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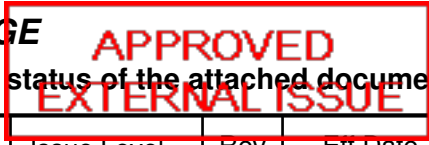
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# Panasonic

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### DOCUMENT COVER PAGE





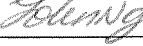
**Note:** This cover page establishes the Doc No., Title and current status of the attached document.

Doc No.	SDSC-PSE-AN7164	Issue Level	Rev	Eff Date
		1	4	27-FEB-06
Doc Title	Product Specifications for AN7164	Total no. of pages (excluding this page)		8

### Revision History

Issue	Rev	Eff Date	S/N	Page	Change Details	Remarks
1	3	16-DEC-04	1	-	Added this cover page.	
			2	6	Removed this page.	
			3	6A	Added this page for leadfree specification.	
			4	6A	Amended Outer Lead Surface Process & Chip Mounting method.	
	4	27-FEB-06	1	5	Removed physical product marking indication.	
			2	6A	Amended outer lead surface process.	

**APPROVED**  
**EXTERNAL ISSUE**

Prepared		<b>Product Specifications</b>	Ref No. A-1	
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Approved			Page No. 1	

Structure	Silicon Monolithic Bipolar IC
Appearance	FP12S Plastic Package (Power Type with Fin attached)
Application	Stereo Set • Karaoke • TV
Function	Low Frequency Power Amplifier




A Absolute Maximum Ratings					
No.	Item	Symbol	Ratings	Unit	Note
1	Storage Temperature	Tstg	-55 ~ +150	° C	1
2	Operating Ambient Temperature	Topr	-30 ~ +75	° C	1
3	Operating Ambient Pressure	Popr	1.013x10 <sup>5</sup> ±0.61x10 <sup>5</sup> (1.0±0.6)	Pa (atm)	
4	Operating Constant Acceleration	Gopr	9,810 (1000)	m/s <sup>2</sup> (G)	
5	Operating Shock	Sopr	4,900 (500)	m/s <sup>2</sup> (G)	
6	Supply Voltage	Vcc	30	V	2
7	Supply Current	Icc	5.0	A	
8	Power Dissipation	P <sub>D</sub>	62.5	W	θ <sub>j-c</sub> = 2.0 (°C/W)

Operating Supply Voltage Range	Vcc	8.3V ~ 24V
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Note 1) The temperature of all items shall be Ta=25°C except storage temperature and operating ambient temperature.

2) No signal.

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# Product Specifications

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B Electrical Characteristics		(Unless otherwise specified, the ambient temperature is 25°C ± 2°C, Vcc=21V, RL=8Ω, freq=1kHz, BTL operation.)							
No	Item	Symbol	Test Circuit	Conditions	Limits			Unit	Note
					min	typ	max		
1	Quiescent Circuit Current	ICQ	1	Vin=0	-	55	100	mA	
2	Output Noise Voltage	Vno	1	Rg=10kΩ	-	0.85	1.3	mV	3
3	Output Offset Voltage	Voffset	1	Vin=0	-	0	300	mV	
4	Total Harmonic Distortion	THD	1	PO=1W	-	0.07	0.3	%	
5	Voltage Gain	Gv	1	PO=1W	49.5	51.5	53.5	dB	
6	Maximum Power Output	PO	1	THD=10%	24	30	-	W	
7	Ripple Rejection Ratio	R.R	1	Rg=0 Supply ripple	45	51	-	dB	3,4
8	Standby Current	ISTB	1	Pin 6 OPEN	-	-	3	μA	

Note 3) Measure with DIN/Audio filter.  
 4) Ripple frequency = 120Hz, 1Vrms.

