

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	A - 1
Checked			Total Page	12
Approved			Page No.	1

Structure	Silicon Monolithic Bipolar IC
Appearance	SIL-7 Pins Plastic Package (Power Type With Fin)
Application	Low Frequency Amplifier
Function	Mono 10W Audio Power Amplifier, with standby circuit and incorporating protection circuits

A	Absolute Maximum Ratings				
No.	Item	Symbol	Ratings	Unit	Note
1	Storage Temperature	Tstg	-55 ~ +150	° C	1
2	Operating Ambient Temperature	Topr	-25 ~ +75	° C	1
3	Operating Ambient Pressure	Popr	$1.013 \times 10^5 \pm 0.61 \times 10^5$ (1.0 ± 0.6)	Pa (atm)	
4	Operating Constant Acceleration	Gopr	9,810 (1,000)	m / s <sup>2</sup> (G)	
5	Operating Shock	Sopr	4,900 (500)	m / s <sup>2</sup> (G)	
6	Power Supply Voltage	Vcc	35.0	V	
7	Power Supply Current	Icc	2.0	A	
8	Power Dissipation	PD	18.7	W	2

Operating Supply Voltage Range	Vcc	10.0 V ~ 32.0 V
--------------------------------	-----	-----------------

Note : 1) Except these items, all other measurements are taken at Ta = 25 °C.

2) Ta = 75 °C with infinite heat sink.

Eff. Date	Eff. Date	Eff. Date	Eff. Date	
11-Feb-1999				

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	A-2
Checked			Total Page	12
Approved			Page No.	2

A	Absolute Maximum Ratings				
No.	Item	Symbol	Ratings	Unit	Note
1	Pin Voltage (Pin 3)	V <sub>3</sub>	-0.3 ~ +3.0	V	

Note) For the above mentioned terminals do not apply a voltage or current that is outside the described range.

Eff. Date	Eff. Date	Eff. Date	Eff. Date	
11-Feb-1999				

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	B - 1
Checked			Total Page	12
Approved			Page No.	3

No.	Item	Symbol	Test Cct.	Condition	Limit			Unit	Note
					Min	Typ	Max		
					<b>B</b> <b>Electrical Characteristics</b> (Ambient temperature is 25°C±2°C unless otherwise specified)				
1	Quiescent Current	Icq		Vin=0mV	-	30	60	mA	
2	Output End Noise Voltage	Vno		No input, Rg=10k	-	0.22	0.4	mV	2
3	Voltage Gain	Gv		Vin=57mV	32	34	36	dB	
4	Total Harmonic Distortion	THD		Vin=57mV	-	0.2	0.4	%	
5	Maximum Output Power	Po		Vcc=26V, THD=10%	8.0	10.0	-	W	
6	Ripple Rejection Ratio	RR		Vr=1 Vrms, fr=120Hz,Rg=10k	45	55	-	dB	2
7	Stand-by On Voltage	Vstb-on		No input Icc ≤ 0.1mA	-	-	5.0	V	
8	Stand-by Off Voltage	Vstb-off		No input Icc ≥ 9.5mA	8.5	-	-	V	

