



鴻宇半導體股份有限公司
COSMOSIC SEMICONDUCTOR CO.

FM MODULATOR - INFRARED TRANSMITTER

GENERAL DESCRIPTION

The hs2k219 is high speed ic types are frequency modulator. fabricated with silicon gate CMOS technology .

It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation. all inputs are equipped with protection circuits against static discharge or transient excess voltage .

FEATURE:

- Output frequency range 50khz ~ 15Mhz .
- Automatic power on/off function .
- Low voltage and low power consumption .
- High speed max(3v=10Mhz);(5v=15Mhz)
- Low power dissipation $i_{cc}=4\mu A(\text{max.})$ at $t_a=25^{\circ}\text{C}$
- Wide operating voltage range $v_{cc}(\text{opr})=2 \sim 5\text{v}$

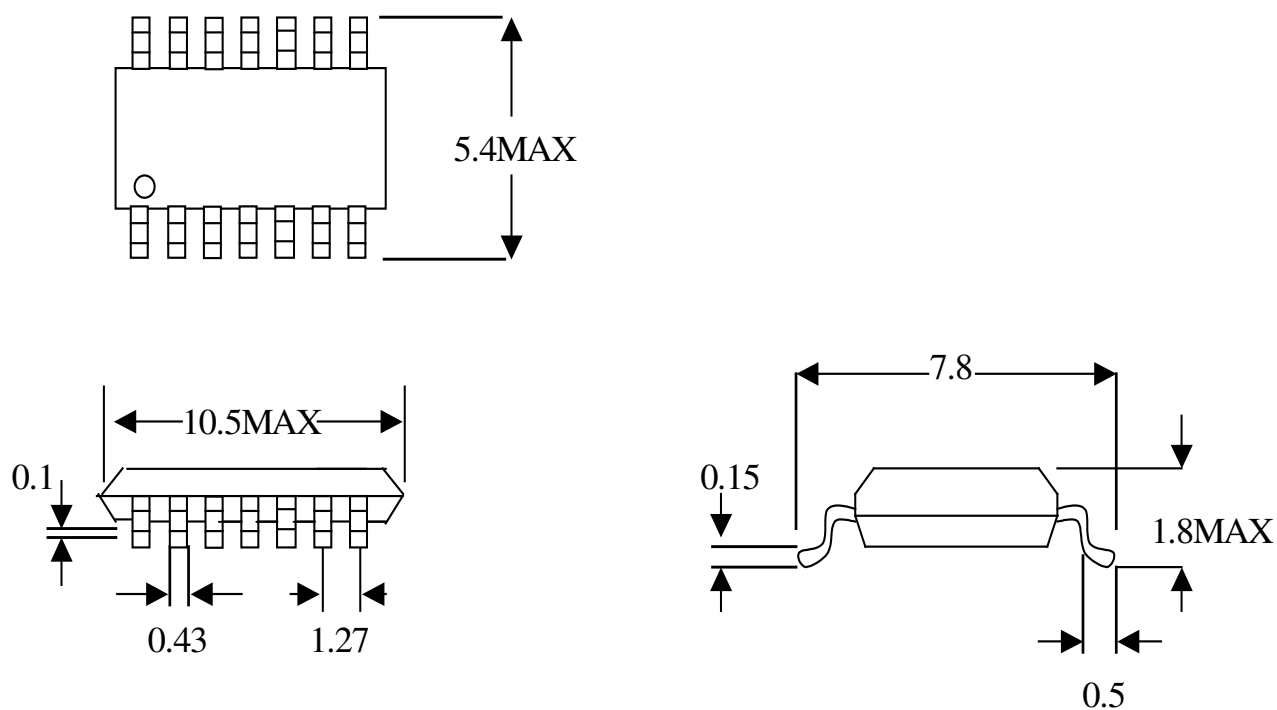
* RECOMMENDED OPERATING CONDITIONS:

- Supply voltage v_{cc} 2.5v to 5v

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply voltage range	Vcc	-0.5 ~ 7	V
DC vcc/ground current	Icc	+_50	mA
Power dissipation	PD	180 (MFP)	mW
Storage temperature	Tstg	- 20 ~ 120	°C
Lead temperature 10sec	TL	300	°C

PACKAGE OUTLINES



Note 1 Lead pitch is 1.27 and tolerance is ± 0.12 against theoretical center of each lead that is obtain on the basis of No.1 and No.14 leads.

