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**EXTERNAL ISSUE**

Prepared	<i>[Signature]</i>	<b>Product Specifications</b> <b>AN7135</b>	Ref No.	A1
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Structure	Silicon Monolithic Bipolar IC
Appearance	FP12S Pin Plastic Package (with Fin)
Application	Low Frequency Power Amplifier
Function	7.5W(3Ω) x 2 Channel Power amplifier With Standby Function

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>	Pa	
4	Operating Constant Acceleration	Gopr	9,810	m/s <sup>2</sup>	
5	Operating Shock	Sopr	4,900	m/s <sup>2</sup>	
6	Supply Voltage	VCC	24	V	
7	Supply Current	ICC	4.0	A	
8	Power Dissipation	PD	62.5	W	2

Operating Supply Voltage Range	VCC	5V ~ 18V	Note 3
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Note 1: The temperature of all item shall be Ta=25°C except storage temperature and operating ambient temperature.

Note 2: R<sub>θj-c</sub> = 2.0°C/W

Note 3: 24V during no signal.

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B Electrical Characteristics (Unless otherwise specified, the ambient temperature is 25°C ± 2°C)									
No.	Item	Symbol	Test Circuit	Conditions	Limits			Unit	Note
					min	typ	max		
1	Quiescent Circuit Current	I <sub>cq</sub>	1	V <sub>IN</sub> =0mV	-	14	20	mA	
2	Output Noise Voltage	V <sub>NO</sub>	1	V <sub>IN</sub> =0mV, R <sub>g</sub> =10kΩ	-	0.25	0.50	mV	1
3	Voltage Gain	G <sub>v</sub>	1	V <sub>IN</sub> =3mV	42.5	44.5	46.5	dB	
4	Total Harmonic Distortion	THD	1	V <sub>IN</sub> =3mV	-	0.40	0.75	%	
5	Maximum Power Output	P <sub>o</sub>	1	THD=10%	7.0	7.5	-	W	
6	Channel Balance	CB	1	V <sub>IN</sub> =3mV	-1	0	+1	dB	
7	Ripple Rejection	RR	1	V <sub>cc</sub> (ripple) = 280mV f(ripple) = 120Hz R <sub>g</sub> = 0Ω Sine wave	45	50	-	dB	1
8	Input Offset Voltage	V <sub>IN(O.S)</sub>	1	Input pin open	-	10	30	mV	
9	Standy-by current	I <sub>STB</sub>	1	Pin 3 open	-	-	30	μA	

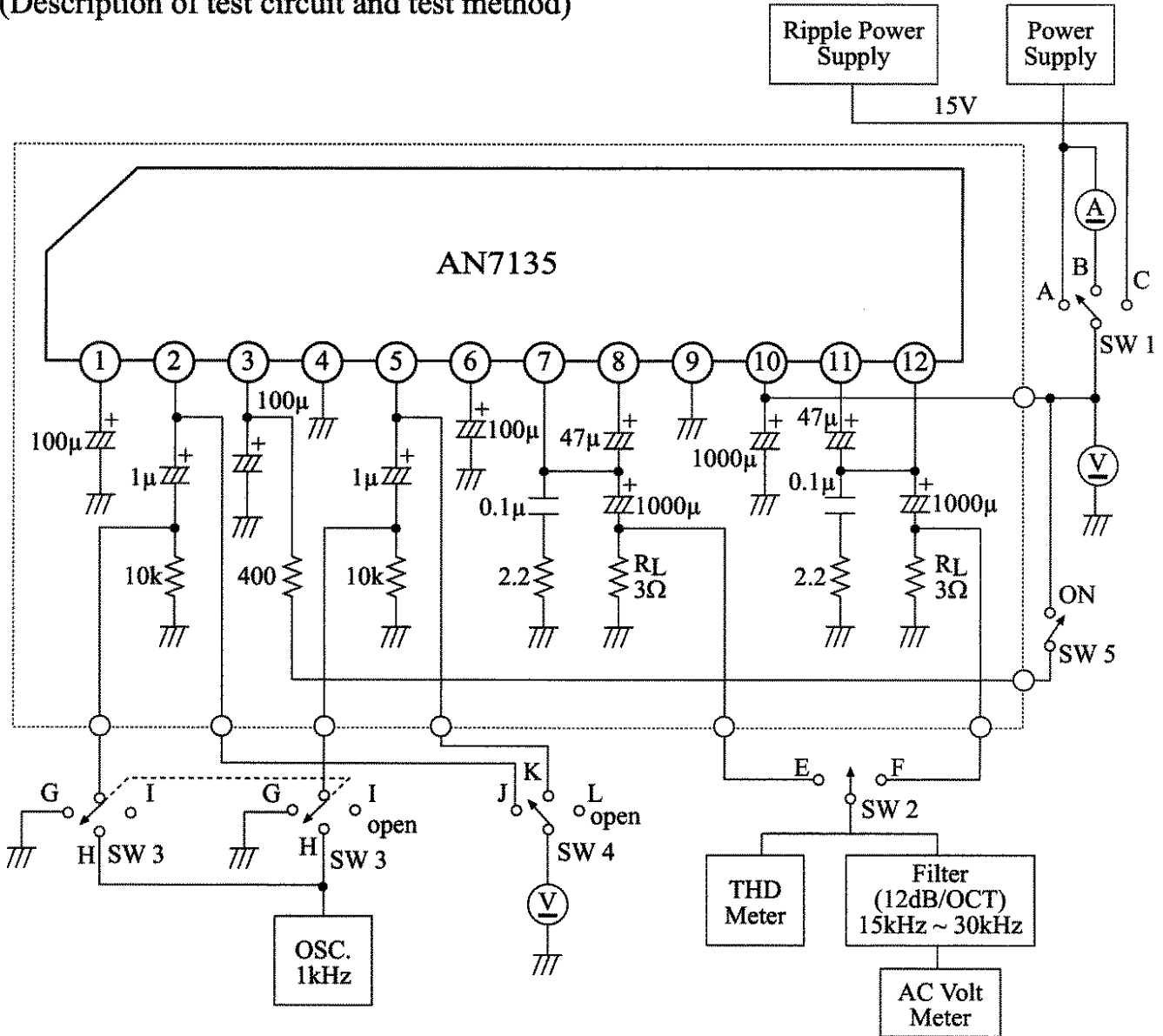
< V<sub>cc</sub> = 15.0V, R<sub>L</sub> = 3Ω, Freq = 1kHz, Driving 2 channel >

