointly at the time of FM reception.
- Supply voltage V_{DD} : 4.5 V to 10 V

Package Dimensions

unit : mm

3025B-DIP42S

[LC7265]



SANYO : DIP42S

Specifications

Absolute Maximum Ratings at Ta = 25 °C, V_{SS} = 0 V

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{DD} max		–0.3 to +11	V
Input voltage	V_{IN}	All input pins	–0.3 to V_{DD}+0.3	V
Output voltage	V_O1	X_{OUT}, $\overline{HLD}$, $\overline{50\ Hz}$, output: off	–0.3 to V_{DD}+0.3	V
	V_O2	Output pins other than V_O1	0 to 15	V
Allowable power dissipation	Pd max	Ta ≦ 65 °C	550	mW
Allowable power dissipation of segment outputs	Pd (seg)1	$\overline{MHz}$, $\overline{b\&c}$, $\overline{b\&e}$, V_{DD} = 4.5 to 6.5 V, I_{OL} = 33 mA	30	mW
	Pd (seg) 2	Other outputs, V_{DD} = 4.5 to 6.5 V, I_{OL} = 16.5 mA	15	mW
	Pd (seg) 3	$\overline{MHz}$, $\overline{b\&c}$, $\overline{b\&e}$, V_{DD} = 6.0 to 10 V, I_{OL} = 36 mA	25	mW
	Pd (seg) 4	Other outputs, V_{DD} = 6.0 to 10 V, I_{OL} = 18 mA	12	mW
Operating temperature	Topr		–30 to +65	°C
Storage temperature	Tstg		–40 to +125	°C

Allowable Operating Ranges at Ta = 25 °C, V_{DD} = 4.5 to 10 V, V_{SS} = 0 V

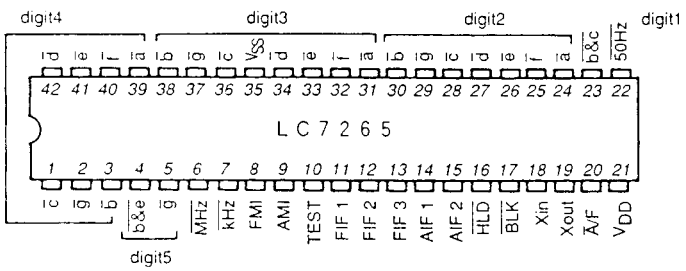
Parameter	Symbol	Conditions	min	typ	max	Unit
Supply voltage	V_{DD}		4.5		10	V
Input high-level voltage	$V_{IH}1$	$\overline{A/F}$, $\overline{BLK}$	$0.7V_{DD}$		V_{DD}	V
	$V_{IH}2$	FIF1, FIF2, FIF3, AIF1, AIF2	$0.9V_{DD}$		V_{DD}	V
Input low-level voltage	$V_{IL}1$	$\overline{A/F}$, $\overline{BLK}$	0		$0.3V_{DD}$	V
	$V_{IL}2$	FIF1, FIF2, FIF3, AIF1, AIF2	0		$0.1V_{DD}$	V
Input frequency	$f_{IN}1$	FMI, sine wave, capacitive coupling, $V_{IN}1$ = 0.7Vp-p	1		18	MHz
	$f_{IN}2$	AMI, sine wave, capacitive coupling, $V_{IN}2$ = 0.5Vp-p*	0.5		3	MHz
	$f_{IN}3$	X_{IN}	0.2		7.5	MHz
Input amplitude	$V_{IN}1$	FMI, sine wave, capacitive coupling, $f_{IN}1$ = 1 to 18 MHz	0.7		$0.9V_{DD}$	Vp-p
	$V_{IN}2$	AMI, sine wave, capacitive coupling, $f_{IN}2$ = 0.5 to 3 MHz	0.5*		$0.9V_{DD}$	Vp-p
	$V_{IN}3$	X_{IN}, sine wave, capacitive coupling, $f_{IN}3$ = 0.2 to 7.5 MHz	1.0		$0.9V_{DD}$	Vp-p
Segment current	Iseg1	$\overline{MHz}$, $\overline{b\&e}$, $\overline{b\&c}$	0		30	mA
	Iseg2	Other outputs	0		15	mA

*: For $f_{IN}2$ = 0.5 MHz to 0.9 MHz and V_{DD} = 8 to 10 V, $V_{IN}2$ min = 1.0 Vp-p applies.