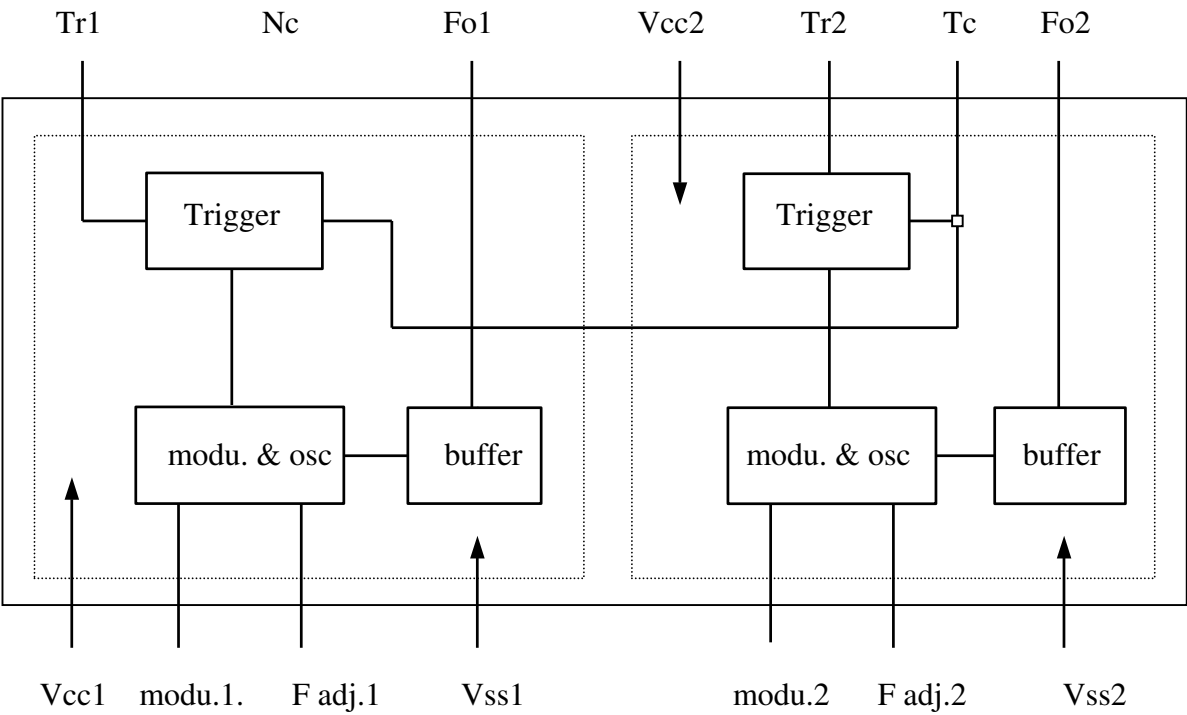
HS2k219 : 8-lead DIL ; plastic (with internal heat spreader) (SOT97A) .

HS2k219:8-lead mini-pack ; plastic (DIP16 ; SOT96A) .

Pin functions

pin no.	symbol	Description	pin no.	symbol	Description
1	Vcc1	Power supply	8	Fo2	Frequency out
2	Modu.1	Fm modulation in	9	Tc	Off time control
3	F adj.1	Frequency adjust	10	Tr2	Trigger on
4	Vss1	GND	11	Vcc2	Power supply
5	Modu.2	Fm modulation in	12	Fo1	Frequency out
6	F adj.2	Frequency adjust	13	Nc	
7	Vss2	GND	14	Tr1	Trigger on

block diagram .



HS2K219 APPENDIX

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION		Ta=25°C			Ta=-40~85°C		UNIT
			VCC	MIN	TYP	MAX	MIN	MAX	
Input Leakage current	I_{IN}	$V_{IN}=V_{CC}$ or GND	6.0	—	—	± 0.1	—	± 0.1	μA
R/C Terminal off-state current	I_{IN}	$V_{IN}=V_{CC}$ or GND	6.0	—	—	± 0.5	—	± 0.5	μA
Quiescent Supply Current	I_{CC}	$V_{IN}=V_{CC}$ or GND	6.0	—	—	4.0	—	40.0	μA
Active-State * Supply Current	I_{CC}'	$V_{IN}=V_{CC}$ or GND	2.0	—	40	120	—	160	μA
			4.5	—	0.1	0.3	—	0.4	mA
			6.0	—	0.2	0.6	—	0.8	mA

AC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION		Ta=25°C			Ta=-40~85°C		UNIT
			VCC	MIN	TYP	MAX	MIN	MAX	
Fm modulation in	Vco in	R ₁₄ =56kΩ	5.0	200	250	300			mv
Output Transition Time	t _{TLH} t _{THL}		2.0	—	30	75	—	95	ns
			4.5	—	8	15	—	19	
			6.0	—	7	13	—	16	
Output Frequency	f _{WOUT}	VR ₁ =5kΩ	3.0	—		—	—	—	mhz
		R ₁₅ =1.5kΩ	5.0	—	3.2	—	—	—	
		VR ₁ =5kΩ	3.0	—		—	—	—	mhz
		R ₁₅ =1.8kΩ	5.0	—	2.8	—	—	—	
Output Pulse Width Error Between Circuits 〈 In same Package 〉	Δ t _{WOUT}	VR ₁ =5kΩ	3.0	—		—	—	—	%
		R ₁₅ =3.3kΩ	5.0	—	2.3	—	—	—	
				—	± 1	—	—	—	

AC ELECTRICAL CHARACTERISTICS 〈 Continuous 〉

PARAMETER	SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40～85℃		UNIT
			VCC	MIN	TYP	MAX	MIN	MAX	
Minimum Trigger Level			5.0		300				mv
Minimum Trigger Pulse Width	t _w 〈 H 〉		2.0	—	0.2		—		ms
	t _w 〈 L 〉		5.0	—	0.06		—		
Trigger Off Time	t _{RR}	C ₁₉ =0.1u	2 5.0	— —	2 1.2	— —	— —	— —	s
		C ₁₉ = 22u	2 5.0	— —	80 60	— —	— —	— —	s
Minimum Clear Removal Time	t _{REM}		2.0	—	—	0	—	0	us
			5.0	—	—	0	—	0	
Power Dissipation Capacitance	C _{PD}			—			—	—	uF

Application Circuit

