# Panasonic

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### DOCUMENT COVER PAGE APPROVED

### 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
DUC NO.	3D3C-F3E-AN7104	1	4	27-FEB-06
Doc Title	Product Specifications for AN7164	Total no. of pag (excluding this	8	

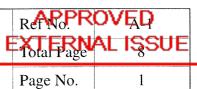
#### **Revision History**

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.	
•		•				

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Checked	162
Approved	Henria

## **Product Specifications**

AN7164



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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	А			
8	Power Dissipation	PD	62.5	W	$\theta j-c = 2.0$ (°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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В	Electrical Characteristics (Unless otherwise specified, the ambient temperature is $25^{\circ}$ C $\pm 2^{\circ}$ C, Vcc=21V, RL=8 $\Omega$ , freq=1kHz, BTL operation.)								
No	Item	Symbol	Test Cir-		L	Limits	r	Unit	Note
			cuit		min	typ	max		
1	Quiescent Circuit Current	I <sub>CQ</sub>	1	Vin=0	_	55	100	mA	
2	Output Noise Voltage	V <sub>no</sub>	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	P <sub>O</sub> =1W	-	0.07	0.3	%	
5	Voltage Gain	Gv	1	P <sub>O</sub> =1W	49.5	51.5	53.5	dB	
6	Maximum Power Output	P <sub>O</sub>	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	I <sub>STB</sub>	1	Pin 6 OPEN		-	3	μA	

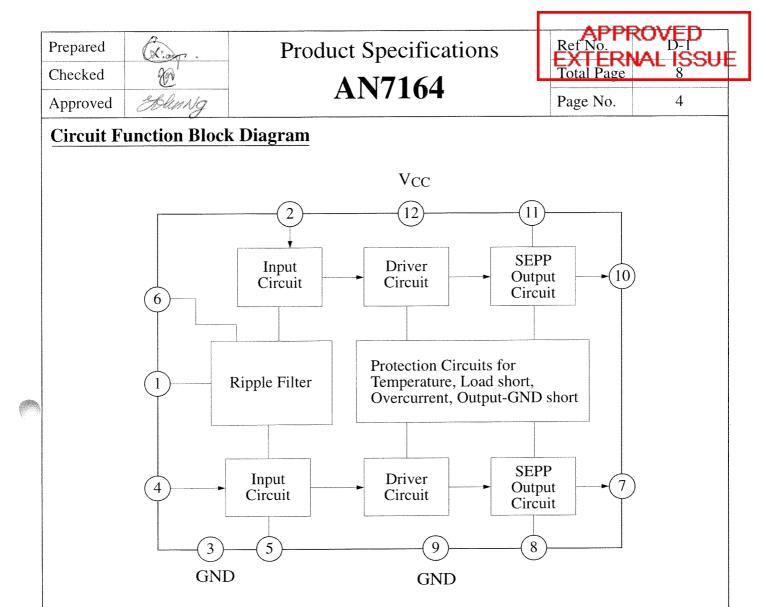
Note 3) Measure with DIN/Audio filter.

4) Ripple frequency = 120Hz, 1Vrms.

