



INTEGRATED CIRCUIT

TECHNICAL DATA

TA7060AP

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

FOR FM IF AMPLIFIER

FOR TV SIF AMPLIFIER

Recommended for Wide and Narrow Bands Amplifier.

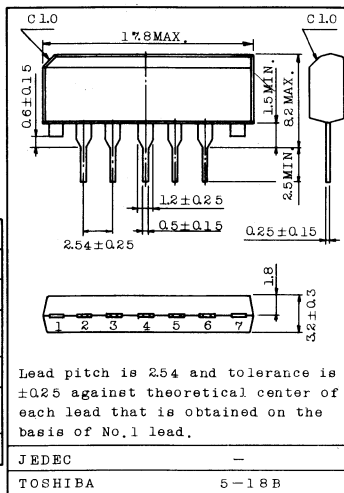
Excellent FM/IF Limiter Circuit.

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	15	V
Output Voltage	V _{OUT}	24	V
Input Voltage (Between 1 pin and 2 pin)	V _{IN}	±15	V
Power Dissipation (Note)	P _D	400	mW
Operating Temperature (V _{CC} =12V)	T _{opr}	-30 ~ 75	°C
Storage Temperature	T _{stg}	-55 ~ 125	°C

Note: Derated above Ta=25°C in the proportion of 3 mW/°C.

Unit in mm



Lead pitch is 254 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No.1 lead.

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I _{CC}	1	V _{CC} =12V	5.3	9.5	14	mA
				V _{CC} =9V	-	6.5	-	
Power Dissipation		P _D	1	V _{CC} =12V	-	114	-	mW
				V _{CC} =9V	-	59	-	
Power Gain		G _p	2	V _{CC} =12V, f=10.7MHz	27	30	33	dB
				V _{CC} =9V, f=10.7MHz	-	27	-	
Voltage Gain		G _v	3	V _{CC} =12V, R _g =50Ω, R _L =1kΩ	-	26.5	-	dB
Input Impedance	Parallel Input Resistance	r _{ip}	-	V _{CC} =12V f=10.7MHz	-	3.5	-	kΩ
	Parallel Input Capacitance	c _{ip}			-	8.0	-	pF
Output Impedance	Parallel Output Resistance	r _{op}			-	80	-	kΩ
	Parallel Output Capacitance	c _{op}			-	3.0	-	pF
Forward Transfer Admittance		y _f	-	-	-	30	-	mΩ
Reverse Transfer Admittance		y _r	-	-	-	2.0	-	μΩ

TA7060



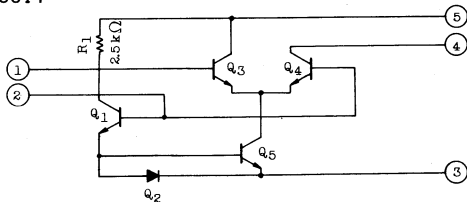
INTEGRATED CIRCUIT

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TECHNICAL DATA

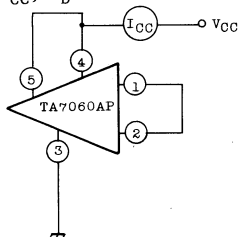
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EQUIVALENT CIRCUIT

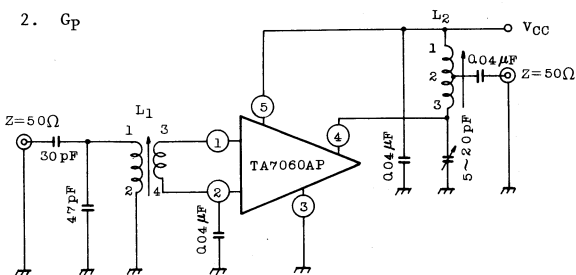


TEST CIRCUIT

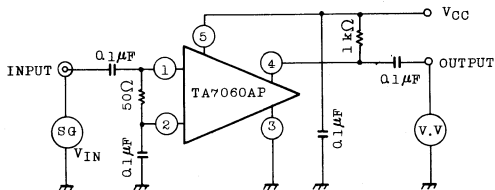
1. I_{CC}, P_D



2. G_p



3. G_v



L_1 : Between terminals 1 and 2
16 Turns.

