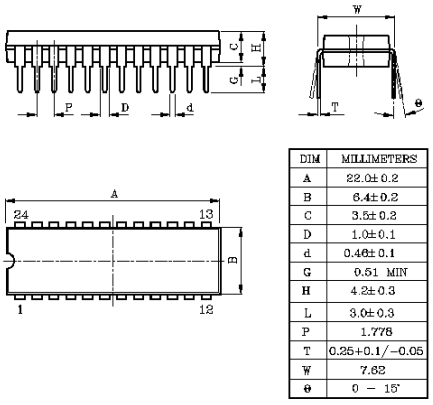
AM/FM IF + MPX (for Digital Tuning System)

KIA2057N is the AM/FM IF + MPX system IC, which is designed for DTS radios.
This is included many functions and this can be used for digital tuning system with IF counter.



DIM	MILLIMETERS
A	22.0±0.2
B	6.4±0.2
C	3.5±0.2
D	1.0±0.1
d	0.46±0.1
G	0.51 MIN
H	4.2±0.3
L	3.0±0.3
P	1.778
T	0.25+0.1/−0.05
W	7.62
θ	0 ~ 15°

NDIP−24

FEATURES

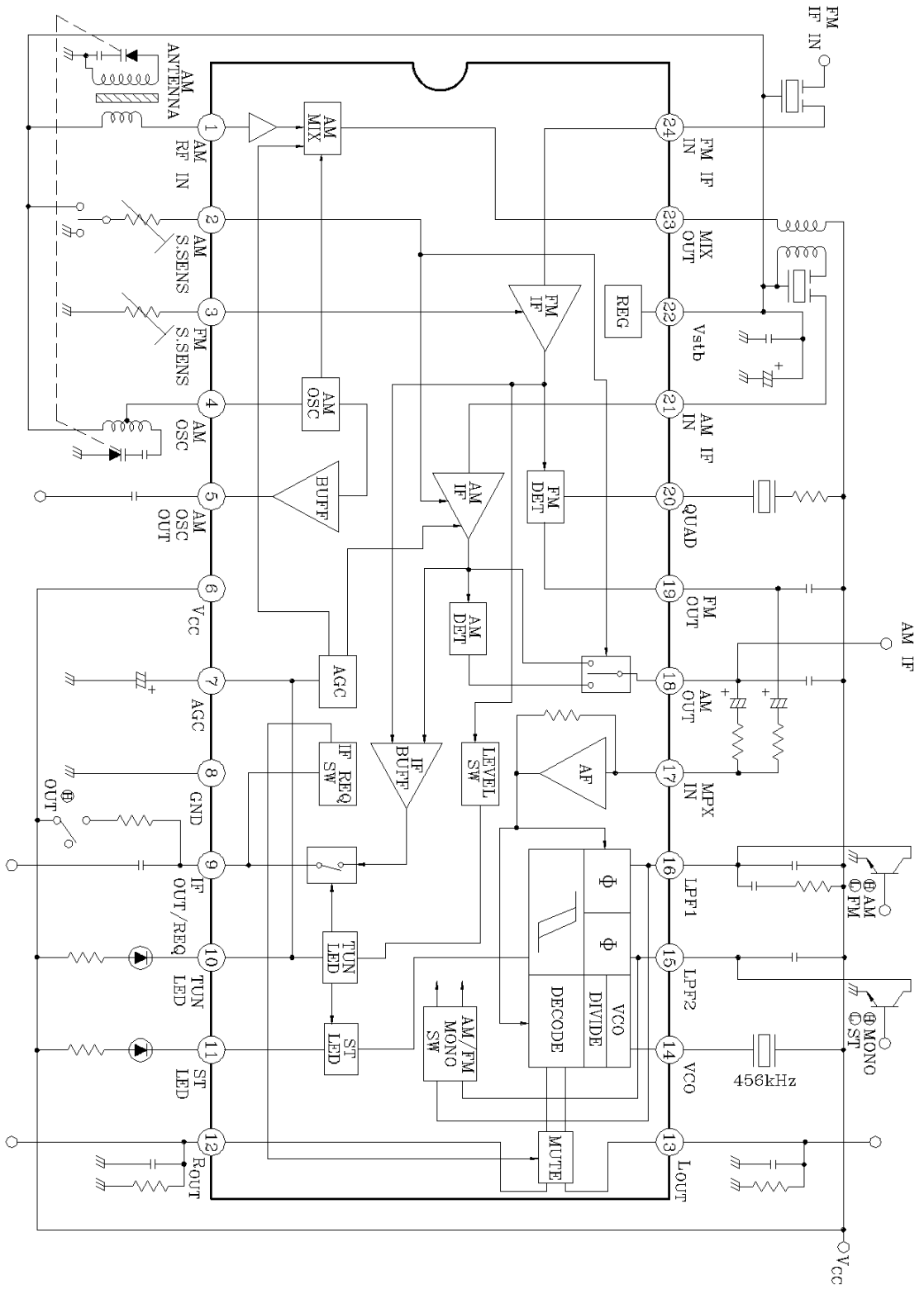
- Suitable for combination with digital tuning system which has IF counter.
- One terminal type AM/FM IF count output (auto stop signal) for IF counter of digital tuning system.
- Built-in mute circuit for IF count output.
- Adjustable for IF count output sensitivity by external resistance of pin ② (AM), and pin ③ (FM).
- For adopting ceramic discriminator and ceramic resonator, it is not necessary to adjust the FM quad detector circuit and MPX VCO circuit.
- Built-in AM local oscillator buffer output circuit.
- Built-in AM IF buffer output circuit for AM stereo.
- Operating supply voltage range (Ta=25℃)
  V_{CC}=3.5~14V