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# Product Specifications

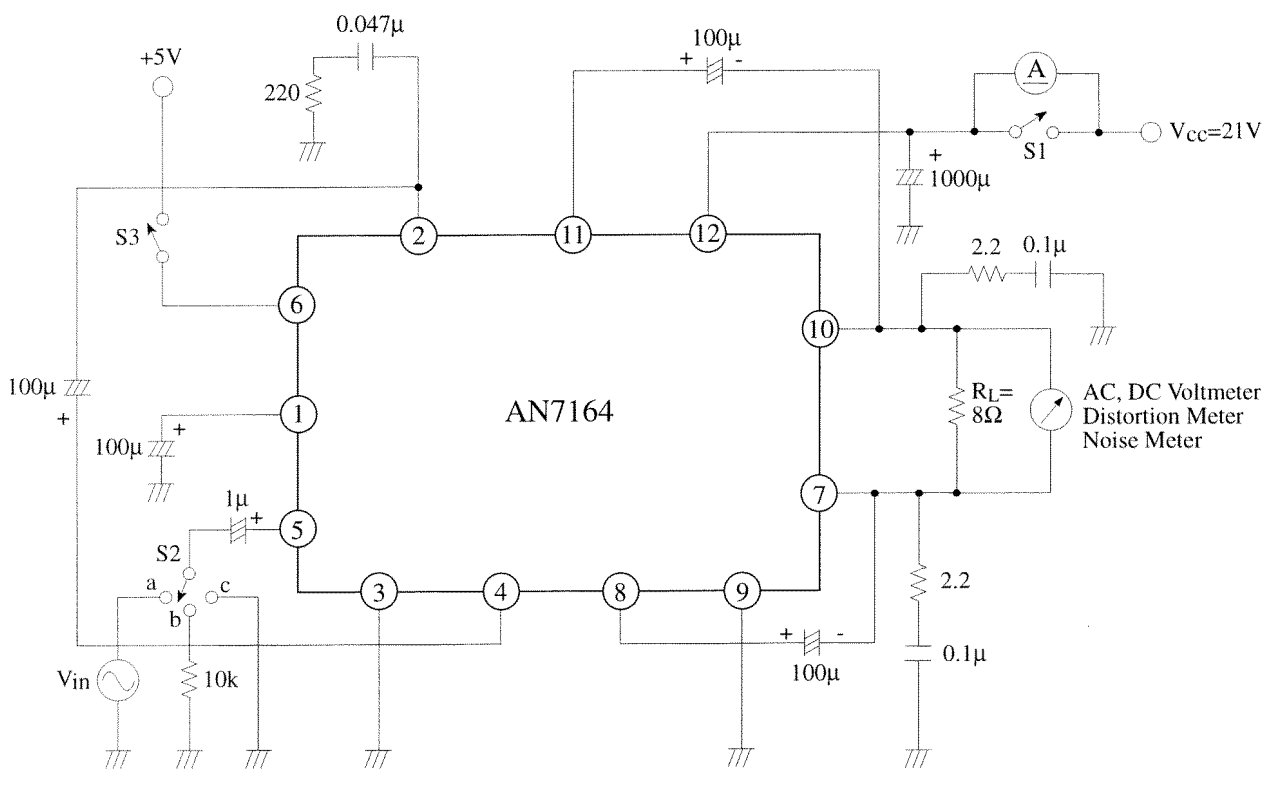
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(Description of test circuit and test method)

### Test Circuit 1



No.		S1	S2	S3
1	I <sub>cQ</sub>	OFF	c	ON
2	V <sub>no</sub>	ON	b	ON
3	V <sub>offset</sub>	ON	c	ON
4	THD	ON	a	ON
5	G <sub>v</sub>	ON	a	ON
6	P <sub>o</sub>	ON	a	ON
7	R.R	ON	c	ON
8	I <sub>STB</sub>	OFF	c	OFF

Note) Pin 6 is a stand-by pin.

