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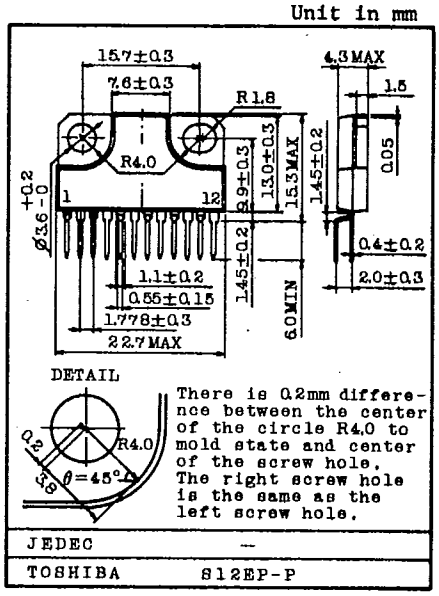
TA7269P

DUAL AUDIO POWER AMPLIFIER.

The TA7269P is a dual audio power amplifier for consumer applications.
It is suitable for power amplifier of portable stereo radio cassette and stereo receiver.

- High Power
  (f=1kHz, THD=10%, R_L=3Ω)
  P_{OUT}(1)=5.0W/ch (Typ.) ; V_{CC}=12V
  P_{OUT}(2)=8.0W/ch (Typ.) ; V_{CC}=15V
  P_{OUT}(3)=3.0W/ch (Typ.) ; V_{CC}=9V
- Low Supply Current
  : I_{CCQ}=35mA(Typ.) (V_{CC}=15V, V_{in}=0)
- Thermal Shut Down Protector
- Audio Muting Function
- Operating Supply Voltage : $V_{CC(opr)}$=6～20V

Unit in mm



JEDEC	—
TOSHIBA	S12EP-P

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	20	V
Output Current (Peak/CH)	$I_{O(peak)}$	4	A
Power Dissipation	P_D	25	W
Operating Temperature	T_{opr}	-20～75	°C
Storage Temperature	T_{stg}	-55～150	°C

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ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V_{CC}=15V, R_L=3Ω, R_g=600Ω, f=1kHz, Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{CCQ}	-	V_{in}=0	-	35	60	mA
Output Power	P_{OUT}(1)	-	THD=10%, V_{CC}=12V	4.0	5.0	-	W
	P_{OUT}(2)	-	THD=10%	7.0	8.0	-	
Total Harmonic Distortion	THD	-	P_{OUT}=1W/CH.	-	0.15	0.8	%
Voltage Gain	G_V(1)	-	R_f=150Ω V_{OUT}=0.775V_{rms}	43	45	47	dB
	G_V(2)	-	R_f=0, V_{OUT}=0.775V_{rms}	-	57	-	
Input Resistance	R_{IN}	-	-	-	30	-	kΩ
Output Noise Voltage	V_{NO}	-	R_g=10kΩ BW=20Hz ~ 20kHz	-	0.4	0.7	mV_{rms}
Ripple Rejection Ratio	R.R	-	R_g=600Ω f_{ripple}=100Hz	-	45	-	dB
Cross Talk	CT	-	R_g=10kΩ, Ampl↔2 V_{OUT}=0dBm, f=1kHz	-	60	-	dB
Input Offset Voltage	V_3, V_5	-	-	-	35	80	mV

TYPICAL DC VOLTAGE OF EACH TERMINAL

(V_{CC}=15V, Ta=25°C)

TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12
DC Voltage (V)	8.1	0.7	0.05	GND	0.05	0.7	7.5	14.6	GND	V_{CC}	14.6	7.5