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	14	V
LED Current	I_{LED}	10	mA
LED Voltage	V_{LED}	14	V
Power Dissipation	P_D (Note)	1200	mW
Operating Temperature	T_{opr}	-25~75	℃
Storage Temperature	T_{stg}	-55~150	℃

Note : Derated above 25℃ in the proportion of 9.6mW/℃ for KIA2057N.

BLOCK DIAGRAM



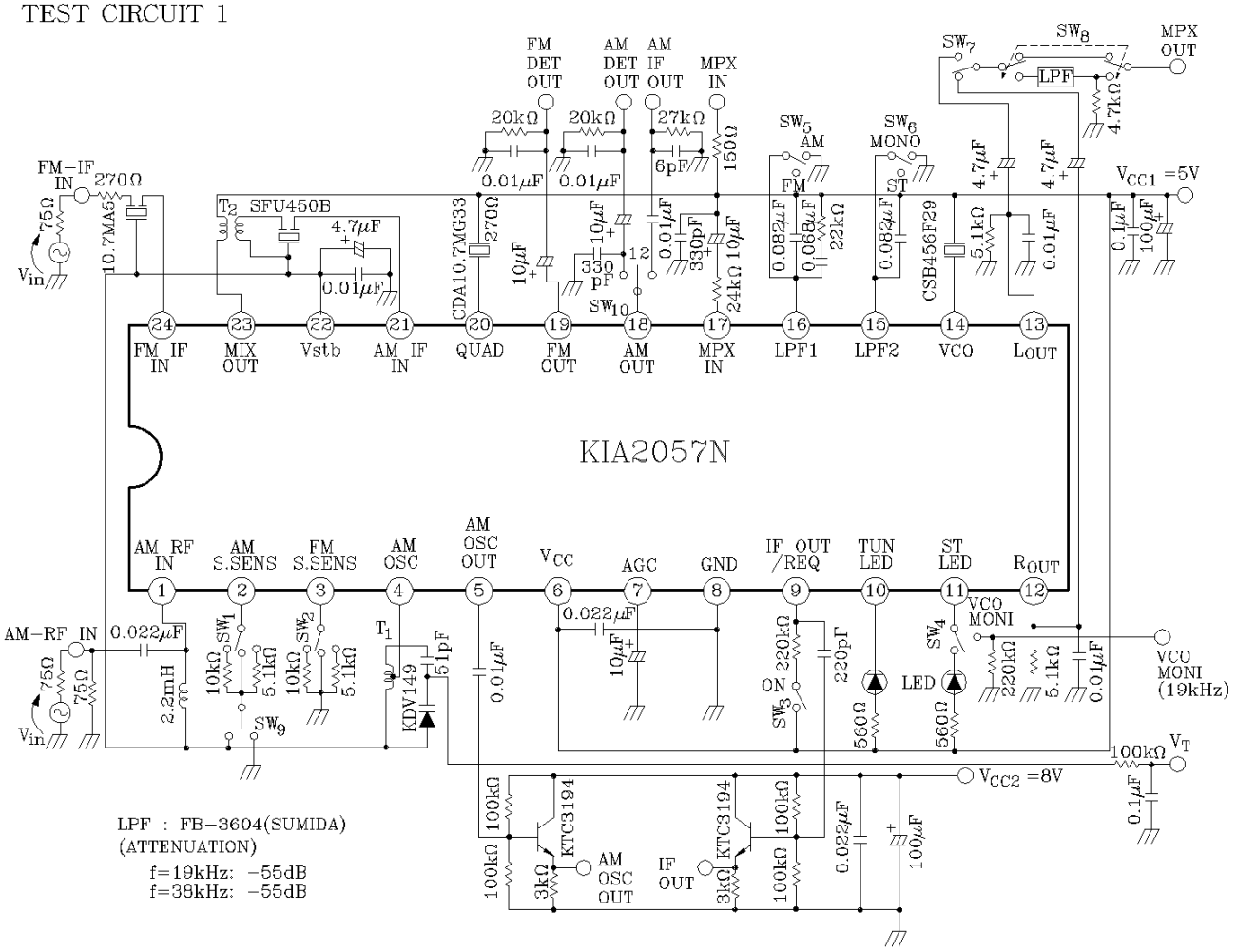
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25℃, V_{CC1}=5V, SW_3=OFF, SW_9=GND, SW_{10}=1
FM IF : f=10.7MHz, ⊿f=±22.5kHz, fm=1kHz
AM : f=1MHz, MOD=30%, fm=1kHz
MPX : fm=1kHz

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}(FM)	1	V_{IN}=0, FM Mode	-	20	26	mA
		I_{CC}(AM)	1	V_{IN}=0, AM Mode	-	20	26	
FM IF	Input Limiting Voltage	$V_{IN(lim)}$	1	-3dB Limiting Point	38	43	48	dBμV EMF
	Recovered Output Voltage	V_{OD}	1	V_{IN}=80dBμV EMF	70	100	140	mV_{rms}
	Signal to Noise Ratio	S/N	1	V_{IN}=80dBμV EMF	-	70	-	dB
	Total Harmonic Distortion	THD	1	V_{IN}=80dBμV EMF	-	0.2	-	%
	AM Rejection Ratio	AMR	1	V_{IN}=80dBμV EMF	-	50	-	dB