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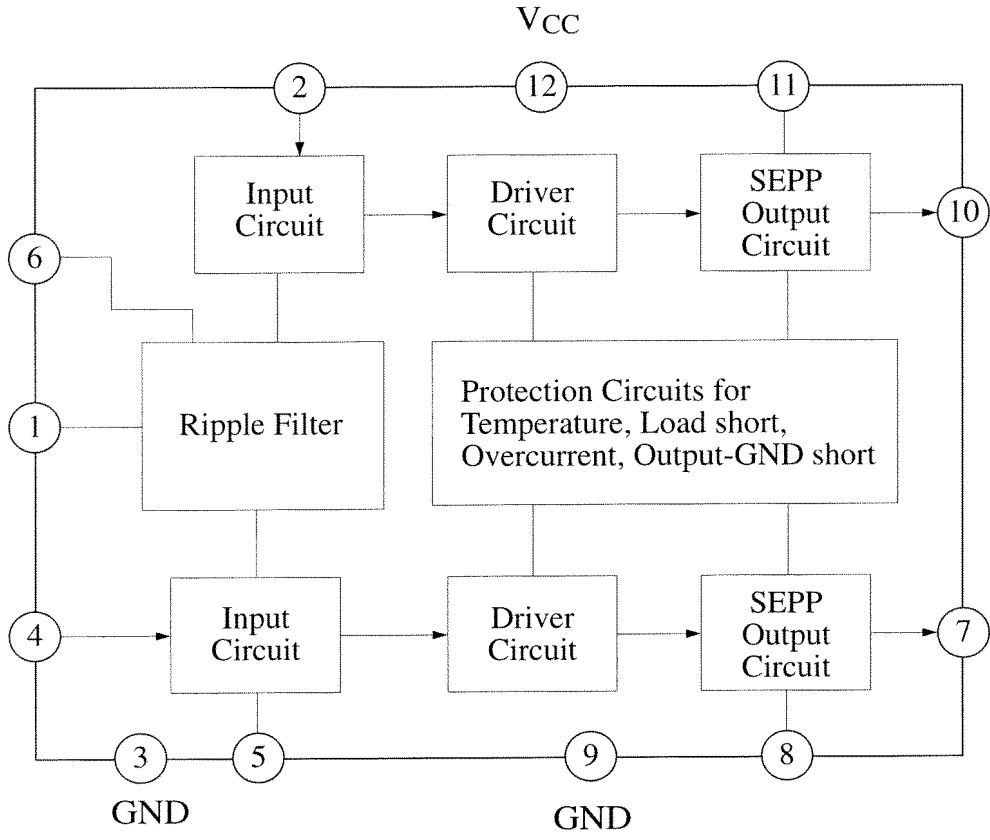
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# Product Specifications

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### Circuit Function Block Diagram



### Pin Descriptions

Pin No.	Description	Pin No.	Description
1	Ripple Filter	7	Output (Ch1)
2	Negative Feedback (Ch2)	8	Bootstrap (Ch1)
3	GND (Input )	9	GND (Output)
4	Negative Feedback (Ch1)	10	Output (Ch2)
5	Input	11	Bootstrap (Ch2)
6	Standby / Mute	12	Vcc

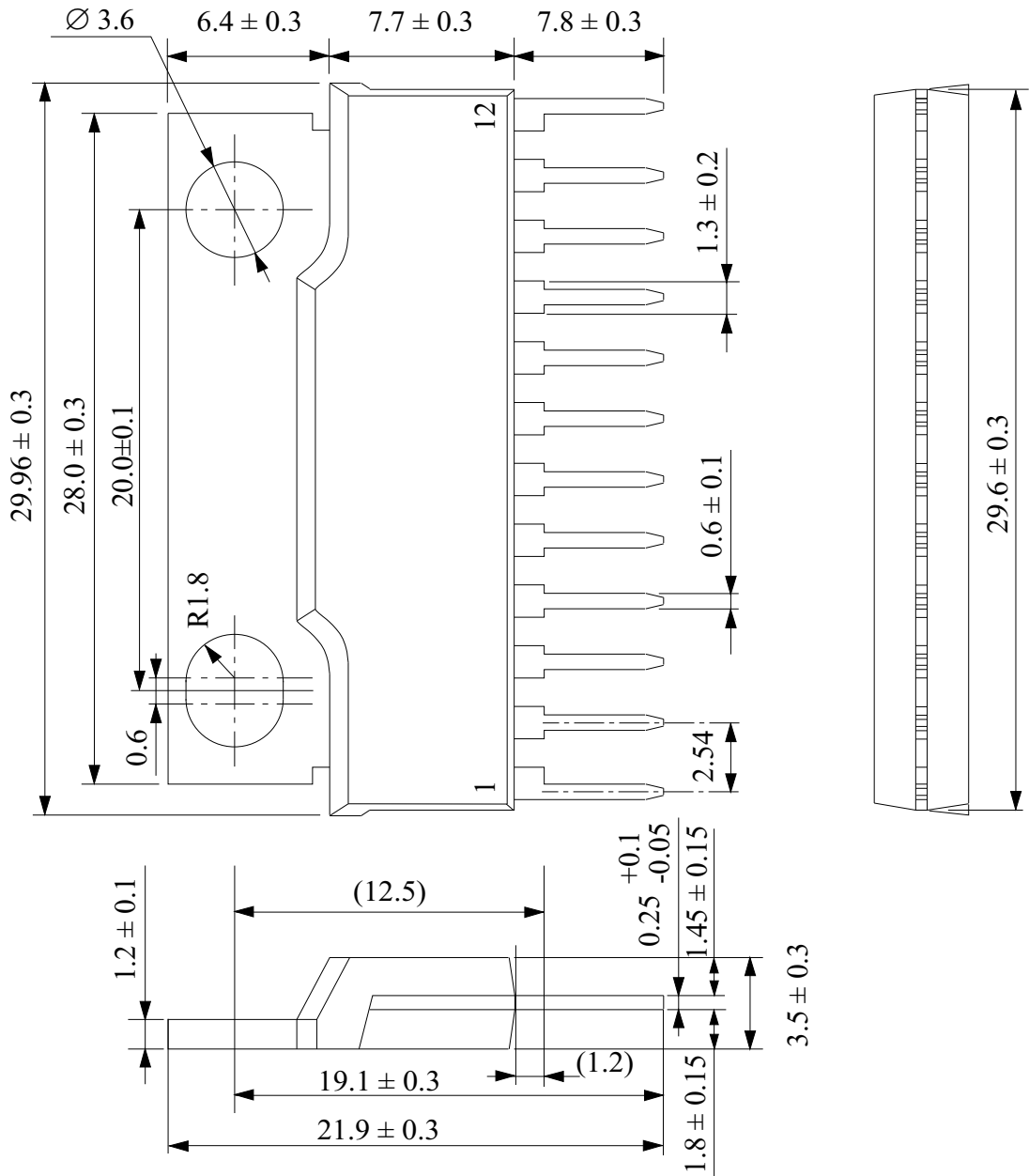
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Prepared	Yiap Shi Hui	<h1 style="margin: 0;">Product Specifications</h1> <h2 style="margin: 0;">AN7164</h2>	Ref No.	E
Checked	John Ng		Total Page	8
Approved	T. Sugimura		Page No.	5

