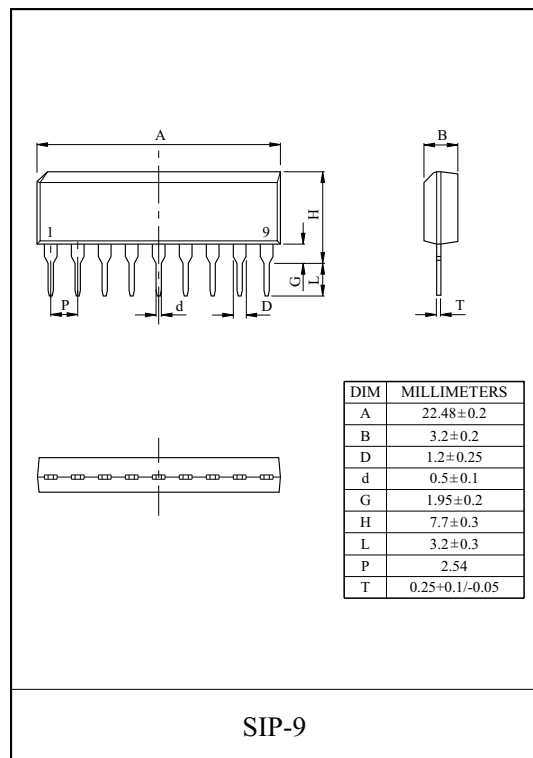


FM STEREO MULTIPLEX FOR AUDIO

The KIA6043S is PLL FM stereo multiplex IC.
It is suitable for automotive applications and portable radio applications because of space merit by the package and wide supply voltage range.

FEATURES

- Excellent Pilot Lamp Sensitivity.
: $V_{L(ON)}=9mV_{rms}$ (Typ.)
- Suitable for LED Driving.
: $I_{LAMP}=20mA$ (Max.)
- Recommendable Input Voltage Range.
: $V_{IN}=200 \sim 700mV_{rms}$
- Operating Supply Voltage Range.
: $V_{CC}=3.5 \sim 12V$
- Excellent Channel Separation.
: $Sep=45dB$ (Typ.)
- Low Distortion.
: $THD=0.08\%$ (Typ.) at $V_{IN}=200mV_{rms}$ (Stereo)
- VCO Stop Capability.
(The VCO is stopped when the ⑦ pin is connected with the power supply line and then the stereo indicator is turn off.)
- Easy Adjustment .
(The monitored free running frequency of VCO is 38kHz at ⑥ pin.)