Note : 1) f=1kHz, RL=8Ω, Vcc=26V, unless otherwise stated

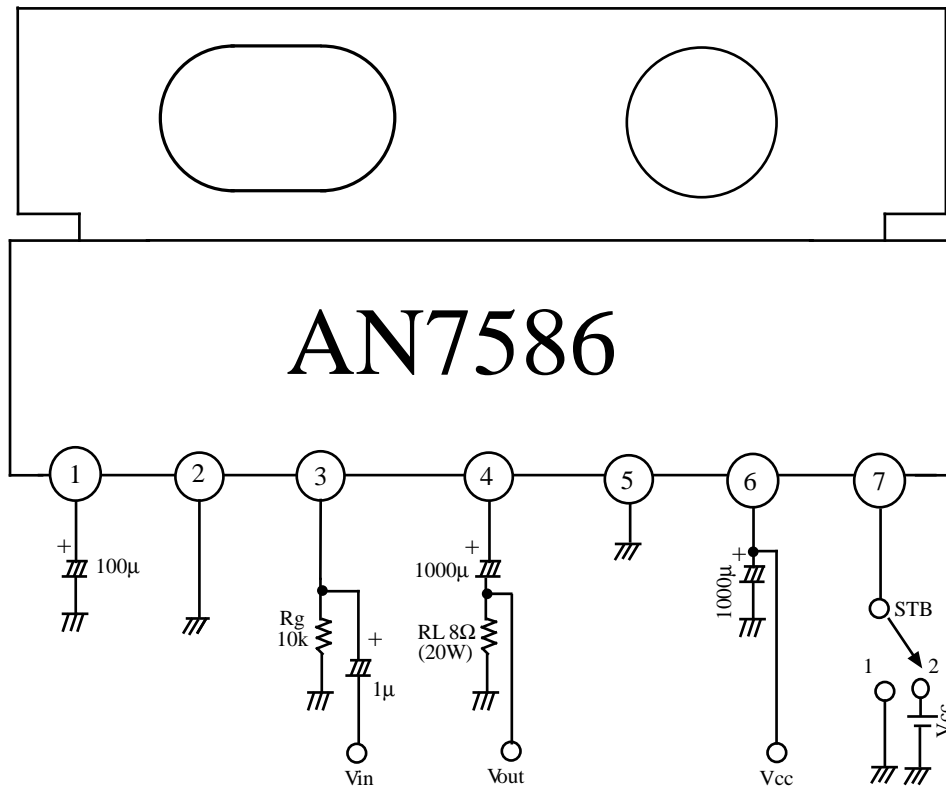
2) For this measurement, use the 20Hz~20kHz (12dB/OCT) filter.

Eff. Date	Eff. Date	Eff. Date	Eff. Date	
11-Feb-1999				

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	C - 1
Checked			Total Page	12
Approved			Page No.	4

Description of Test Circuits and Test Methods

Test Circuit :

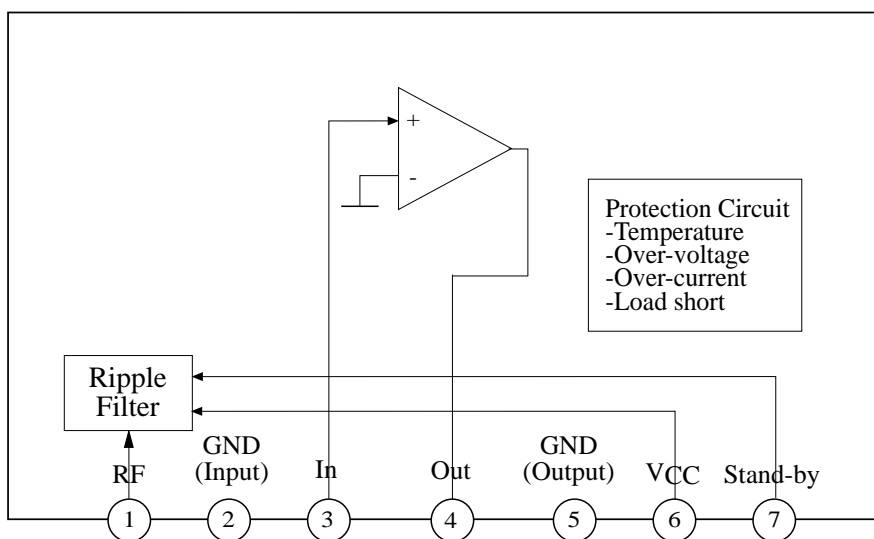


Note:  
For ' OPERATIONAL MODE ', connect STB to Vcc.

Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	D - 1
Checked			Total Page	12
Approved			Page No.	5

