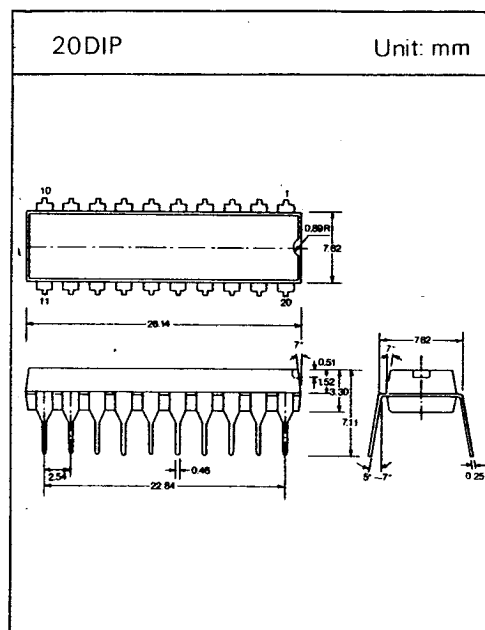


DEFLECTION COMBINATION FOR A C-TV

DBL 2009 is a monolithic integrated circuit designed for deflection combination in C-TV or C-Monitor receivers.

FUNCTION

- Sync separation
- Vertical oscillation
- Vertical drive
- Horizontal AFC
- Horizontal oscillation
- X-ray protection



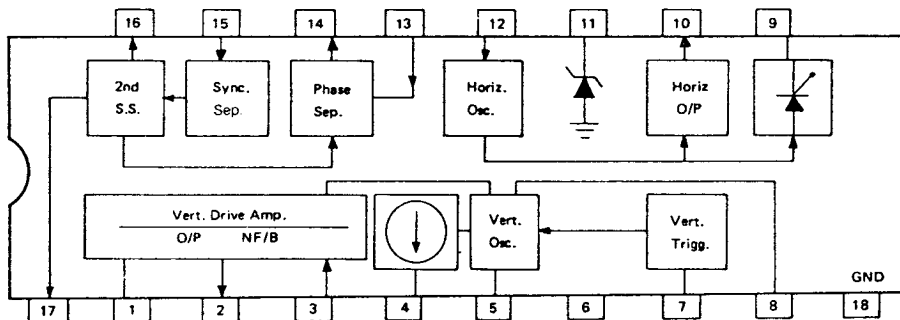
MAXIMUM RATINGS(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Vertical Supply Voltage	V_{CC}	16	V
Horizontal Supply Current	I_{CC}	25	mA
Power Dissipation(Ta = 75°C)	P_D	500	mW
Operating Temperature	T_{opr}	-20 ~ +75	°C
Storage Temperature	T_{stg}	-55 ~ +150	°C
Output Current(Pin 2, Pin 10 and Pin 16)	I_o	15	mA

PIN CONNECTIONS AND PIN VOLTAGES.

($V_{CC} = 12V$)

Pin No.	Functions	Voltage Values			Unit
		min.	typ.	max.	
1	Connected to Capacitor for Prevention of Parastic Oscillation		3.3		V
2	Vertical Output Pin		1.1		V
3	Feedback Input Pin for Vertical DC/AC Output Voltage		3.3		V
4	Connected to Resistor for Determination of the Vertical Osc Discharging Time Constant	3.3	4	4.2	V
5	Connected to Capacitor for Vertical Osc		7.1		V
6	Power Supply Pin for Vertical Oscillator		12		V
7	Vertical Sync Input Pin		5		V
8	Determination of Vertical Osc Frequency		5.1		V
9	Input Pin for X-Ray Protector		0		V
10	Output Pin for Horizontal Section		1		V
11	Power Supply Pin for Horizontal Oscillator	11.8	12.8	13.8	V
12	Connected to Horizontal Osc CR		6.5		V
13	FBP Input Pin For Phase Detector		3.6		V
14	Output Pin for Phase Detector		6.6		V
15	Video Signal Input Pin for Sync Separator		12.5		V
16	Output Pin for Sync Separator		1		V
17	Feedback Pin for Sync Separator		2.5		V
18	GND Pin		0		V