Electrical Characteristics at Ta = 25 °C, V_{DD} = 4.5 to 10 V, V_{SS} = 0 V

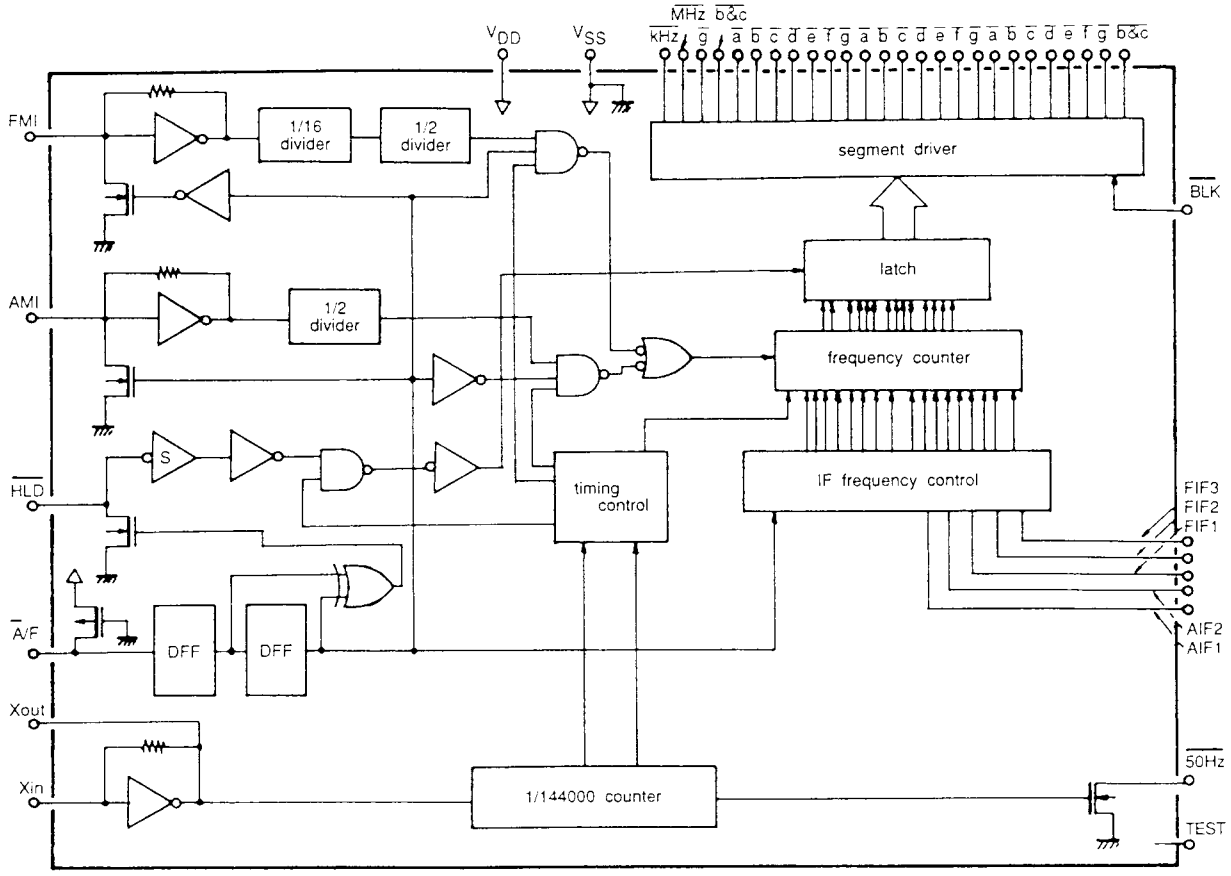
Parameter	Symbol	Conditions	min	typ	max	Unit
Input high-level current	$I_{IH}1$	FIF1, FIF2, FIF3, AIF1, AIF2 $V_I = V_{DD}$	0		10	µA
	$I_{IH}2$	$\overline{BLK}$ $V_I = V_{DD}$	0		2	µA
Input low-level current	$I_{IL}1$	FIF1, FIF2, FIF3, AIF1, AIF2 $V_I = V_{SS}$	0		10	µA
	$I_{IL}2$	$\overline{BLK}$ $V_I = V_{SS}$	0		2	µA
	$I_{IL}3$	$\overline{A/F}$ $V_I = V_{SS}$	20		500	µA
Input floating voltage	V_{IF}	$\overline{A/F}$ V_I = open	$0.8V_{DD}$		V_{DD}	V
Input/output high-level leakage current	I_{OFF}	$\overline{HLD}$, output off, $V_I = V_{DD}$	0		2	µA
Output low-level voltage	$V_{OL}1$	$\overline{HLD}$, output on, I_O = 1 mA	0		1	V
	$V_{OL}2$	$\overline{b\&e}$, $\overline{b\&c}$, $\overline{MHz}$ V_{DD} = 4.5 to 10 V, I_{OL} = 30 mA	0		0.7	V
	$V_{OL}3$	Segments other than above V_{DD} = 4.5 to 10 V, I_{OL} = 15 mA	0		0.7	V
	$V_{OL}4$	$\overline{50\ Hz}$, I_O = 0.2 mA	0		1.0	V
Input high-level threshold voltage	Vth	$\overline{HLD}$	$0.4V_{DD}$	$0.5V_{DD}$	$0.7V_{DD}$	V
Output off leakage current	$I_{OFF}2$	All segments output pins, V_O = 13 V, output off	0		10	µA
Current drain	I_{DD}	FM mode, $\overline{A/F}$ = open or V_{DD}, $f_{IN}1$ = 18 MHz, 0.7Vp-p or (AM mode, $\overline{A/F}$ = V_{SS}, $f_{IN}2$ = 3 MHz, 0.5Vp-p) $f_{IN}3$ = 7.2 MHz, 1Vp-p FIF1, FIF2, FIF3 = V_{DD} AIF1, AIF2 = V_{DD} $\overline{HLD}$, $\overline{BLK}$ = V_{DD} other pins open	0		18	mA