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(Description	n of test circuit	and test n	nethod)		
Test Cir	cuit 1				
Vin	$\begin{array}{c} S3 \\ S3 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$		)( AN7 (4)	10 164 777	$R_{L} = 0.1 \mu$ $R_{L} = 0.1 \mu$ $R_{L} = 0.1 \mu$
1	No.	S1	S2 S3		
	1 Icq	OFF	c ON		
	2 Vno	ON	b ON		
	3 Voffset	ON	c ON		
	4 THD	ON	a ON		
	5 Gv	ON	a ON		
	6 Po	ON	a ON		
	7 R.R	ON	c ON		
	8 Istb	OFF	c OFF		
N	fote) Pin 6 is a	stand-by	pin.		
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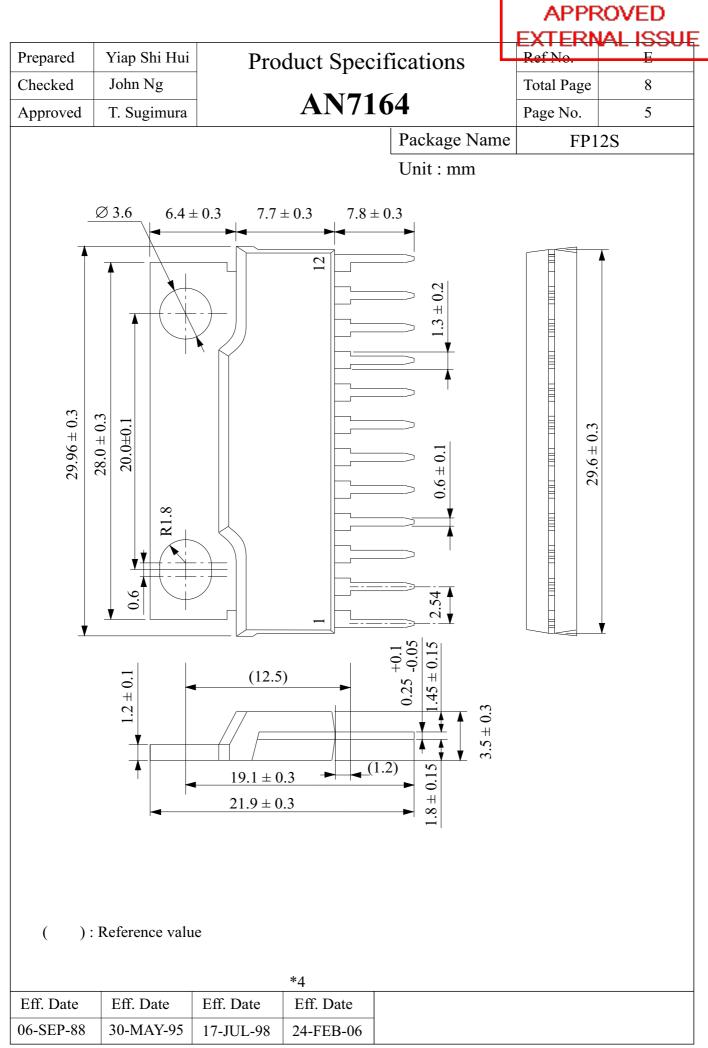


#### **Pin Descriptions**

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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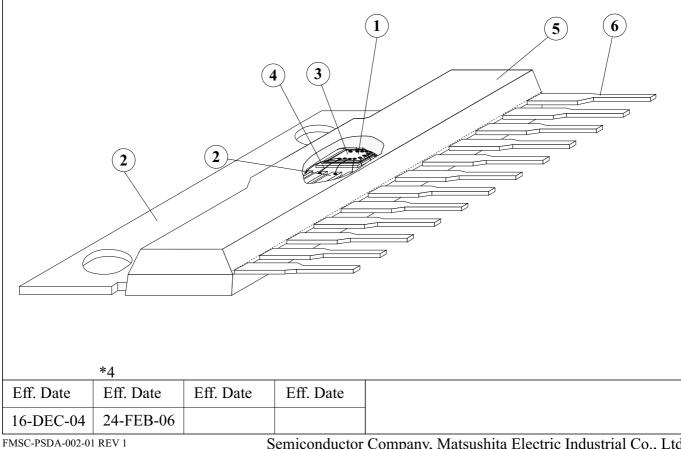