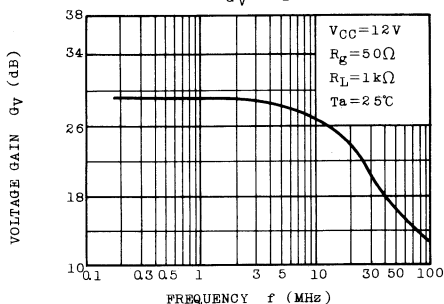
Between terminals 3 and 4
2 Turns.

L_2 : Between terminals 1 and 2
15 Turns.

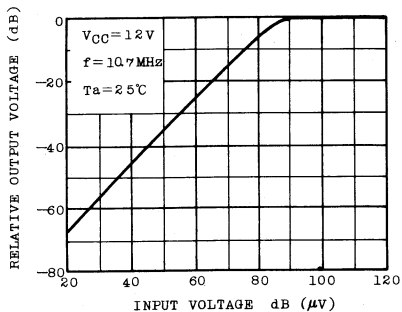
Between terminals 1 and 3
25 Turns.

0.10mm \varnothing UEW

$G_v - f$



INPUT - OUTPUT CHARACTERISTICS



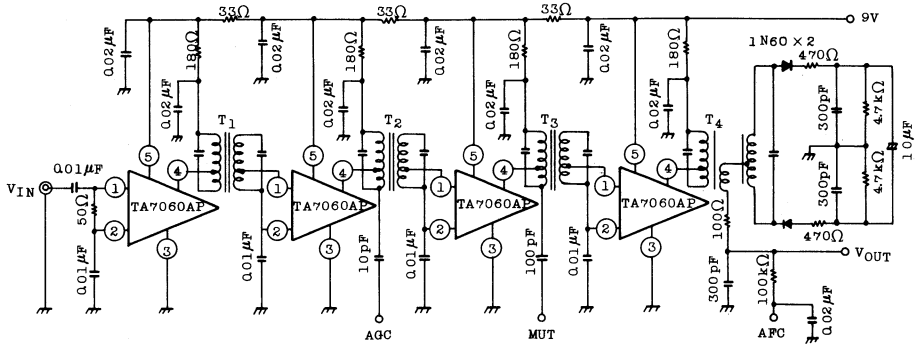


INTEGRATED CIRCUIT

TECHNICAL DATA

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APPLICATION CIRCUIT

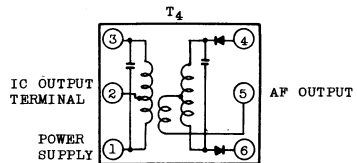
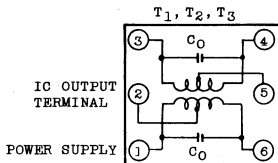


CHARACTERISTIC	SYMBOL	TEST CONDITION		UNIT
Supply Voltage	V _{CC}	-	9	V
Supply Current	I _{CC}	V _{CC} =9V	24	mA
Detected Output Voltage	V _{OD}	V _{IN} =60dB(µV), f=400Hz, ΔF=22.5kHz	70	mV
Input Limiting Voltage	V _{IN} (lim)	-3dB Output	21	dB(µV)
Band Width	BW	6dB Band Width	±110	kHz
Total Harmonic Distortion	THD	V _{IN} =60dB(µV), f=400Hz, ΔF=75kHz	0.5	%
AM Rejection	AMR	FM f=400Hz, ΔF=75kHz, AM f=1kHz 30%	45	dB
Capture Ratio	-	f=400Hz, ΔF=75kHz	3	dB

COIL DATA

	C ₀ (pF)	f (MHz)	Q ₀		TURNS			
			1-6	3-4	1-6	1-2	3-4	4-5
T ₁	120	10.7	65	65	13	6	13	6
T ₂	120	10.7	65	65	13	6	13	6
T ₃	120	10.7	65	65	13	9	13	6