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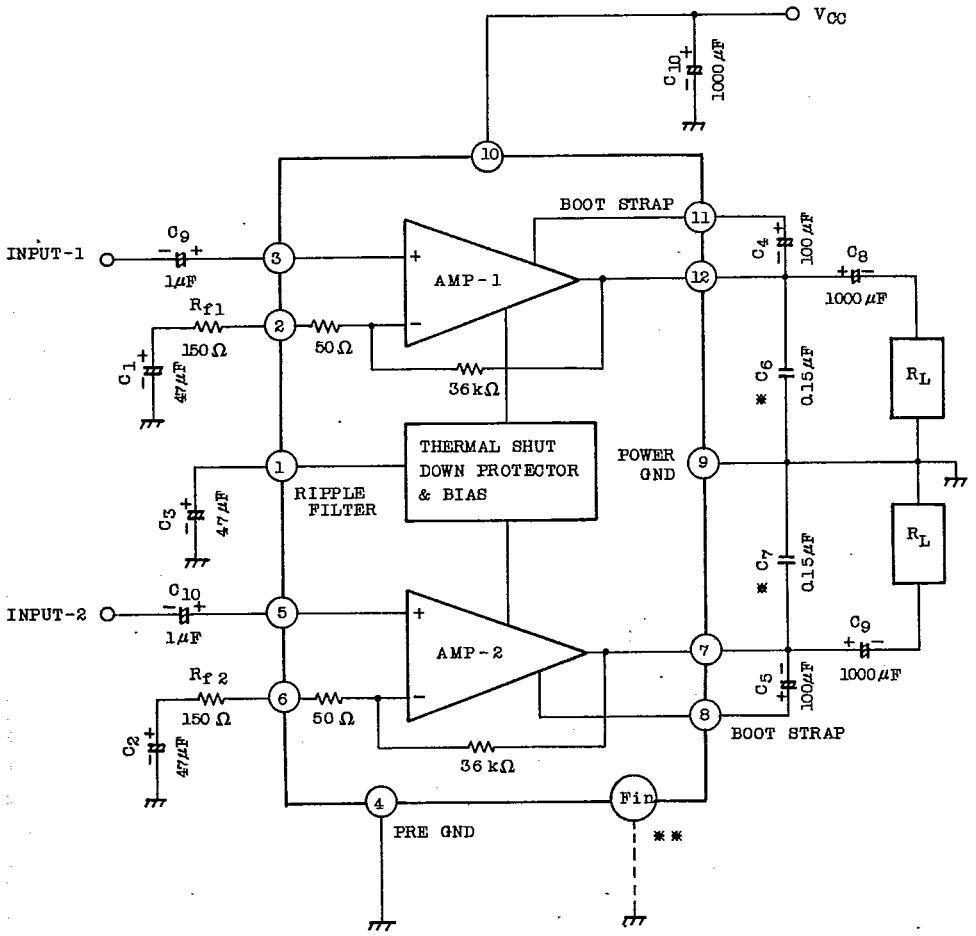
BLOCK DIAGRAM, TEST CIRCUIT



* C_6, C_7 : Polystiroll capacitor

** Heat Sink (Fin) : Connect to GND or open

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APPLICATION INFORMATION

1. VOLTAGE GAIN ADJUSTMENT

The voltage gain : G_V is determined by R_1, R_2 and R_f.

$$G_V = 20 \log \frac{R_f+R_1+R_2}{R_f+R_1}$$

When $R_f=0$

$G_V=57dB$(Typ.)

When $R_f=150\Omega$

$G_V=45dB$(Typ.) is given.

The recommended voltage gain is more than 40dB.

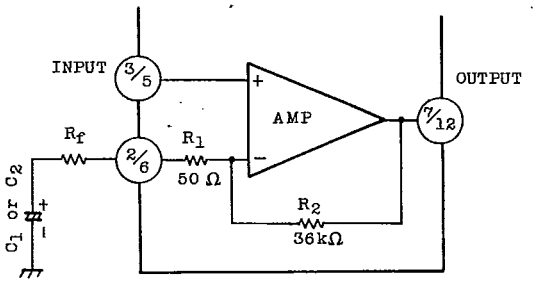

Fig. 1

2. AUDIO MUTING

Audio muting can be accomplished by connecting 1 pin (ripple filter) to GND as shown in Fig. 2.
Then, the bias circuit are cut off.
Amount of muting attenuation is about 60dB.
The ripple filter : C_3 is in dead states at muting on. Therefore, the ripple rejection ratio should be checked at muting on/off in applications.