	LED ON Sensitivity	V_L	1	I_L=1mA	43	48	53	dBμV EMF
	IF Count Output Voltage	V_{IF}(FM)	1	SW_3:ON, V_{IN}=80dBμV EMF	350	500	-	mV_{p-p}
	IF Count Output Sensitivity	IF_{sens}(FM)	1	SW_3:ON, SW_1:0Ω	-	76	-	dBμV EMF
				SW_3:ON, SW_1:5.1kΩ	-	62	-	
AM	Gain	G_V	1	V_{IN}=26dBμV EMF	37	70	105	mV_{rms}
	Recovered Output Voltage	V_{OD}	1	V_{IN}=60dBμV EMF	70	100	140	mV_{rms}
	Signal to Noise Ratio	S/N	1	V_{IN}=60dBμV EMF	-	45	-	dB
	Total Harmonic Distortion	THD	1	V_{IN}=60dBμV EMF	-	0.5	-	%
	LED ON Sensitivity	V_L	1	I_L=1mA	19	24	29	dBμV EMF
	Local OSC Buff Output Voltage	V_{OSC}(AM)	1	f_{osc}=1.45MHz	350	500	-	mV_{p-p}
			2	f_{osc}=27MHz	-	500	-	
	AM IF Output Voltage for AM Stereo	V_{IF}(ST)	1	SW_9:V_{stb}, V_{IN}=60dBμV EMF SW_{10}:2	800	1100	1400	mV_{P-P}
	IF Count Output Voltage	V_{IF}(AM)	1	SW3:ON, V_{IN}=60dBμV EMF	350	500	-	mV_{p-p}
	IF Count Output Sensitivity	IF_{sens}(AM)	1	SW_3:ON, SW_2:0Ω	-	54	-	dBμV EMF
				SW_3:ON, SW_2:5.1kΩ	-	30	-	