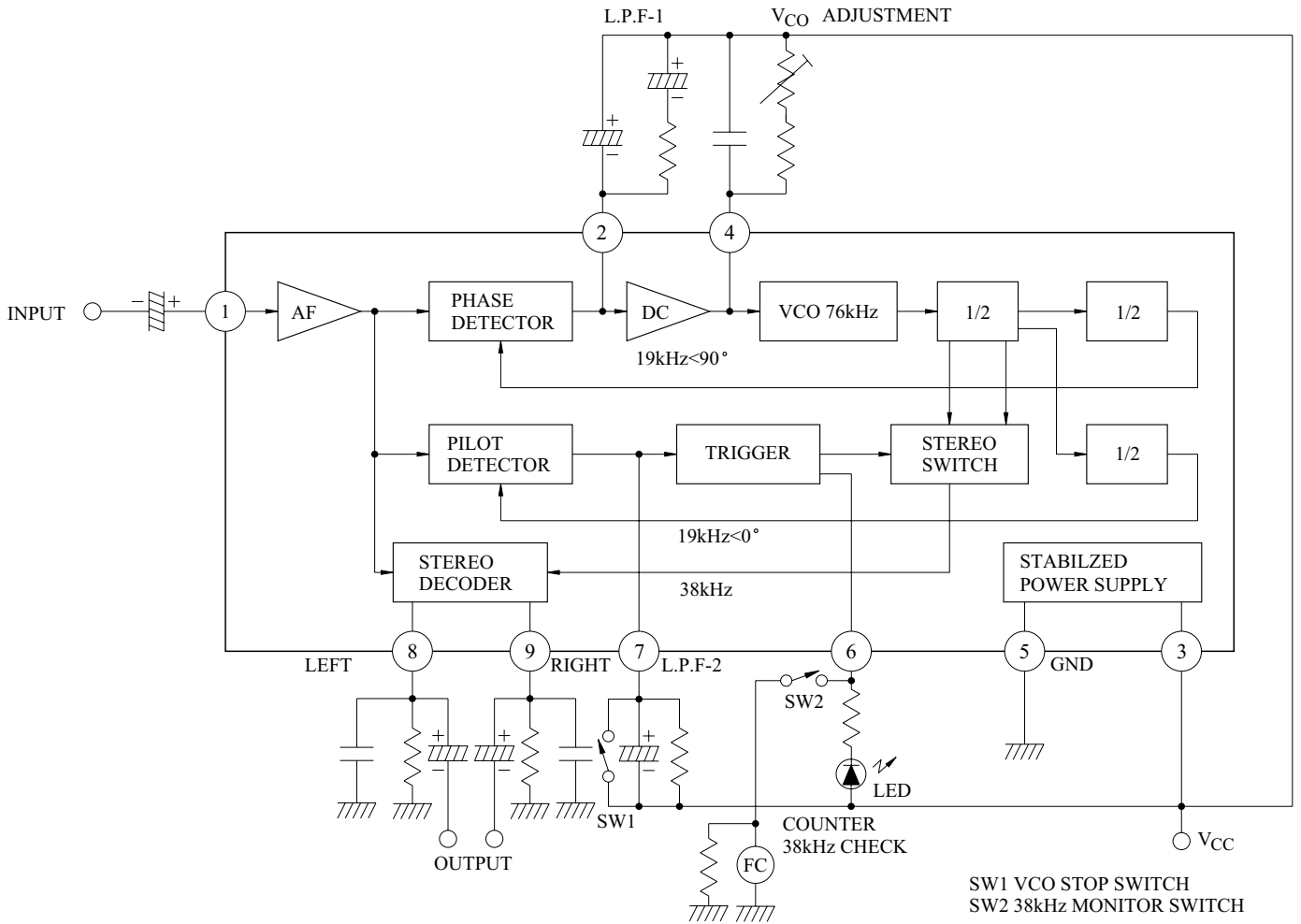
MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	12	V
Lamp Voltage	V_{LAMP}	16	V
Lamp Current	I_{LAMP}	20	mA
Power Dissipation (Note)	P_D	500	mW
Operating Temperature	T_{opr}	-30 ~ 75	°C
Storage Temperature	T_{stg}	-55 ~ 150	°C

Note : Derated above Ta=25 °C in the Proportion of 4mW/°C for KIA6043S.