Package Name	FP12S
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Unit : mm



( ) : Reference value

\*4

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Prepared	Yiap Shi Hui
Checked	John Ng
Approved	T. Sugimura

# Product Specifications

(Leadfree)

## AN7164

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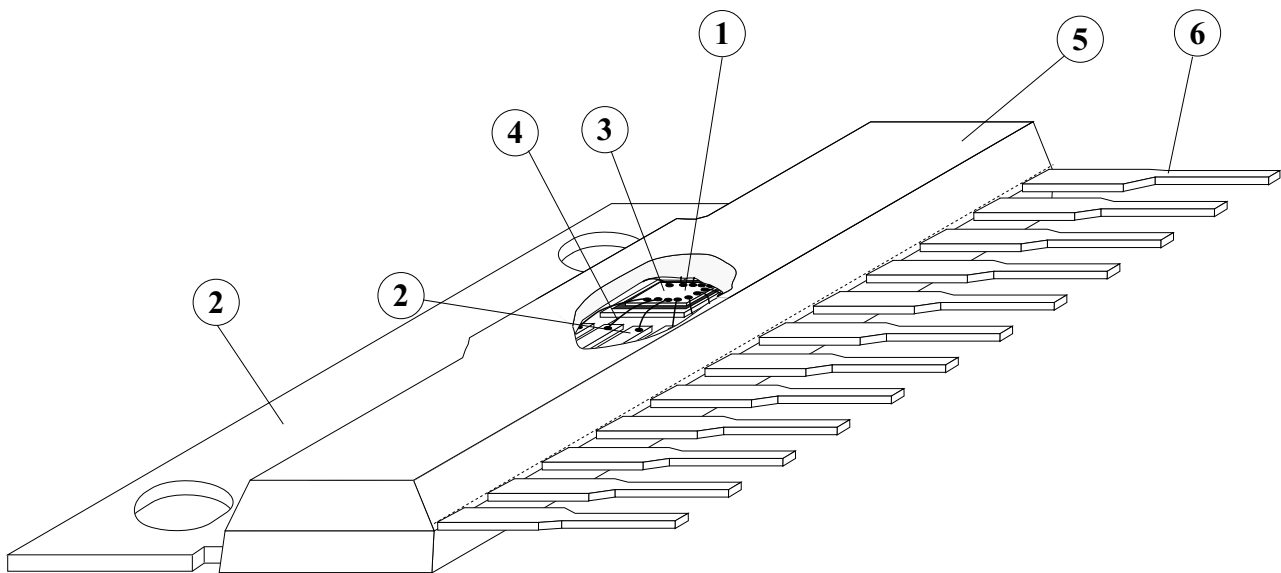
**(Structure Description)**