	C (pF)		f (MHz)	Q ₀	TURNS				
	1-3	4-6			1-3	1-2	5-CT	4-CT	6-CT
T ₄	22	47	10.7	65	31 1/2	11	9 1/2	11	11



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TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT
SILICON MONOLITHIC

FOR FM IF AMPLIFIER
FOR TV AMPLIFIER

- High Power Gain : $G_p=69\text{dB}(\text{Typ.})$
- Good Limiter Characteristic : $V_{IN}(\text{lim})=600\mu\text{V}(\text{Typ.})$
- High Output Voltage : $V_{OM}=800\text{mV}(\text{Typ.})$
- Wide Frequency Range : $f=1\text{kHz} \sim 20\text{MHz}$
- Operating Supply Voltage Range : $V_{CC}=6 \sim 15\text{V}$

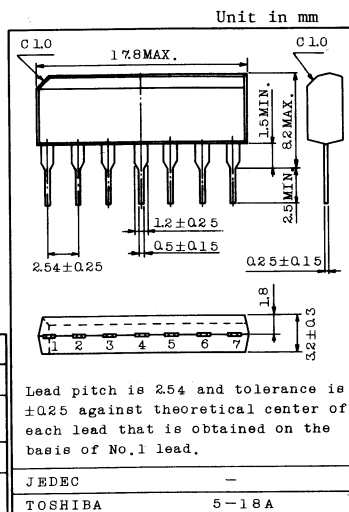
MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	15	V
Input Voltage (Between Terminals 6 and 7)	V_{IN}	± 3	V
Power Dissipation (Note)	P_D	400	mW
Operating Temperature ($V_{CC}=7.5\text{V}$)	T_{opr}	$-25 \sim 75$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-55 \sim 125$	$^\circ\text{C}$

Note: Derated above $T_a=25^\circ\text{C}$ in the proportion of $4\text{mW}/^\circ\text{C}$.

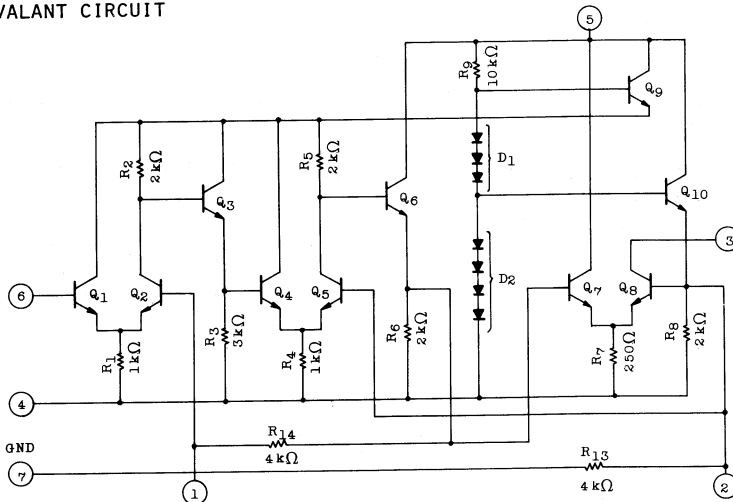
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}	1	$V_{CC}=12\text{V}$	-	11	14	mA
				$V_{CC}=6\text{V}$	7.0	8.5	-	
Output Current		I_{OUT}	1	$V_{CC}=12\text{V}$	-	2.5	-	mA
Input Limiting Voltage		$V_{IN}(\text{lim})$	2	$V_{CC}=12\text{V}$, $f=10.7\text{MHz}$	-	600	-	μV
Maximum Output Voltage		V_{OM}	2	$V_{CC}=12\text{V}$, $V_{IN}=10\text{mV}$, $f=10.7\text{MHz}$	-	800	-	mV
Power Gain		G_p	2	$V_{CC}=12\text{V}$, $f=10.7\text{MHz}$	66	69	72	dB
IF Voltage Gain		$G_v(\text{IF})$	5	$V_{CC}=12\text{V}$, $f=10.7\text{MHz}$, $50\text{dB}\mu\text{V}$	-	56	-	dB
Input Impedance	Parallel Input Resistance	r_{ip}	3	$V_{CC}=12\text{V}$, $f=10.7\text{MHz}$	-	5	-	k Ω
	Parallel Input Capacitance	c_{ip}			-	6	-	pF
Output Impedance	Parallel Output Resistance	r_{op}	4	$V_{CC}=12\text{V}$, $f=10.7\text{MHz}$	-	10	-	k Ω
	Parallel Output Capacitance	c_{op}			-	5	-	pF