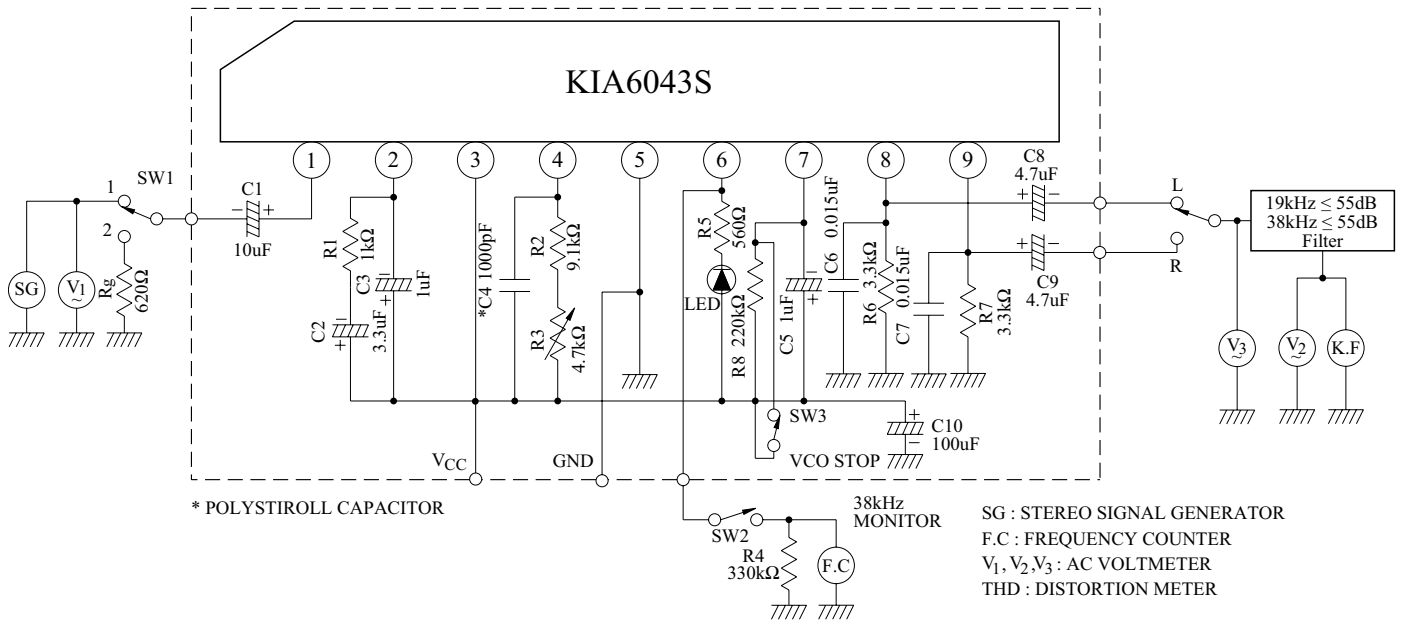
KIA6043S

BLOCK DIAGRAM



KIA6043S

TEST CIRCUIT



ELECTRICAL CHARACTERISTICS

1. DC CHARACTERISTICS (Ta=25 °C, V_{CC}=8V, Terminal Voltage at No Signal)

PIN NO.	ITEM	SYMBOL	Typ.	UNI
1	INPUT	V ₁	3.5	V
2	L.P.F.1	V ₂	6.6	V
3	V _{CC}	V ₃	8.0	V
4	VCO	V ₄	7.1	V
5	GND	V ₅	0	V
6	ST. LAMP	V ₆	-	V
7	L.P.F.2	V ₇	7.4	V
8	L-CH OUTPUT	V ₈	4.0	V
9	R-CH OUTPUT	V ₉	4.0	V

Note : No Describing terminals of KIA6043S denote no connection.