Pin Assignment



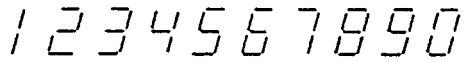
Top view

Equivalent Circuit Block Diagram



1. Display

1-1 Display font

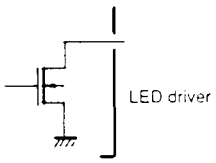


1-2 Lighting system
- Static lighting

1-3 Display range (High-order 1 digit : zero blanking)
- FM : 00.00 MHz to 199.95 MHz 50 kHz step
- MW, LW : 000 kHz to 1999 kHz 10 kHz or 1 kHz step

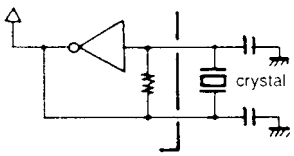
2. Pin Description

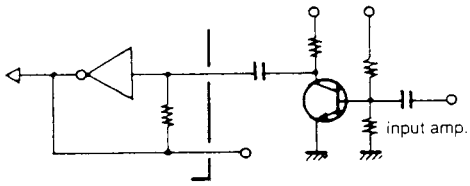
2-1 • $\overline{a}$ to $\overline{g}$, $\overline{b\&c}$, $\overline{b\&e}$, $\overline{MHz}$, $\overline{kHz}$: LED



2-2 • V_{DD}, V_{SS} : Power supply pins

2-3 • X_{IN}, X_{OUT} : Crystal resonator or input amp pin





2-4 • FIF1, FIF2, FIF3 : FM IF select pins

FIF1	0	0	0	0	1	1	1	1
FIF2	0	0	1	1	0	0	1	1
FIF3	0	1	0	1	0	1	0	1
IF (MHz)	+10.700	+10.725	+10.675	+10.750	–10.700	–10.725	–10.675	–10.650

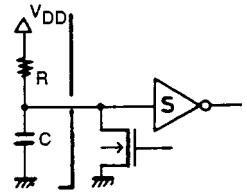
2-5 • AIF1, AIF2 : AM IF select pins

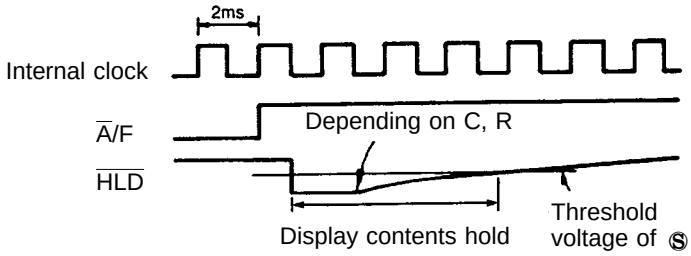
AIF1	0	0	1	1
AIF2	0	1	0	1
IF (kHz)	+450 (2)	+450 (1)	+455	+469

1 : High level (V_{DD})
0 : Low level (V_{SS})

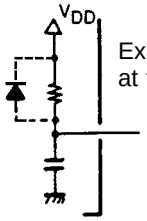
(Note) 450 kHz(1) : 10 kHz step display, others : 1 kHz step display

2-6 • $\overline{\text{HLD}}$: Display contents hold pin
Normally, this pin is set at high level. To hold display contents, this pin is set at low level. Connecting time constant circuit to this pin makes it possible to hold display contents for a certain period of time at the time of FM/MW, LW band selection.