CHARACTERISTIC			SYMBOL	TEST CIRCUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
MPX	Max. Composite Signal Input Voltage		V_{IN}(MAX) STEREO	1	L+R=90%, P=10% THD=3%, SW_8→LPF:ON		-	800	-	mV_{rms}
	Separation		Sep.	1	L+R=180mV_{rms} P=20mV_{rms} SW_8→LPF:ON	fm=100Hz	-	45	-	dB
						fm=1kHz	35	45	-	
						fm=10kHz	-	45	-	
	Total Harmonic Distortion	Monaural	THD (MONO)	1	V_{IN}=200mV_{rms} (MONO)		-	0.05	-	%
		Stereo	THD (ST)		L+R=180mV_{rms}, P=20mV_{rms} SW_8→LPF:ON		-	0.05	-	
	Voltage Gain		G_V(MPX)	1	V_{IN}=200mV_{rms} (MONO)		-2	0	2	dB
	Channel Balance		C.B.	1	V_{IN}=200mV_{rms} (MONO)		-2	0	2	dB
	Stereo Lamp Sensitivity	ON	V_L(ON)	1	Pilot Input		-	10	18	mV_{rms}
		OFF	V_L(OFF)				3	8	-	
	Stereo LED Hysteresis		V_H	1	to LED turn OFF from LED turn ON		-	2	-	mV_{rms}
	Capture Range		C.R.	1	P=20mV_{rms}		-	±1.3	-	%
	Signal to Noise Ratio		S/N	1	V_{IN}=200mV_{rms} (MONO)		-	78	-	dB

TEST CIRCUIT 1

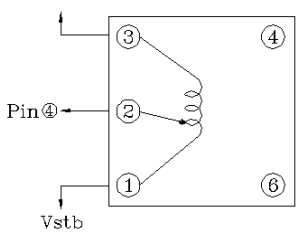


COIL DATA (TEST CONDITION 1)

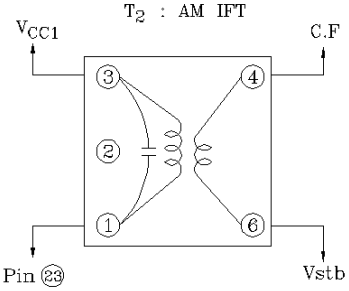
COIL No.	f	L (μH)	C_O (pF)	Q_O	TURN				WIRE (mmΦ)	REF (COIL NO.)
					1-2	2-3	1-3	4-6		
T_1 AM OSC	796kHz	288	-	115	13	73	-	-	0.08 UEW	ⓢ4147-1356-038
T_2 AM IFT	455kHz	-	180	120	-	-	180	15	0.06 UEW	ⓢ2150-2162-165

ⓢ : SUMIDA ELECTRIC Co., Ltd.