KIA6043S

2. AC ELECTRICAL CHARACTERISTICS

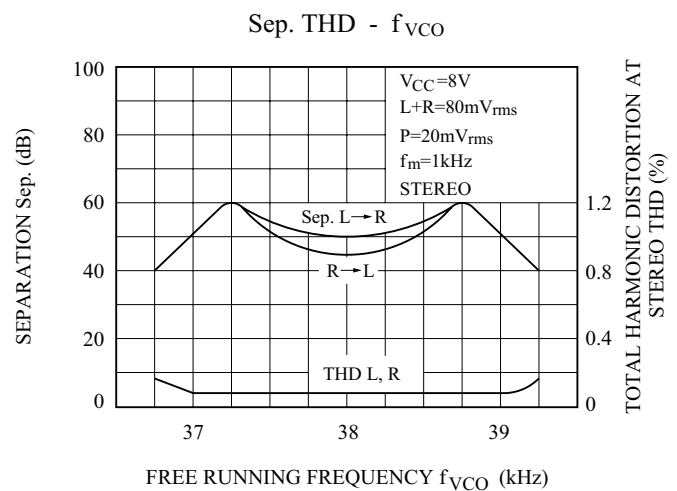
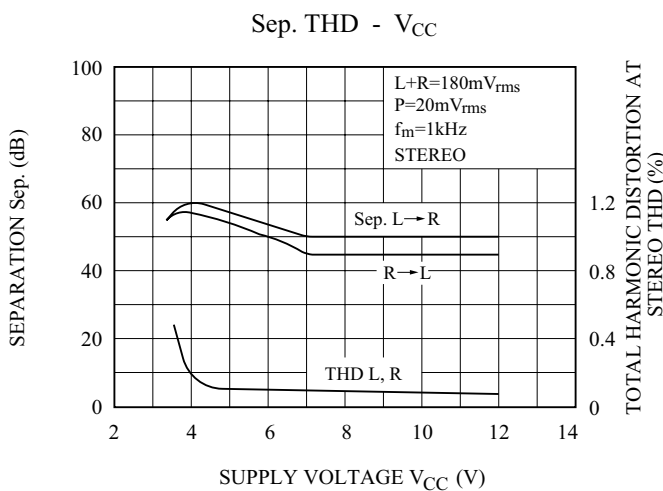
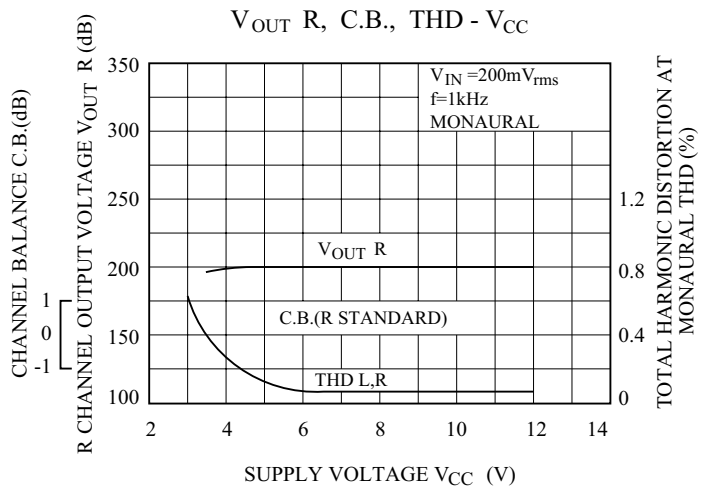
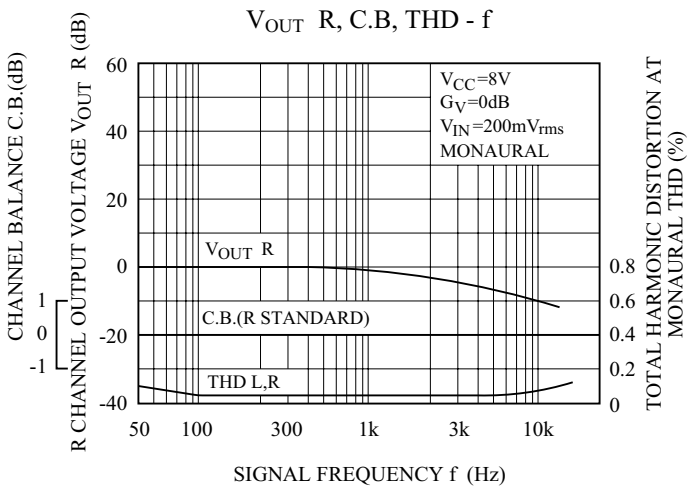
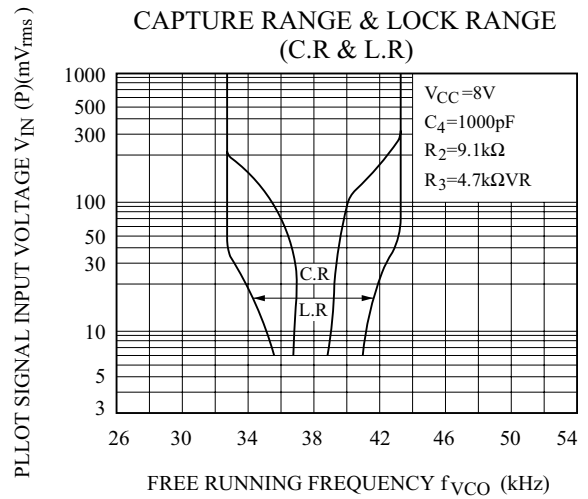
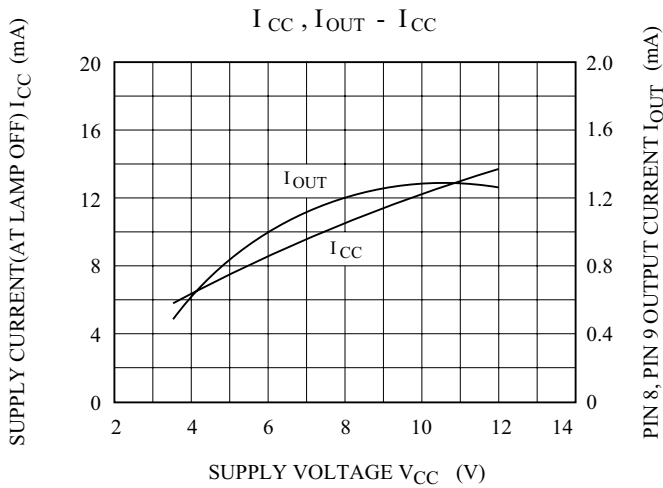
(Unless otherwise specified, $T_a=25\text{ }^\circ\text{C}$, $V_{CC}=8\text{V}$, $f=1\text{kHz}$)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Current		I_{CC}	-	at Lamp off	-	11	18		
Input Resistance		R_{IN}	-	-	-	33	-	$k\Omega$	
Max. Composite Signal Input Voltage		V_{IN} MAX (stereo)	-	L+R=90%, P=10%	-	900	-	mV_{rms}	
Separation		Sep.	-	L+R=180 mV_{rms} , P=20 mV_{rms}	36	45	-	dB	
Total Harmonic Distortion	Monaural	THD (monaural)	-	$V_{IN}=200mV_{rms}$	-	0.08	0.3	%	
	Stereo	THD (stereo)	-	L+R=180 mV_{rms} , P=20 mV_{rms}	-	0.08	-	%	