### Circuit Function Block Diagram



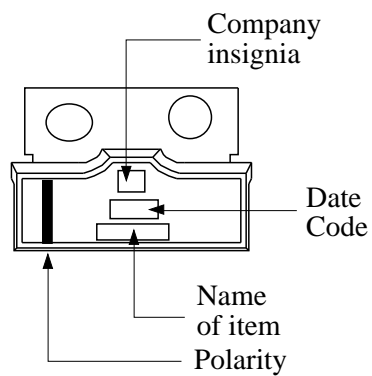
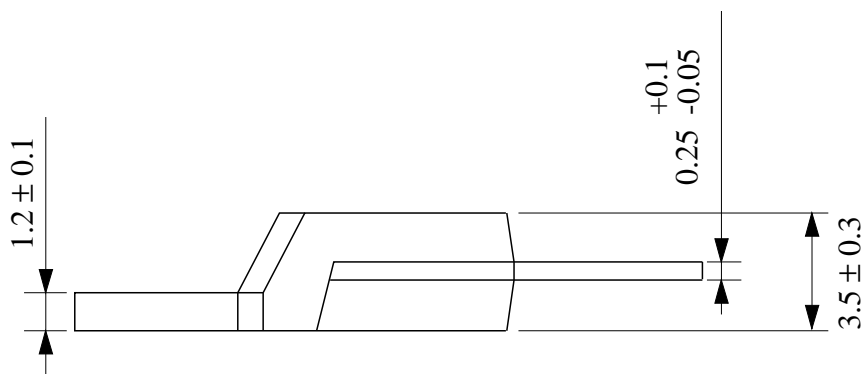
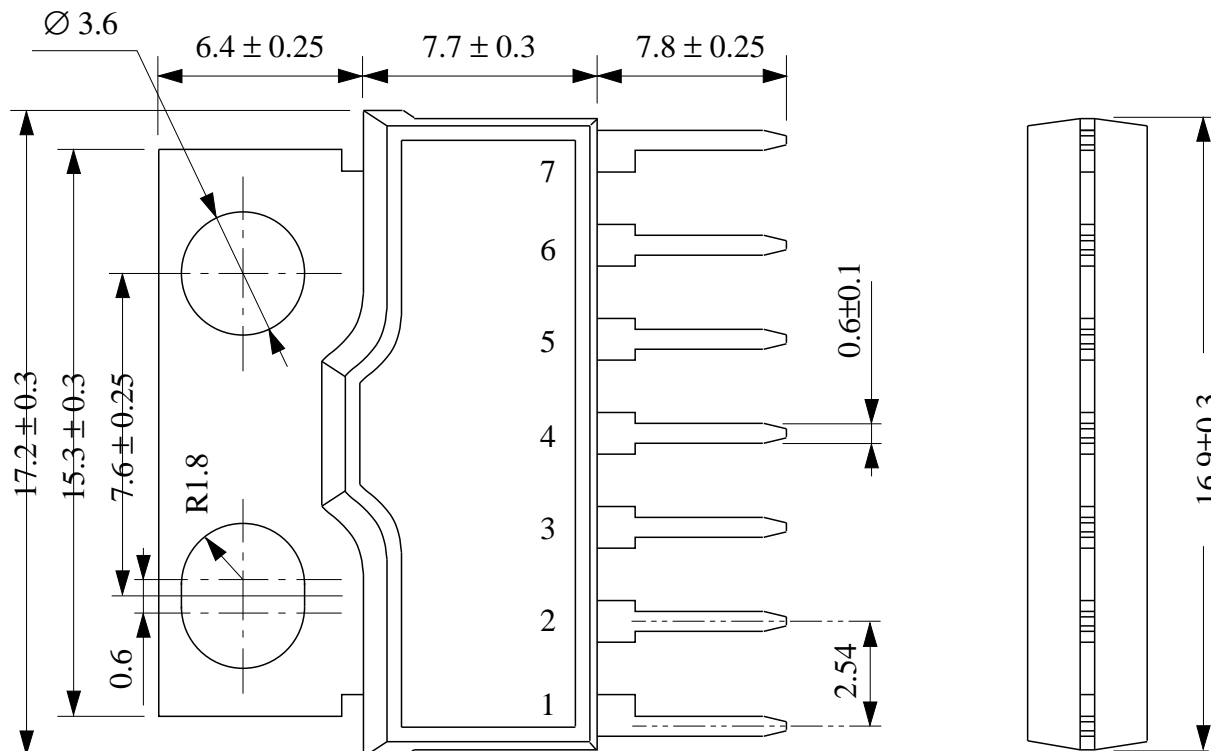
### Pin Descriptions

Pin No.	Pin Descriptions	Pin No.	Pin Descriptions
1	Ripple Filter	5	GND (output)
2	GND (input)	6	Vcc
3	Input	7	Standby
4	Output		

Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b> <b>AN7586</b>	Ref No.	E-1
Checked			Total Page	12
Approved			Page No.	6
			Package Name	FP - 7S