\*4

Chip surface passivation	SiN, <span style="border: 1px solid black; border-radius: 5px; padding: 2px;">PSG</span> , Others ( )	①
Lead frame material	Fe group, <span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Cu group</span> , Others ( )	②, ⑥
Inner lead surface process	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Ag plating</span> , Au plating, Others ( )	②
Outer lead surface process	General Customer: Solder Plating (98Sn-2Bi) SC Buyback: Solder Dip (95.5Sn-2Ag-2Bi-0.5Cu)	⑥
Chip mounting method	Ag paste, Au-Si alloy, <span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Solder (95.5Pb-2.5Ag-2Sn)**</span> ,	③
Wire bonding method	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Thermalsonic bonding</span> , Others ( )	④
Wire material	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Au</span> , Diameter 38 μm, Others ( )	④
Mold material	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Epoxy</span> , Others ( )	⑤
Molding method	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Transfer mold</span> , Multiplunger mold, Others ( )	⑤
Fin material	<span style="border: 1px solid black; border-radius: 5px; padding: 2px;">Cu group</span> , Others ( )	⑦

\*\* Under RoHS exemption clause, Lead (Pb) in high melting temperature type solder (ie. tin-lead solder alloy containing more than 85% of lead), is exempted until 2010.

**Package FP12S**



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## Product Specifications

(Technical Data)

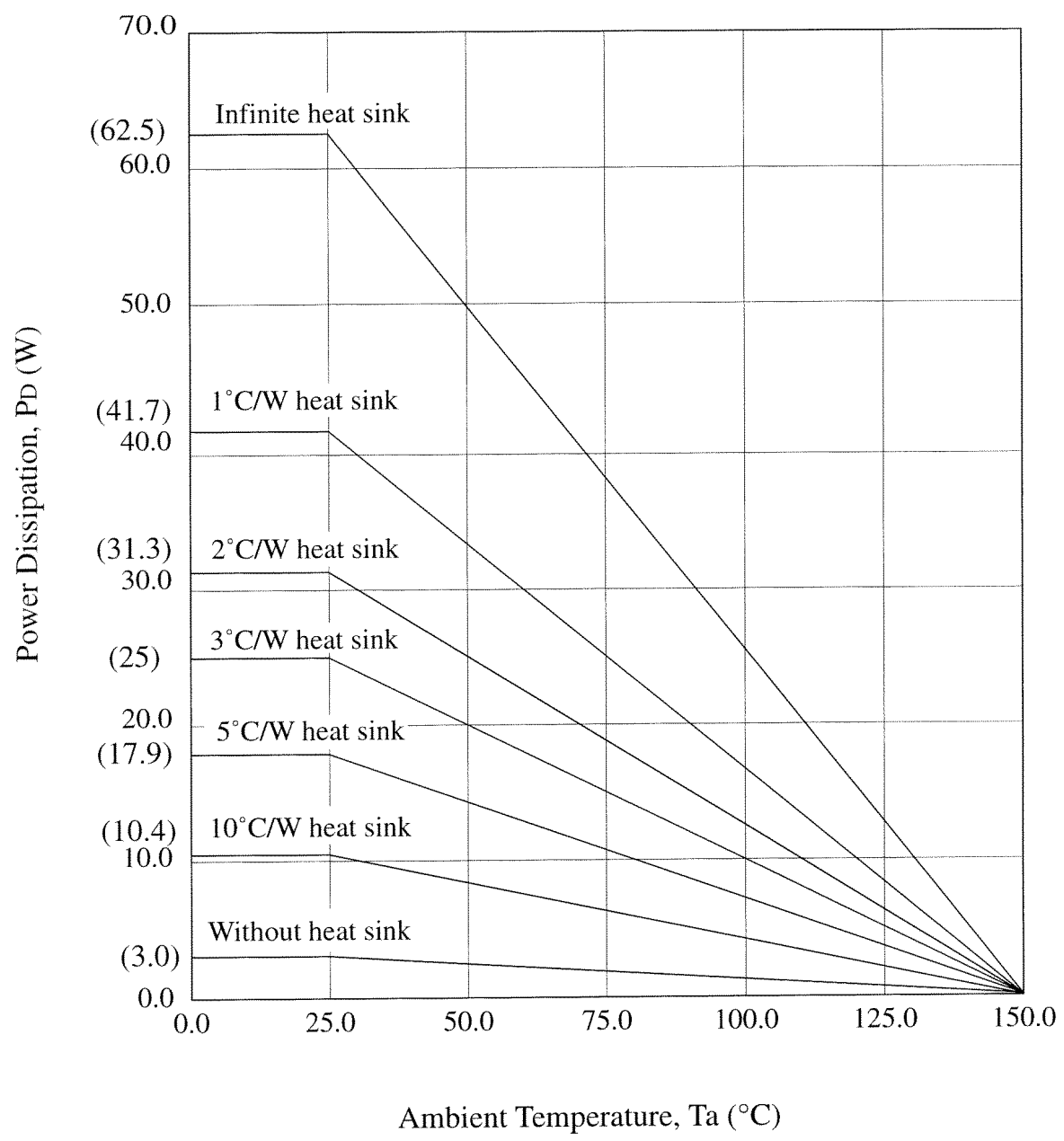
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### FP-12S Package Power Dissipation