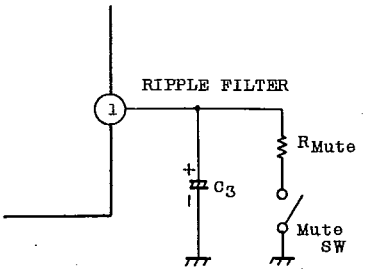

Fig. 2

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3. INPUT AMPLIFIER

The first stage is a PNP transistor, the input terminal voltage (Q_1 base) is 80mV and less, and the volume : V_R can be directly coupled without a coupling capacitor.
But volume slide noise should be checked at volume up/down in applications.

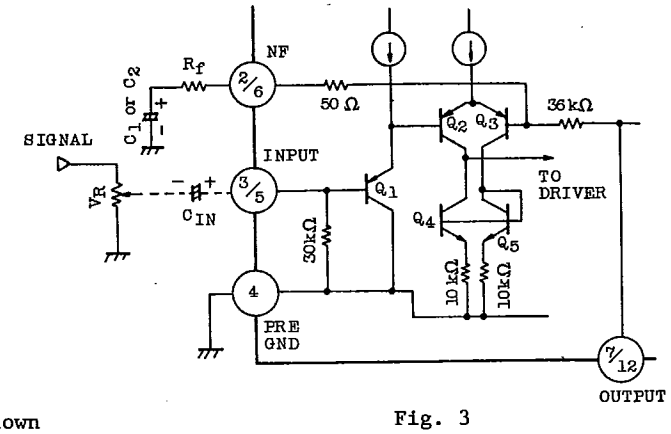

Fig. 3

4. THERMAL SHUT DOWN CIRCUIT

This IC built in thermal shut down protector.
The operating temperature of thermal shut down circuit is 160°C (Typ.)

5. CAPACITOR C_6, C_7

The purpose of capacitor C_6, C_7 are to prevent oscillation.
These capacitors need to be small temperature coefficient.
So celamic capacitor is unsuitable.
The voltage gain less than 40dB results occasionally in a parastic oscillation.
The following capacitor layout is recommended to refer the standard print board.

6. INPUT VOLTAGE

The maximum input voltage is 270mV$_{rms}$ (Typ.). (at V_{CC}=15V, R_L=3Ω, f=1kHz)
When input voltage is more 270mV$_{rms}$, the output wave is turn up.

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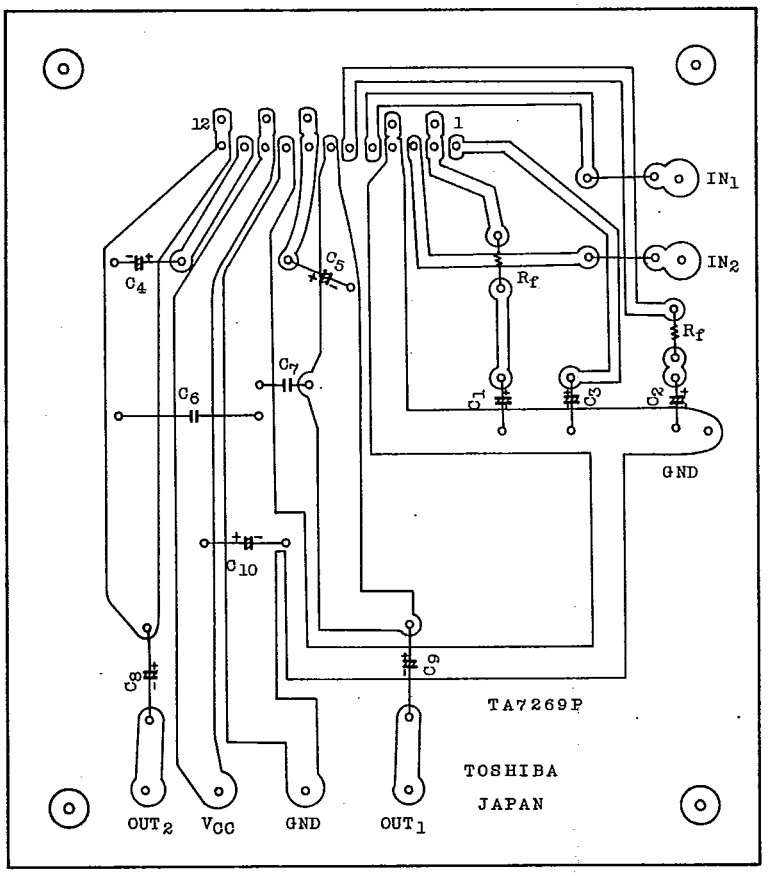
STANDARD PRINT PATTERN