Unit : mm



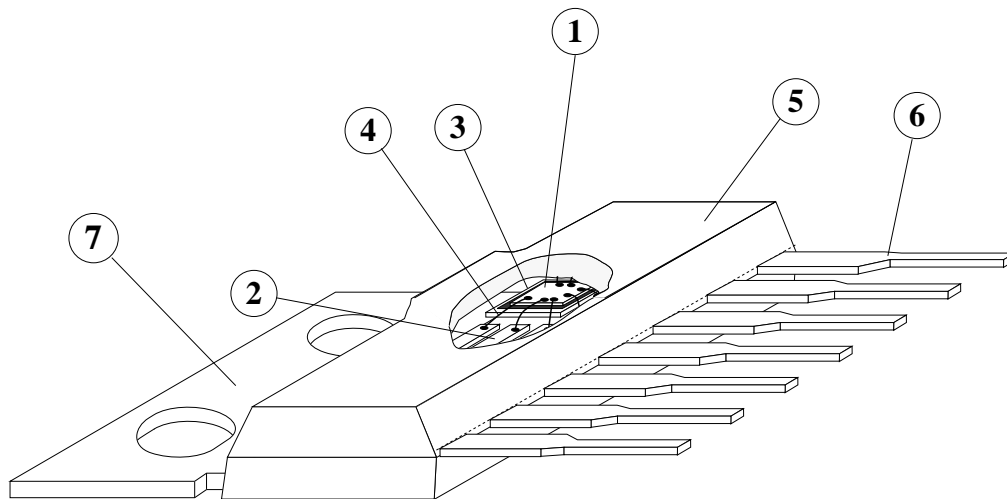
Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b> <b>AN7586</b>	Ref No.	F
Checked			Total Page	12
Approved			Page No.	7

**(Structure Description)**

Chip surface passivation	SiN,	PSG,	Others ( )	①	
Lead frame material	Fe group,	Cu group,	Others ( )	②, ⑥	
Inner lead surface process	Ag plating,	Au plating,	Others ( )	②	
Outer lead surface process	Solder plating,	Solder dip,	Others ( )	⑥	
Chip mounting method	Ag paste,	Au-Si alloy,	Solder,	Others ( )	③
Wire bonding method	Thermalsonic bonding,		Others ( )	④	
Wire material	Au,	Diameter 38 μm	Others ( )	④	
Mold material	Epoxy,		Others ( )	⑤	
Molding method	Transfer mold,	Multiplunger mold,	Others ( )	⑤	
Heat Fin Material	Fe group,	Cu group,	Others ( )	⑦	