Voltage Gain		G_V	-	$V_{IN}=200mV_{rms}$	-2.0	0.5	+2.0	dB	
Channel Balance		C.B.	-	$V_{IN}=200mV_{rms}$	-	0	1.5	dB	
Lamp Sensitivity	ON	$V_{L(ON)}$	-	Pilot Input	-	9	15	mV_{rms}	
	OFF	$V_{L(OFF)}$	-		2	6	-	mV_{rms}	
Stereo Lamp Hysteresis		V_H	-	To Turn Off from Lamp Turn On	-	3	-	mV_{rms}	
Capture Range		C.R.	-	P=20 mV_{rms}	-	± 3	-	%	
Carrier Leak	19kHz	C.L.	-	L+R=180 mV_{rms} , P=20 mV_{rms}	-	34	-	dB	
	38kHz				-	42	-		
SCA Rejection Ratio		SCA Rej.	-	L+R=160 mV_{rms} , P=20 mV_{rms} SCA=20 mV_{rms} , $f_{SCA}=67\text{kHz}$	-	70	-	dB	
Signal to Noise Ratio		S/N	-	$V_{IN}=200mV_{rms}$, $f=1\text{kHz}$ $R_g=620\Omega$	-	74	-	dB	
Output Current (pin ⑧, pin ⑨)		I_{OUT}	-	$R_L=3.3k\Omega$	$V_{CC}=3.5\text{V}$	-	0.3	0.6	mA
					$V_{CC}=8.0\text{V}$	-	1.2	1.8	
					$V_{CC}=12\text{V}$	-	1.4	2.1	