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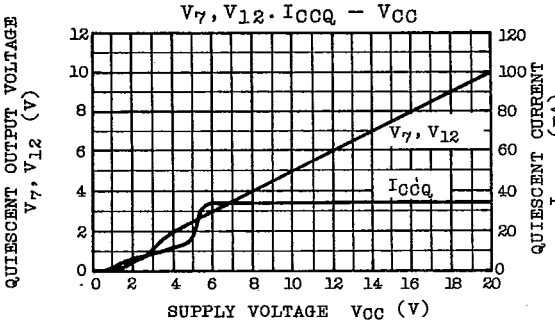
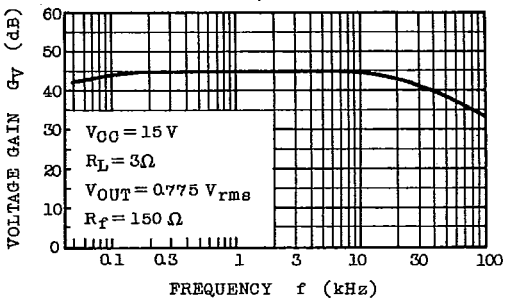
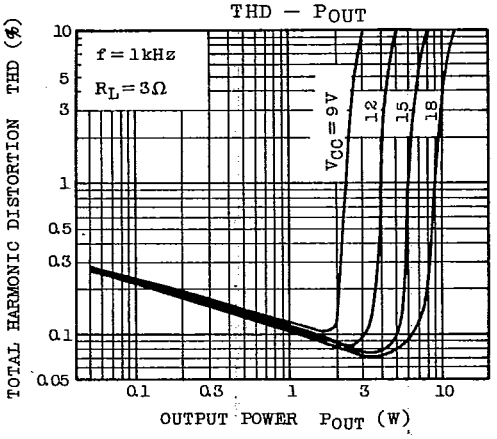
$V_7, V_{12}, I_{CCQ} - V_{CC}$