□ ELECTRICAL CHARACTERISTICS

1. Horizontal Section(Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Conditions	Min.	Typ.	Max.	Unit
Regulated Voltage	V_{11}	2	19.9V Applied to 11-Pin via 470Ω	11.8	12.8	13.8	V
Supply Current	I_{CC}	2	19.9V Applied to 11-Pin via 470Ω	12.9	15	17.3	mA
Osc Frequency	f_{OH}	2	$R_H = 12.6K\Omega$; $C_H = 5.6nF$	14734	15734	16734	Hz
Horizontal Pull-in Range	Δf_{pH}	1		±450	±650		Hz
AFC Loop Gain	f_C	1		577.5	750	1070	Hz/μS
Temperature Coefficient of f_{OH}	Δf_{OH-Ta}	2	$C_H = 5.6nF$; $R_H = 12.6K\Omega$; C_H and R_H Is Set Outside the Constant Temperature Bath	-6	-3	0	Hz/°C
Output Pulse Width	t_{HW}	1	Measure at 10-Pin	22.5	25	27.5	μS
f_{OH} Stability against V_{CC} Variation	Δf_{OH-VCC}	2	The Osc Frequency Difference with V_{CC} Varied from 11.5V to 12.8V	-100	0	100	Hz
Output Saturation Voltage	$V_{CE(sat)}$	2	12KΩ Inserted between 10-Pin and GND			0.3	V
Output High Voltage	V_{10H}	7	Adjust Current, at 10-Pin for -6.5mA	2.8	4.1	6.8	V
Osc Starting Supply Voltage	V_{OHS}	2	$f_{OH} = 10KHz \sim 20KHz$		2	6	V

□ ELECTRICAL CHARACTERISTICS

2. Vertical Section.(Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Conditions	Min.	Typ.	Max.	Unit
Osc Frequency	f_{OV}	3	$R_V = 6K\Omega$; $C_V = 2.2\mu F$	55	60	65	Hz
Vertical Pull-in Range	Δf_{PV}	1			-10	-7.5	Hz
Temperature Coefficient of f_{OV}	Δf_{OV-Td}	3	$R_V = 6K\Omega$; $C_V = 2.2\mu F$	-0.03	0	+0.03	Hz/°C
f_{OV} Stability against V_{CC} Variation	Δf_{OV-VCC}	3	Measure the Osc Frequency Difference with V_{CC} Varied from 14.4V to 9.6V	-2	0	2	Hz
Output High Voltage(1)	$V_{2h(1)}$	6	5V at Pin 1; 6V at Pin 3; 15V at Pin 6 Measure Voltage at Pin 2 with 15mA Drawn from Pin 2	9.5	11.5	13.5	V
Output High Voltage(2)	$V_{2h(2)}$	6	5V at Pin-1; 6V at Pin 3 15V at Pin 6 Measure Voltage at Pin 2 with No Load Applied to Pin 2	12.8	13.7	14.5	V
Vertical Osc Starting Voltage	V_{OVS}	3	$R_V = 6K\Omega$; $C_V = 2.2\mu F$; $f_{OV} = 40Hz \sim 70Hz$		5	9	V

ELECTRICAL CHARACTERISTICS(continued)

3. Sync Separation Section. (Ta = 25°C)

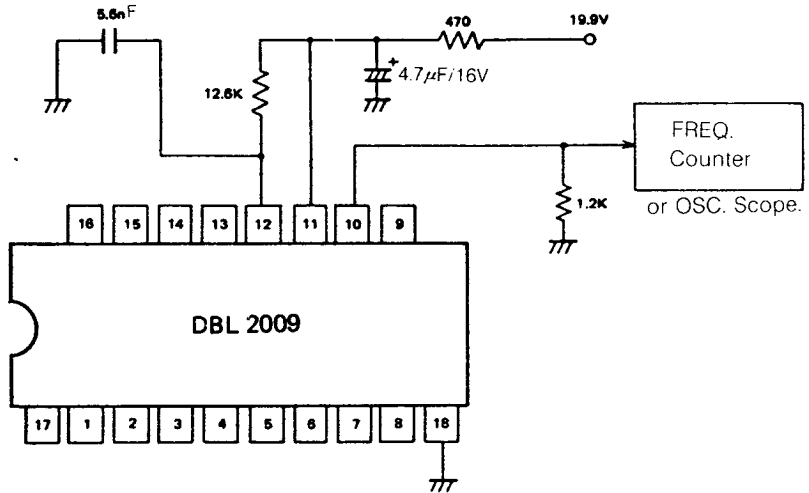
Characteristic	Symbol	Test Circuit	Test Conditions	Min	Typ.	Max.	Unit
Input Voltage	V ₁₅	4	Negative Pulse Applied to Pin 15	0.2			V _{p-p}
Output Voltage	V ₁₆	4	Measure at Pin 16	8	10		V _{p-p}
Output Pulse Width(1)	t ₁₆₍₁₎	4	APL = 50%; 2.5V _{p-p} applied at the Input Point	4.5	5	5.5	μs
Output Pulse Width(2)	t ₁₆₍₂₎	4	APL = 50%; 1.0V _{p-p} applied at the Input Point	4.5	5	5.5	μs