2-7 • $\overline{\text{BLK}}$: Display blanking pin

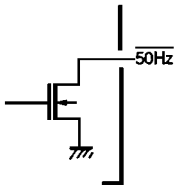


Example of blanking misdisplay at the time of application of power.

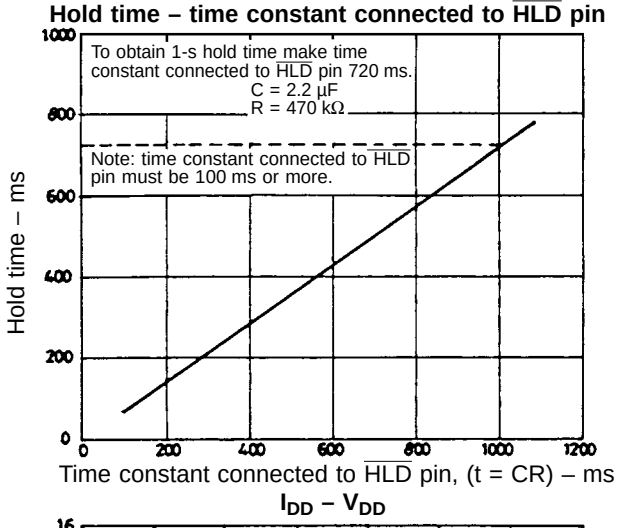
2-8 • FMI, AMI : Local oscillation signal input pins
FMI — For FM : 0.7Vp-p input sensitivity
AMI — For MW, LW : 1.0Vp-p input sensitivity (V_{DD} = 8 to 10 V, f_{IN} = 0.5 to 0.9 MHz)
0.5Vp-p input sensitivity (other than above)

2-9 • $\overline{\text{A}}$/F : FM/MW, LW select pin
FM — Pin open or high level
MW, LW — Low level

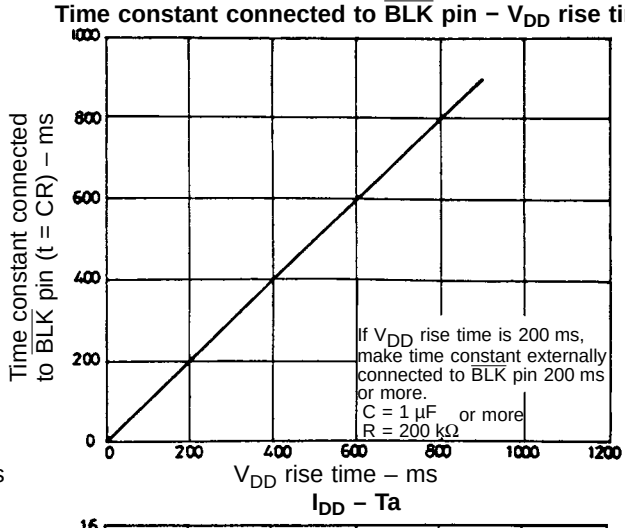
2-10 • $\overline{\text{50 Hz}}$: 50 Hz time base output pin



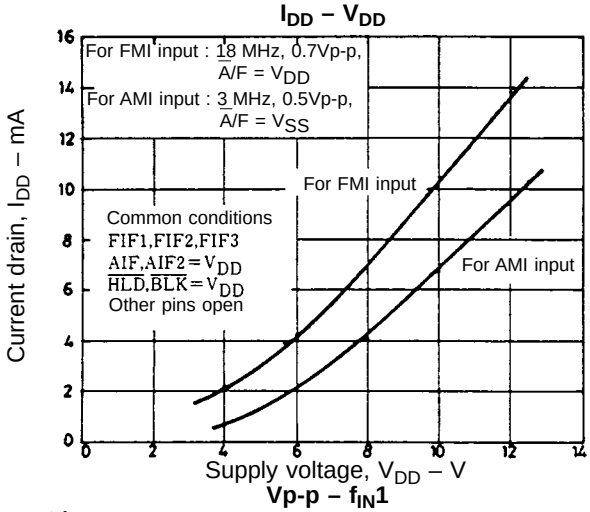
Hold time – time constant connected to $\overline{HLD}$ pin