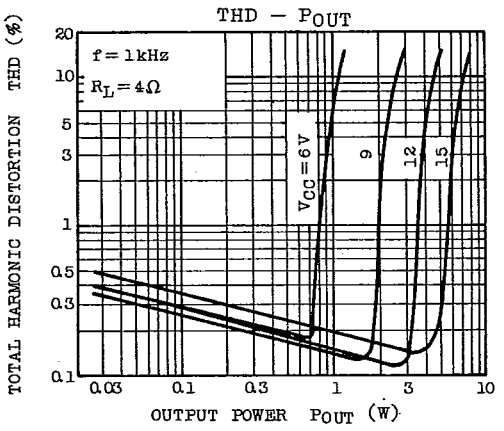
$G_V - f$



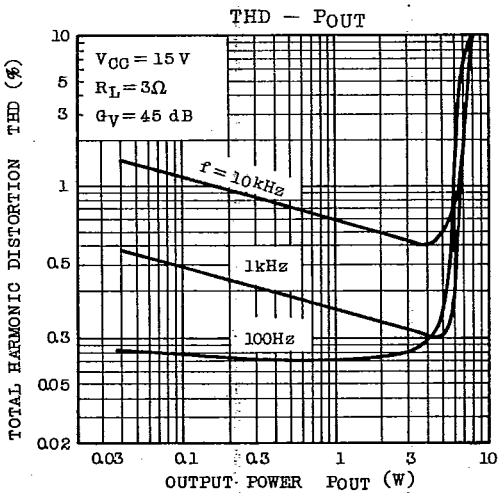
THD – P_{OUT}



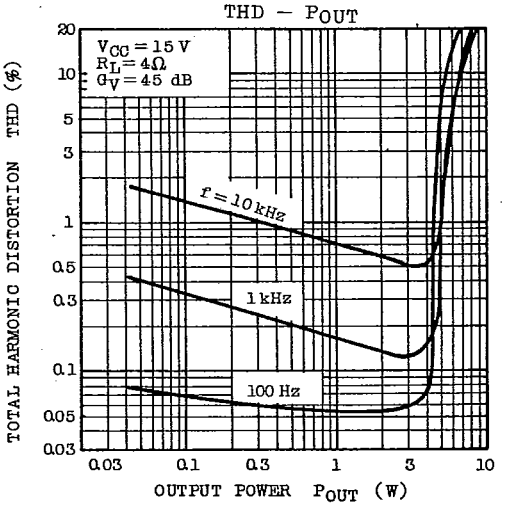
THD – P_{OUT}



THD – P_{OUT}



THD – P_{OUT}



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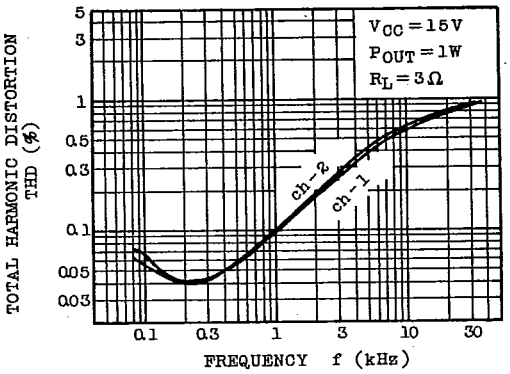
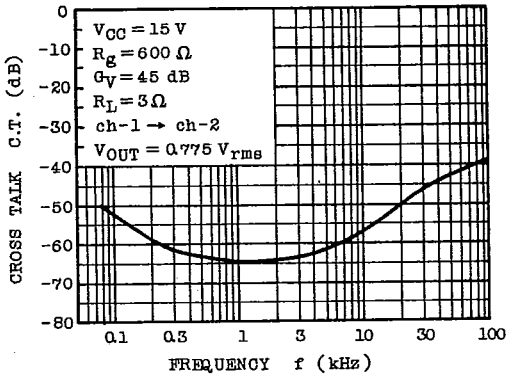
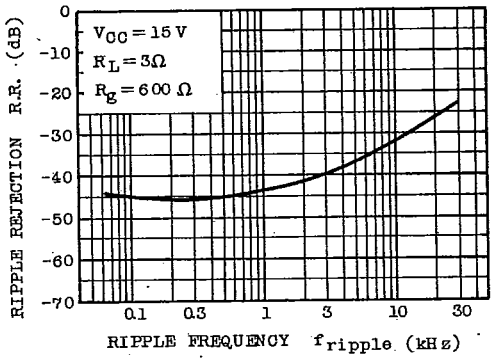
THD — f