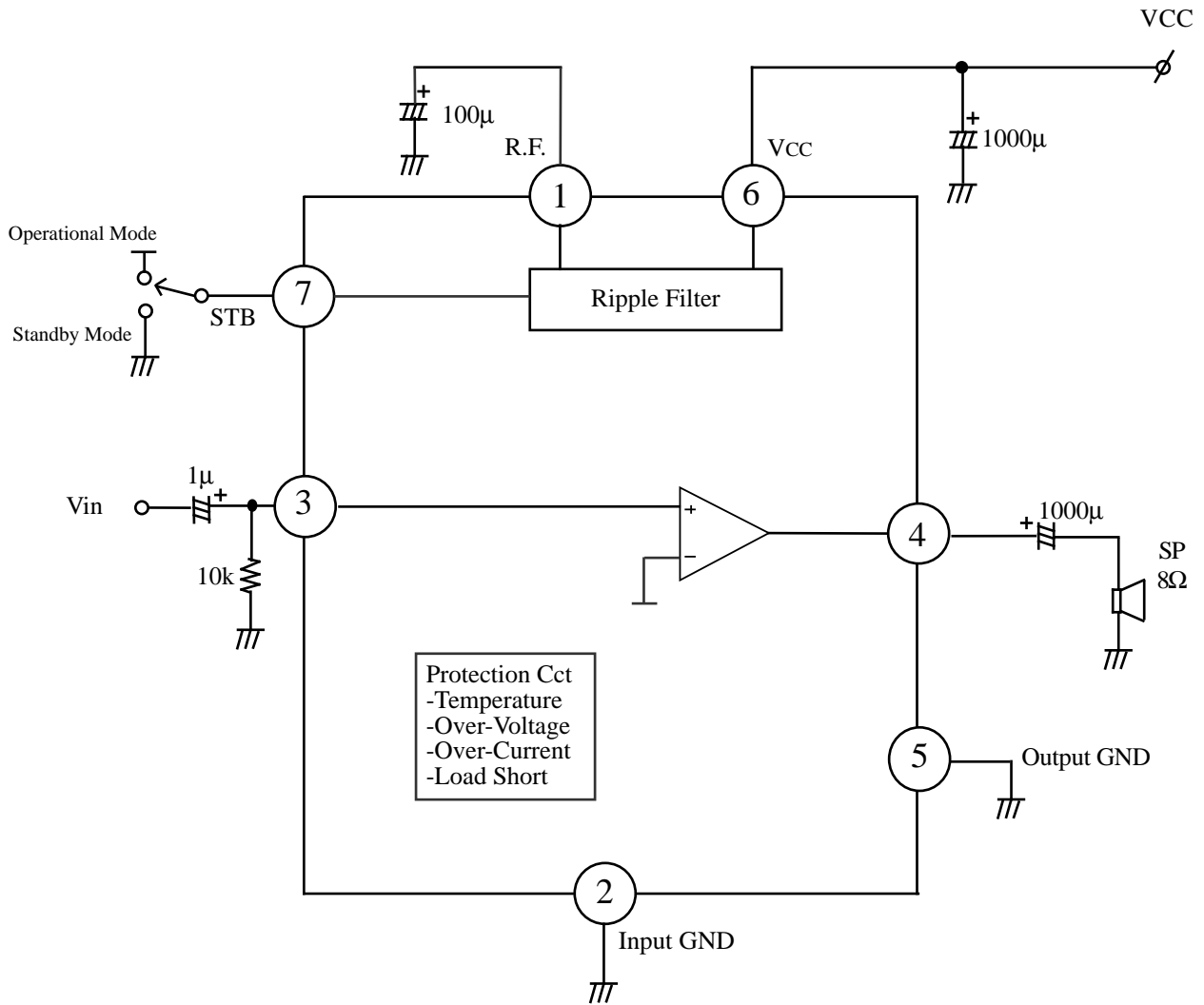
**Package FP-7S**



Eff. Date	Eff. Date	Eff. Date	Eff. Date	
11-Feb-1999				

Prepared		<b>Product Specifications</b>  <b>AN7586</b>	Ref No.	G - 1
Checked			Total Page	12
Approved			Page No.	8

Application Circuit



Operational Mode	VCC
Standby Mode	0V

Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			



Prepared		<b>Product Specifications</b> (Technical Data) <b>AN7586</b>	Ref No.	G - 2
Checked			Total Page	12
Approved			Page No.	9

Pin No.	Function	Adjacent Circuitry	Pins Description / Signal	DC Bias (V)
1	Ripple Filter		This is the pin to connect the positive terminal of a ripple filter capacitor.	Vcc-1.5V <sub>BE</sub>
2	Input GND		Input ground pin.	0V
3	Input		This is the amplifier input pin.	0V

Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b> (Technical Data) <b>AN7586</b>	Ref No.	G - 2
Checked			Total Page	12
Approved			Page No.	10

Pin No.	Function	Adjacent Circuitry	Pins Description / Signal	DC Bias (V)
4	Output		Output pin	$V_{cc}/2$
5	Output Gnd		Output ground.	0V
6	Vcc		This is the power supply pin.	Typ: 26V
7	Standby		Standby control pin. Standby Mode = 0 V Operational Mode = Vcc	