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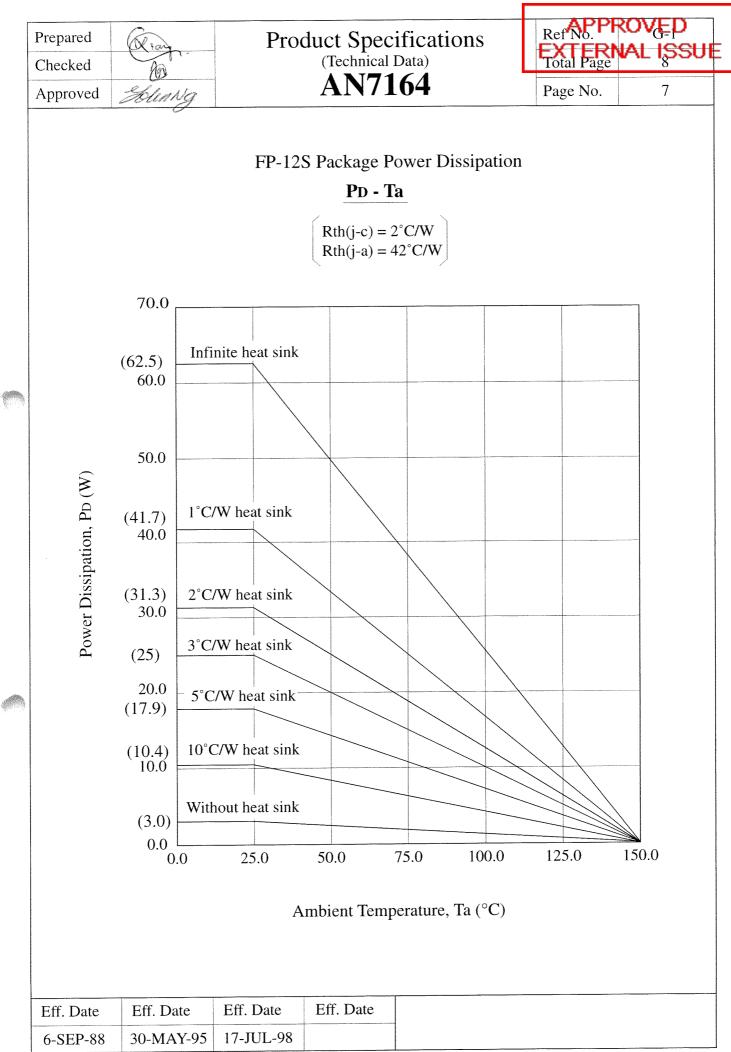
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	(Structu	re Description	)						
	Chip surfa	ace passivation	SiN,	PSG,	Otł	ners (	)	1	
	Lead frame material		Fe group,	Cu group,	Oth	ners (	)	2,6	
	Inner lead surface process		Ag plating,	Au plating,	Oth	ners (	)	2	
∗4	Outer lead	l surface process	General Customer:Solder Plating (98Sn-2Bi)SC Buyback:Solder Dip (95.5Sn-2Ag-2Bi-0.5Cu)						
	Chip mou	nting method	Ag paste,	Au-Si alloy, Solder (	95.5Pb-	-2.5Ag-2S1	n)**,	3	
	Wire bonding method		Thermalsonic	bonding,	Oth	ners (	)	4	
	Wire mate	erial	Au,	Diameter <u>38 µ</u> m	Otł	ners (	)	4	
	Mold mat	erial	Epoxy,		Oth	ners (	)	5	
	Molding method		Transfer mold	I, Multiplunger mold,	Oth	ners (	)	5	
	Fin mater	ial	Cu group,		Oth	ners (	)	7	

### Package FP12S

\*\* 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.



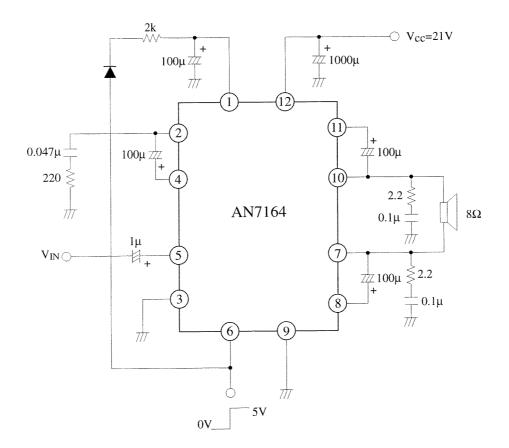
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#### (Precaution)

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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