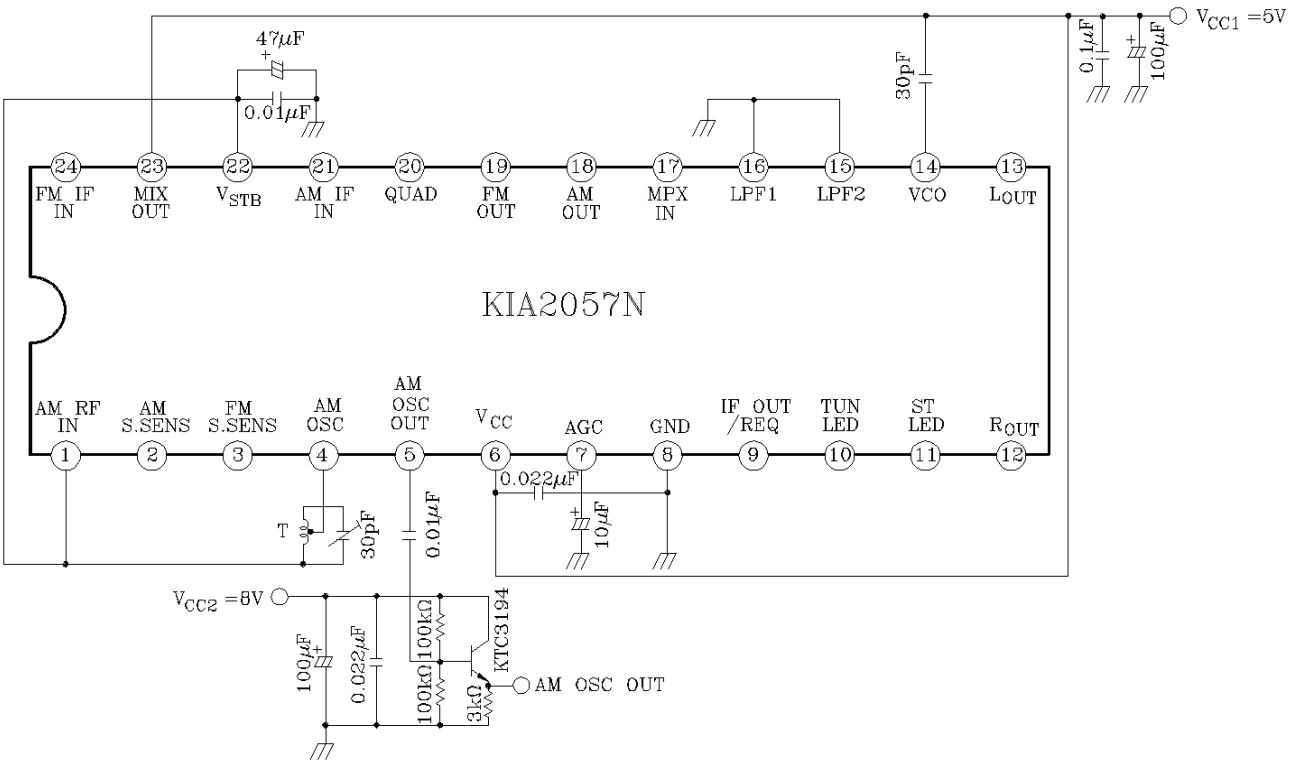
T_1 : AM OSC



T_2 : AM IFT



TEST CIRCUIT 2



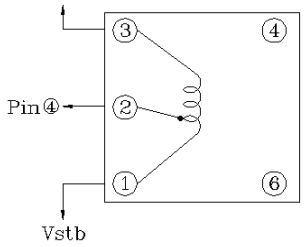
COIL DATA (TEST CIRCUIT 2)

COIL No.	f	L (μH)	C_O (pF)	Q_O	TURN				WIRE (mmΦ)	REF (COIL NO.)
					1-2	2-3	1-3	4-6		
T AM OSC	7.96MHz	1.4	-	84	1	6	7	-	0.08 UEW	Ⓣ7PL-1344Y

Ⓣ Toko co., Ltd.