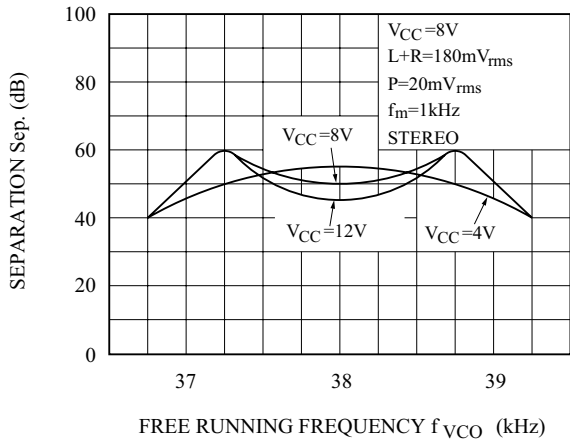
KIA6043S

EXTERNAL PARTS TABLE

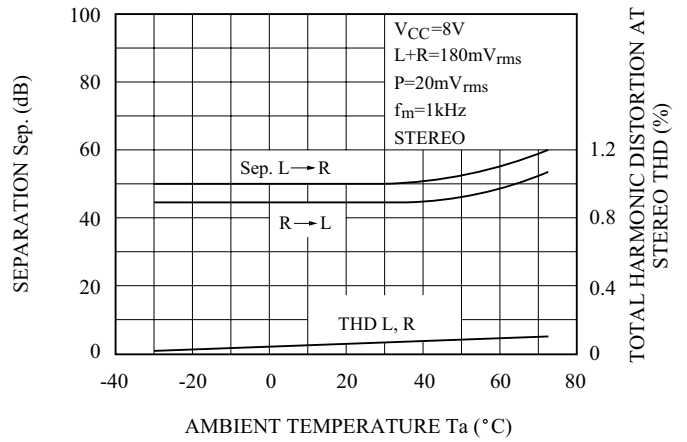
PARTS NUMBER	TYPICAL	PURPOSE	INFLUENCE		NOTE
			SMALLER THAN TYP.	GREATER THAN TYP.	
C ₁	10 μ F	Coupling	Sep. is bad at 50 ~ 300Hz	"POP" Noise is High	Input
C ₂	3.3 μ F	L.P.F at PLL	THD is bad at 5k ~ 10kHz (stereo)	Narrow Capture Range	-
C ₃	1 μ F				
R ₁	1k Ω				
C ₄	1000pF	VCO Free Running Frequency adjustment	C4: Small \rightarrow Wide Capture Range and Large Gitter		-
R ₂	9.1k Ω		C4: Large \rightarrow Narrow Capture Range		
R ₃	4.7k Ω VR				
R ₄	330k Ω	Monitor Load	-		-
R ₅	560 Ω	Rush Current Limiter	IC is Damaged by the Rush Current	Lamp is Dark	I _{LAMP} \leq 20mA
LED	-	Stereo Indicator	-		
C ₆	0.015 μ F	Load and Deemphasis	Deemphasis (50 μ sec)		C ₆ =0.022 μ F for 75 μ sec
R ₆	3.3k Ω		Output Voltage is small	THD is Bad for Low V _{CC}	
C ₇	0.015 μ F	"	"		"
R ₇	3.3k Ω	"	"		"
C ₈	4.7 μ F	Output Coupling	Frequency Response is Bad	"POP" Noise is Large	L-CH R-CH
C ₉	4.7 μ F	"			
R ₈	220k Ω	Lamp Sensitivity Adjustment	V _{L(ON)} is Large	V _{L(ON)} is Small	-
C ₅	1 μ F	L.P.F at Lamp	THD is Bad at 50 ~ 300Hz	Slow Lamp Response	-



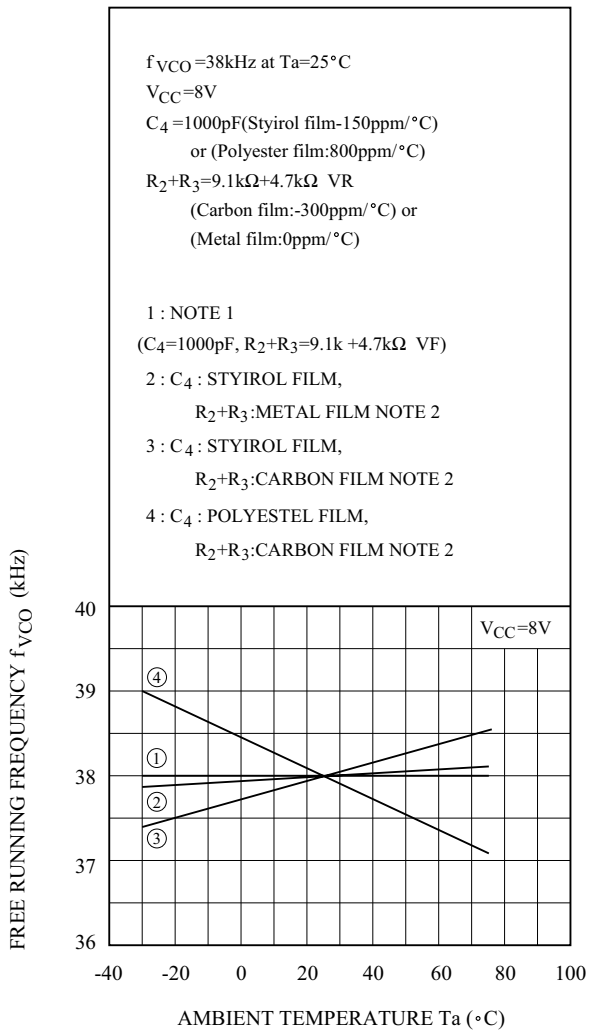
Sep. - f_{VCO}



Sep., THD - T_a



f_{VCO} - T_a



Note 1) ① : With IC only put into a temperature test chamber

Note 2) ② ③ ④ : With IC, resistors and capacitors put into a temperature test chamber.