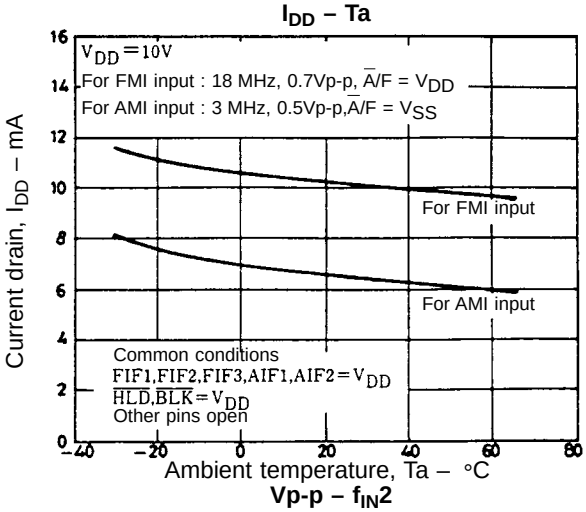
Time constant connected to $\overline{BLK}$ pin – V_{DD} rise time



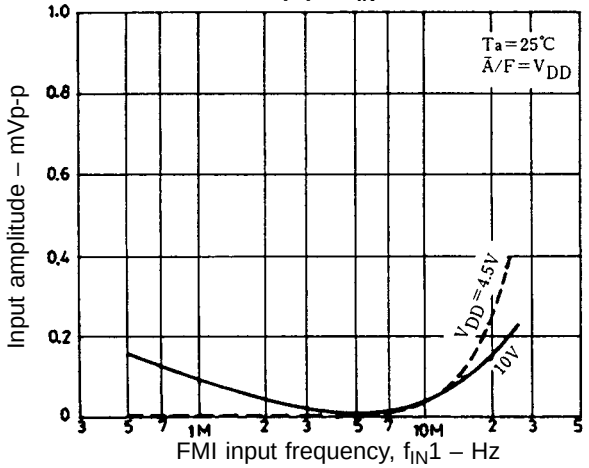
I_{DD} – V_{DD}



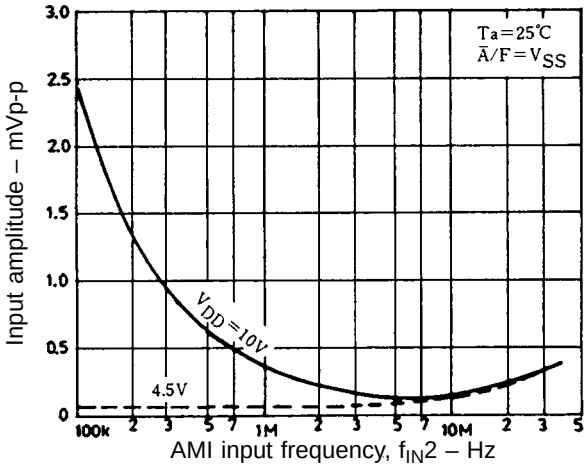
I_{DD} – Ta



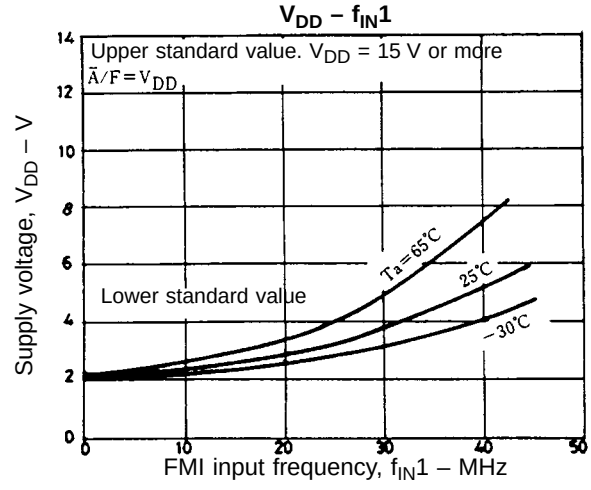
Vp-p – $f_{IN}1$



Vp-p – $f_{IN}2$



V_{DD} – $f_{IN}1$



V_{DD} – $f_{IN}2$