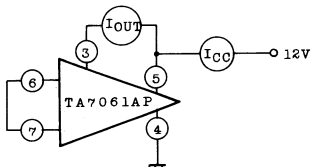
TECHNICAL DATA

EQUIVALENT CIRCUIT

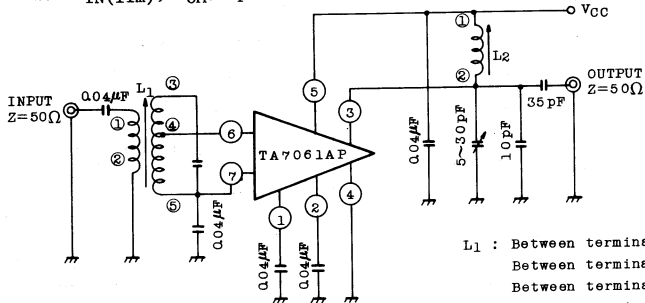


TEST CIRCUIT

1. I_{CC} , I_{OUT}



2. $V_{IN(1im)}$, V_{OM} , G_p



- L1 : Between terminals ① and ② 3 Turns
 - Between terminals ③ and ④ 10 Turns
 - Between terminals ④ and ⑤ 13 Turns
 - L2 : Between terminals ① and ② 13 Turns
- ϕ1mm UEW

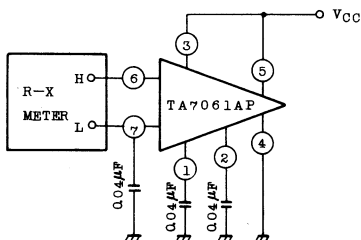


INTEGRATEDCIRCUIT

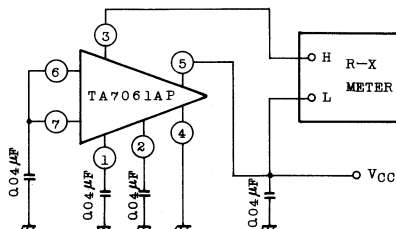
TECHNICAL DATA

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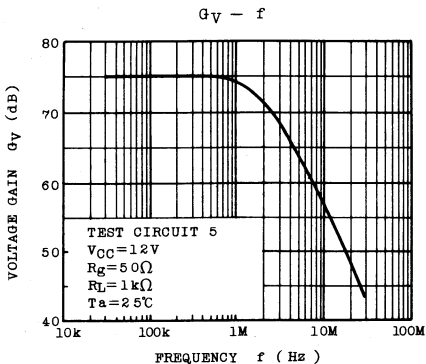
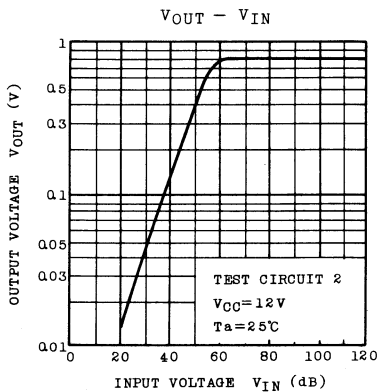
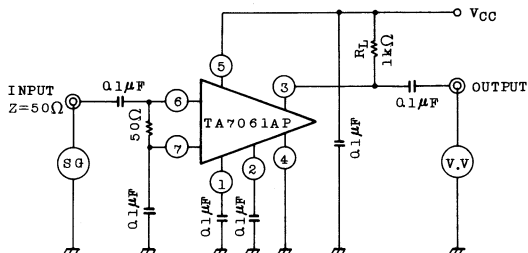
3. r_{ip}, c_{ip}