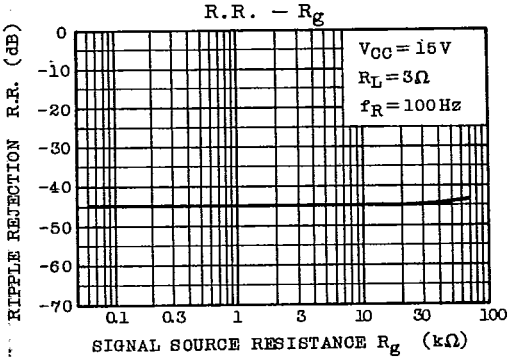
C.T — f



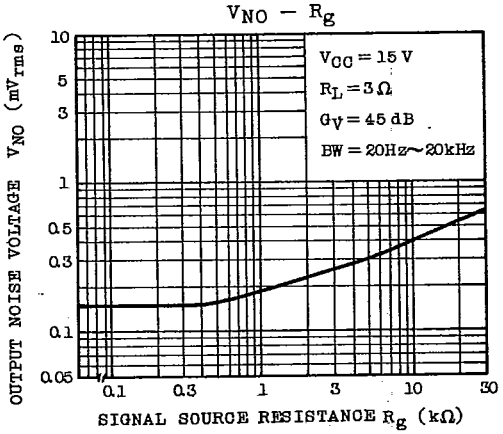
R.R. — f



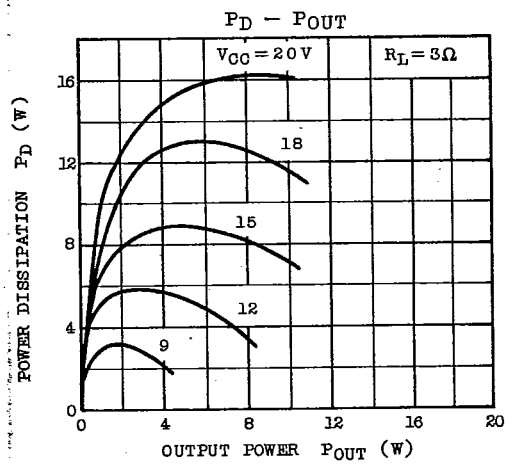
R.R. — R_g



V_{NO} — R_g



P_D — P_{OUT}



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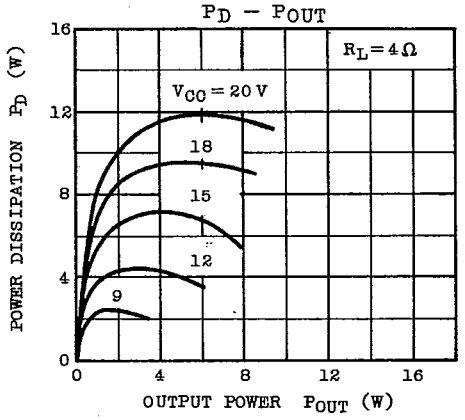
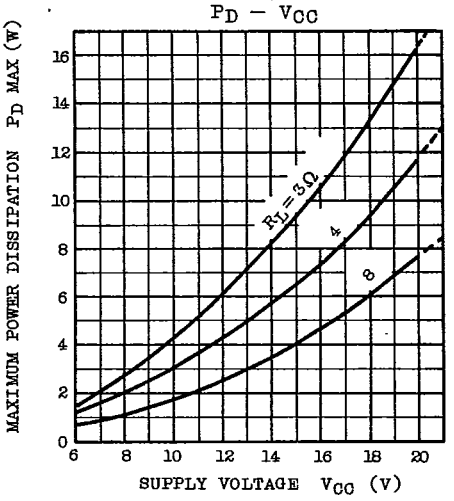
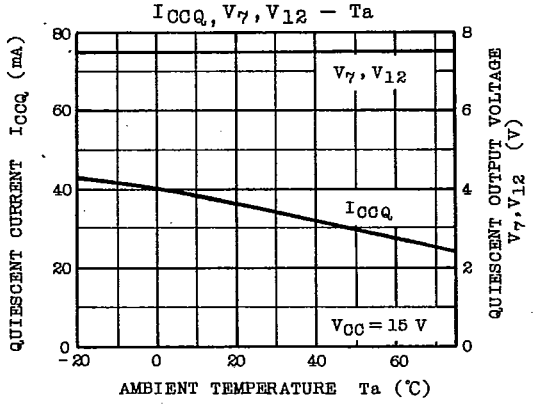
$P_D - P_{OUT}$



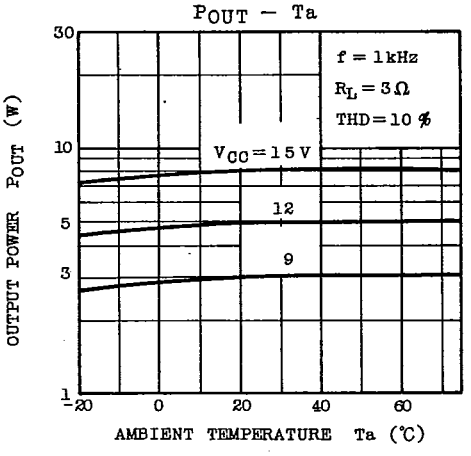
$P_D - V_{CC}$



$I_{CCQ}, V_7, V_{12} - Ta$



$P_{OUT} - Ta$



P_D MAX − Ta