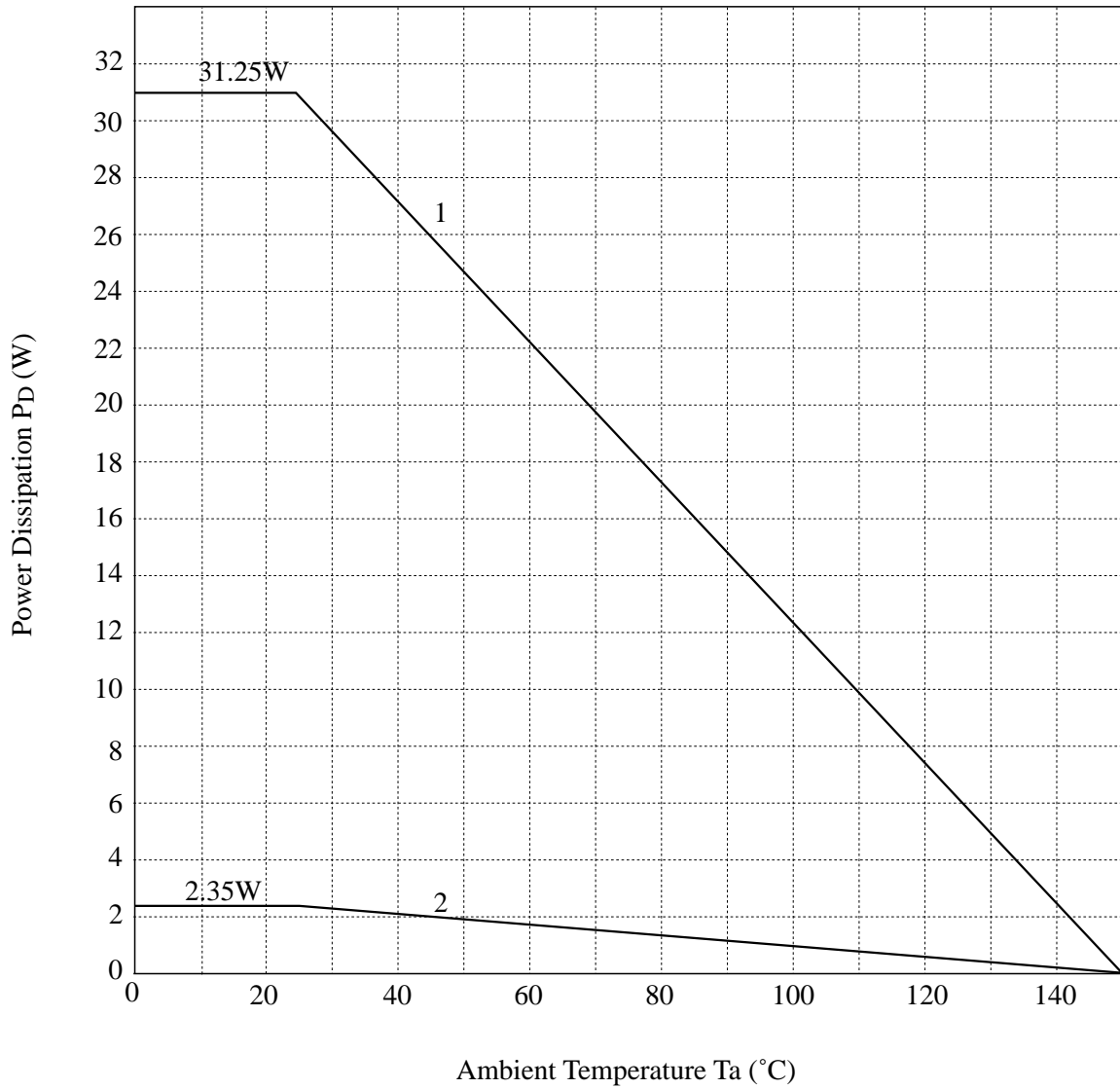
Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b>	Ref No.	G-3
Checked			Total Page	12
Approved			Page No.	11

# AN7586

## FP-7S Power Dissipation vs. Ambient Temperature

- 1 Infinity Heat Sink :  $R_{th(j-c)} = 4 \text{ } ^\circ\text{C/W}$
- 2 No Heat Sink :  $R_{th(j-a)} = 53.2 \text{ } ^\circ\text{C/W}$



Eff. Date	Eff. Date	Eff. Date	Eff. Date
11-Feb-1999			

Prepared		<b>Product Specifications</b> <b>AN7586</b>	Ref No.	H
Checked			Total Page	12
Approved			Page No.	12

### Application's Precautions

- (1) External heatsink is needed when used. External heatsink should be fixed to the chassis.
- (2) Fin of the IC can be connected to GND.
- (3) Please prevent "Output to VCC short", "Output to GND short", "Pin Shift" in direction of Pin 7 and "Reverse Insertion" to avoid damaging the IC.
- (4) The temperature protection circuit will operate at Tj around 150°C. However, if temperature decrease, the protection circuit will automatically be deactivated and resume normal operation.

Eff. Date	Eff. Date	Eff. Date	Eff. Date	
11-Feb-1999				