4. r_{op}, c_{op}



5. $G_V(f)$



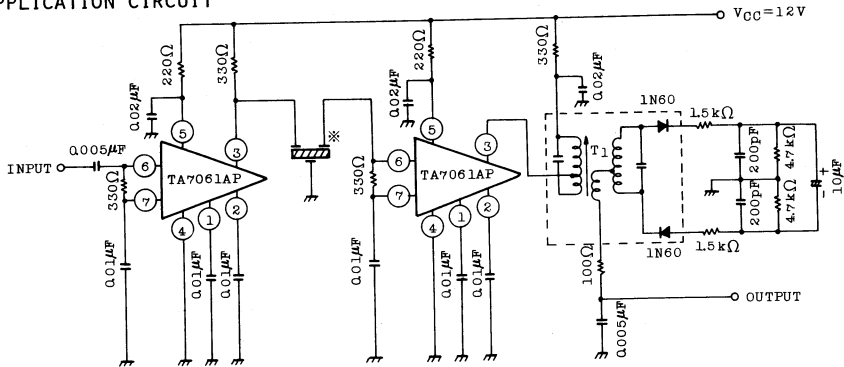


INTEGRATED CIRCUIT

TECHNICAL DATA

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APPLICATION CIRCUIT

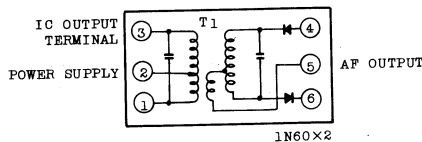


* CERAMIC FILTER CFP-107MA (MURATA)

CHARACTERISTIC	SYMBOL	TEST CONDITION	VALUE	UNIT
Supply Current	I_{CC}	$V_{CC}=12V$	21	mA
Recovered Output Voltage	V_{OD}	$V_{IN}=60dB(\mu V)$, $f=400Hz$ $\Delta f=\pm 22.5kHz$	90	mV
Input Limiting Voltage	$V_{IN}(lim)$	-3dB Limiting	22	dB μV
Total Harmonic Distortion	THD	$V_{IN}=60dB(\mu V)$, $f=400Hz$ $\Delta f= \pm 75kHz$	0.5	%
AM Rejection Ratio	AMR	FM : $f=400Hz$, $\Delta f=\pm 75kHz$ $V_{IN}=80dB\mu V$, AM : $f=1kHz$, 30%	60	dB
Capture Ratio	-	$f=400Hz$, $\Delta f=\pm 75kHz$	3	dB

COIL DATA (V₄FCD 1175BW TOKO INC)

	C_0 (pF)		f (MHz)	TURNS						
	1-3	4-6		Q_0		1-3	1-2	5-CT	4-CT	6-CT
				1-3	4-6					
T	22	46	10.7	60	50	31½	11	9½	11	11



1N60×2



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TECHNICAL DATA

BOTTOM VIEW OF P.C. BOARD (ACTUAL SIZE)

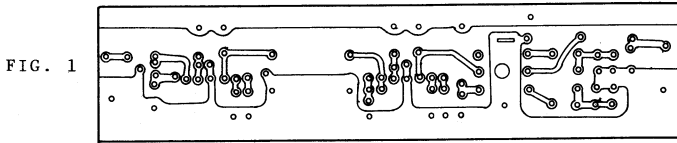


FIG. 1

BOTTOM VIEW OF P.C. BOARD LAYOUT

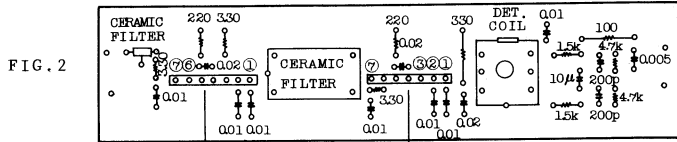


FIG. 2

TA7061AP

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R:Ω
C:μF

CHARACTERISTICS