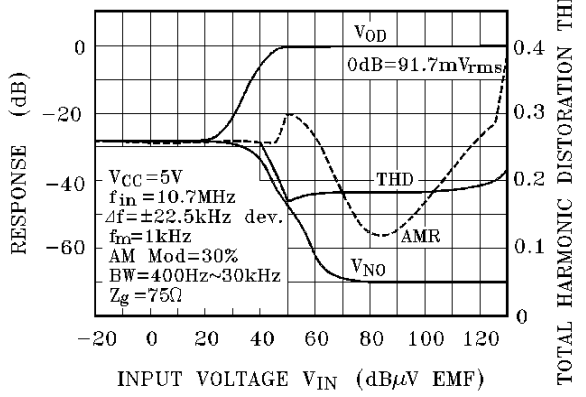
T : AM OSC

TRIMMER CONDENSER

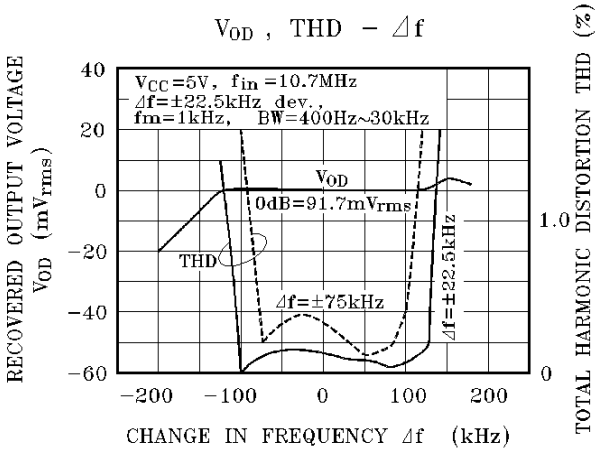


FM(IF)

V_{OD} ,V_{NO} ,THD,AMR – V_{IN}

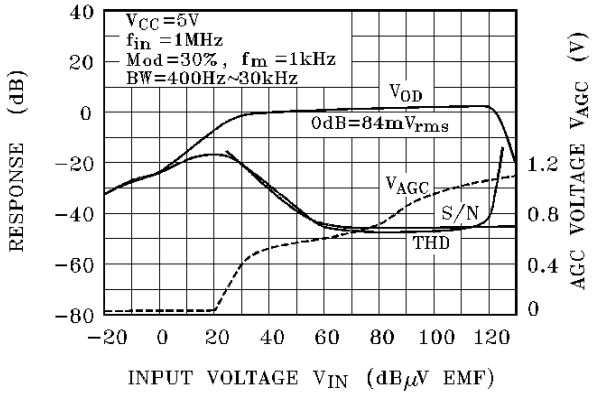


V_{OD} , THD – Δf

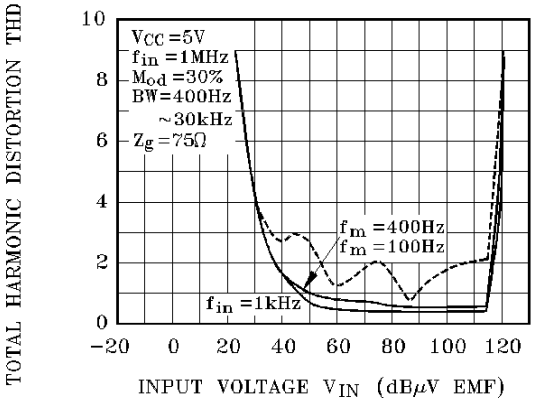


AM

V_{OD} ,V_{NO} ,THD,V_{AGC} – V_{IN}

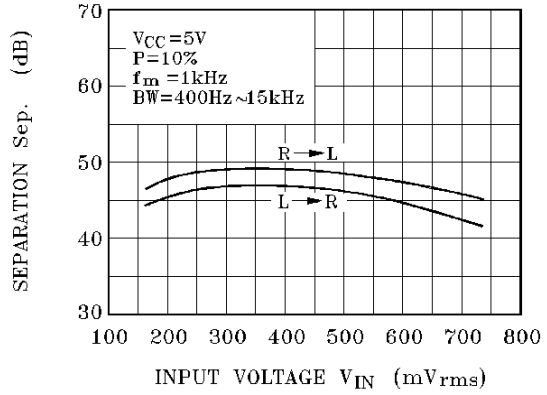


THD – V_{IN}



MPX

Sep – V_{IN}



CAPTURE RANGE & LOCK RANGE