4. X-Ray Protection Section. (Ta=25°C)

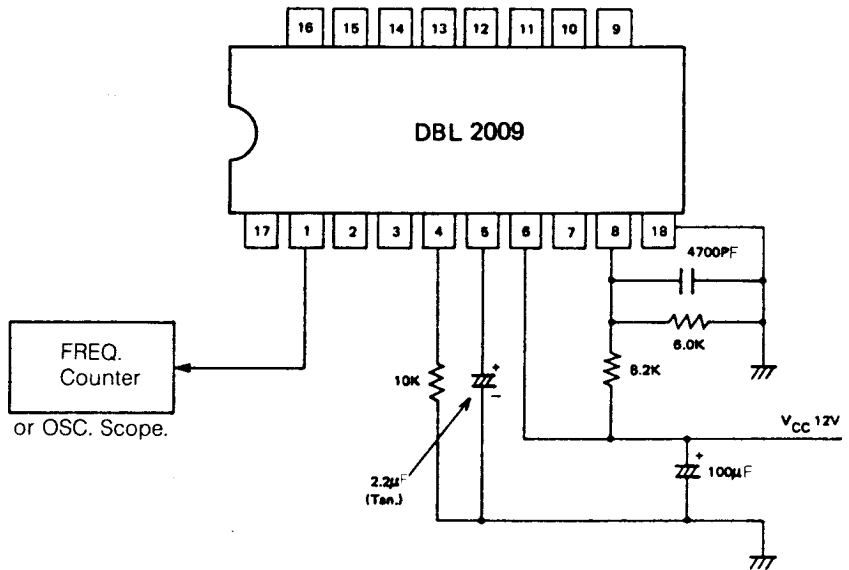
Characteristic	Symbol	Test Circuit	Test Conditions	Min.	Typ.	Max.	Unit
Trigger Gate Voltage	V _{GT}	5	R = 4.7 Ω and C = 33 μF/16V as the External Parts for Pin 9	0.68	0.75	0.82	V
Temperature Coefficient of V _{GT}	ΔV _{GT-Ta}	5	R = 4.7K Ω and C = 33 μF/16V as the EXternal Parts for Pin9		-2.5		mV/°C
V _{CC} Dependence of V _{GT}	ΔV _{GT} V _{CC}	5	R = 4.7K Ω and C = 33 μF/16V as the External Parts for Pin 9		-30		mV/°C

□ TEST CIRCUITS(Continued)