**Pd - Ta**

$$\left( \begin{array}{l} R_{th(j-c)} = 2^{\circ}C/W \\ R_{th(j-a)} = 42^{\circ}C/W \end{array} \right)$$



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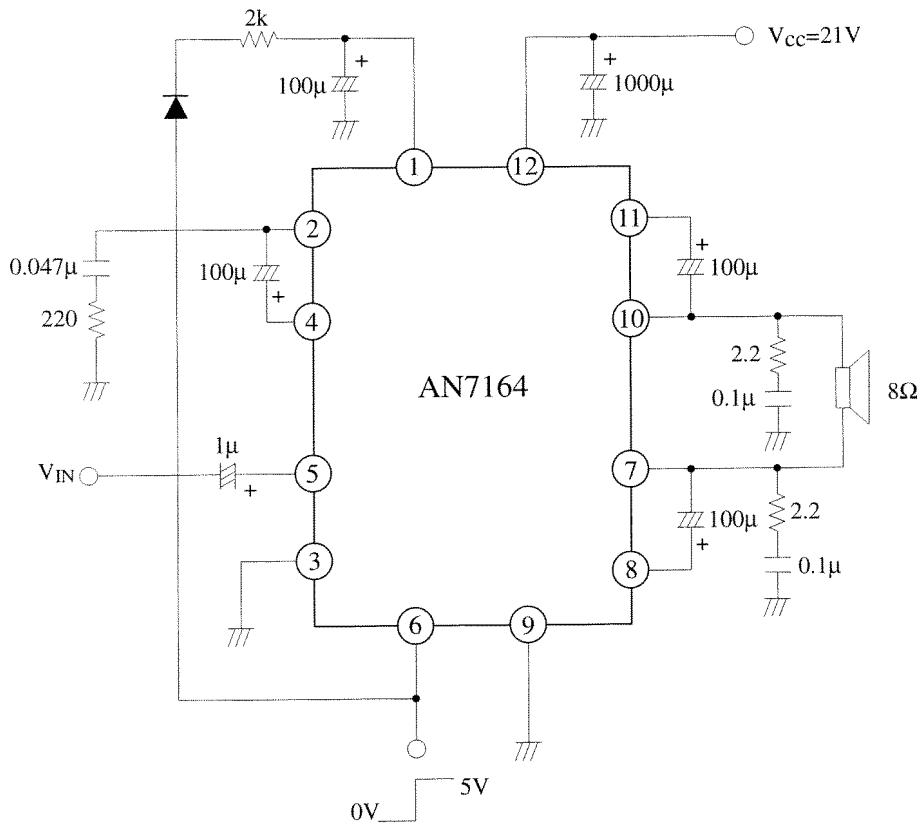
# Product Specifications

## AN7164

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### (Precaution)

When standby is OFF (apply 5V at pin 6) at high temperature, the output disappears because ripple filter fast discharge circuit misoperates. It is necessary to force about 1mA of current into pin 1 when standby is OFF.  
Below is one of the example for the application circuit.



Note) Please take note if the external circuit used is by following the test circuit, the standby function may misoperate and IC cannot function.

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