2. f_{OH} and Δf_{OH}



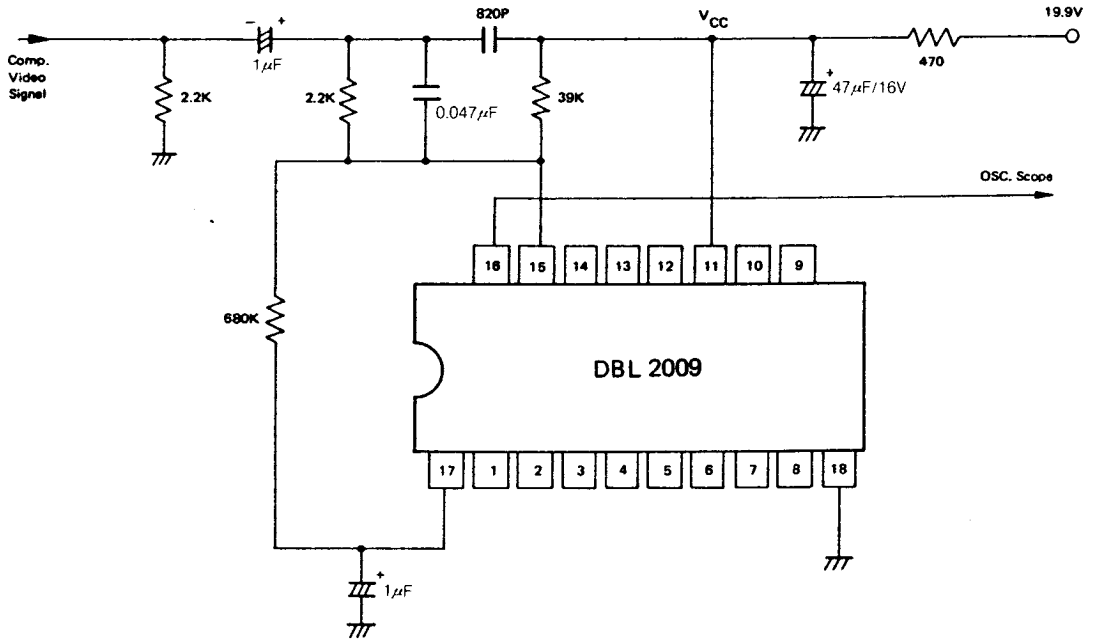
3. f_{OV} and Δf_{OV}



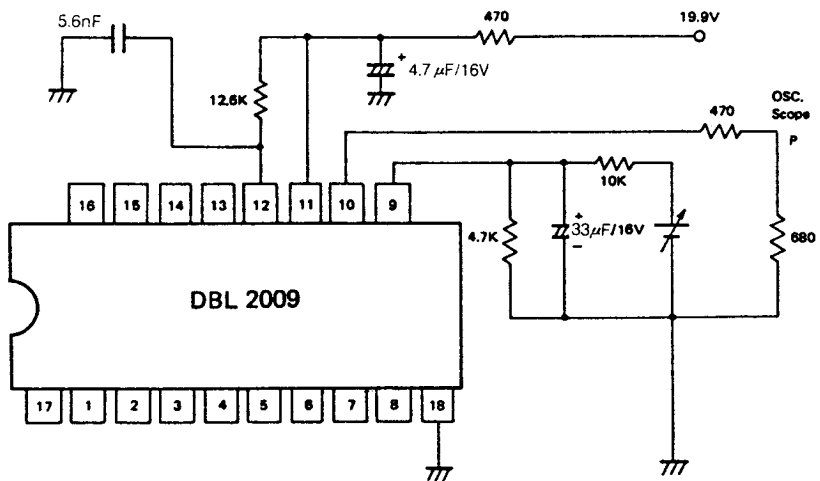
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TEST CIRCUITS(Continued)

4. Sync. Separation

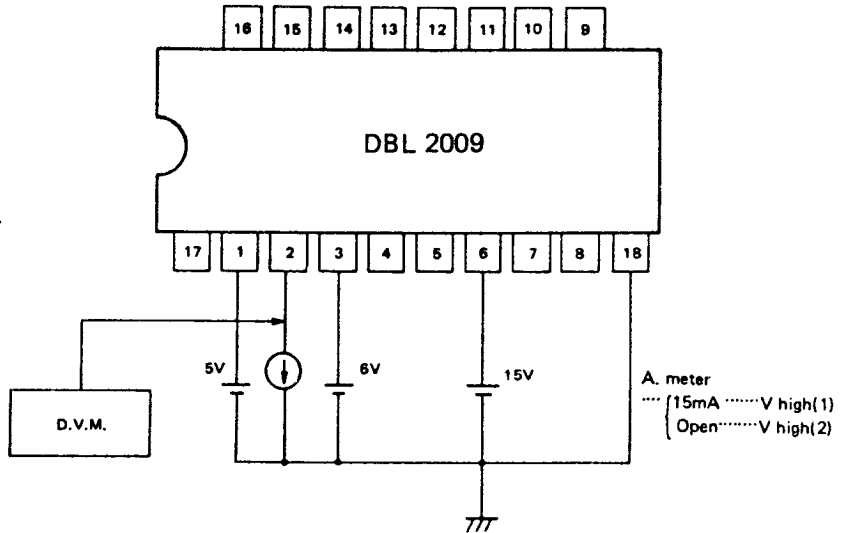


5. X-Ray Protection Block



□ TEST CIRCUITS(Continued)

6. Vertical Output



7. Horizontal Output