Note 1) Use filter 15Hz ~ 30kHz (12dB/OCT) when measurement.

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(Description of test circuit and test method)

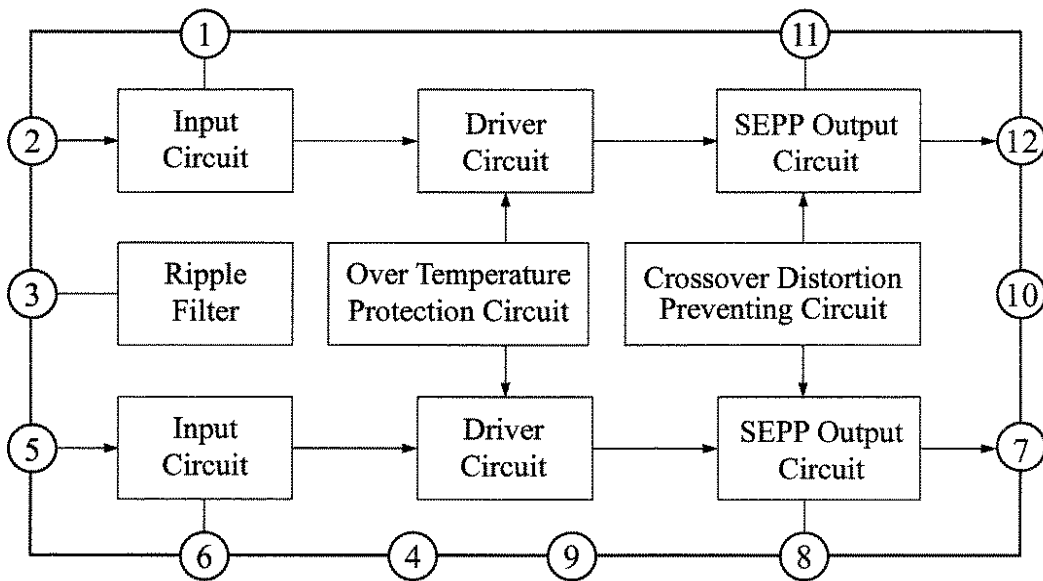


ITEM	SW 1	SW 2	SW 3	SW 4	SW 5
B1	B	-	G	L	ON
B2	A	E or F	I	L	ON
B3	A	E or F	H	L	ON
B4	A	E or F	H	L	ON
B5	A	E or F	H	L	ON
B6	A	E or F	H	L	ON
B7	C	E or F	G	L	ON
B8	A	-	I	J or K	ON
B9	A	-	I	-	OFF

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Circuit Function Block Diagram



Pin Descriptions

Pin No.	Description	Pin No.	Description
1	Channel 1 negative feedback	7	Channel 2 output
2	Channel 1 input	8	Channel 2 bootstrap
3	Repple filter / Stand-by	9	GND (Output side)
4	GND (Input side)	10	Power supply
5	Channel 2 input	11	Channel 1 bootstrap
6	Channel 2 negative feedback	12	Channel 1 output

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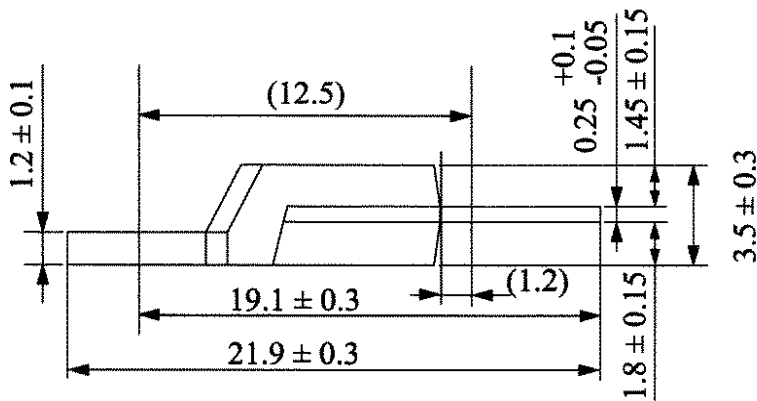
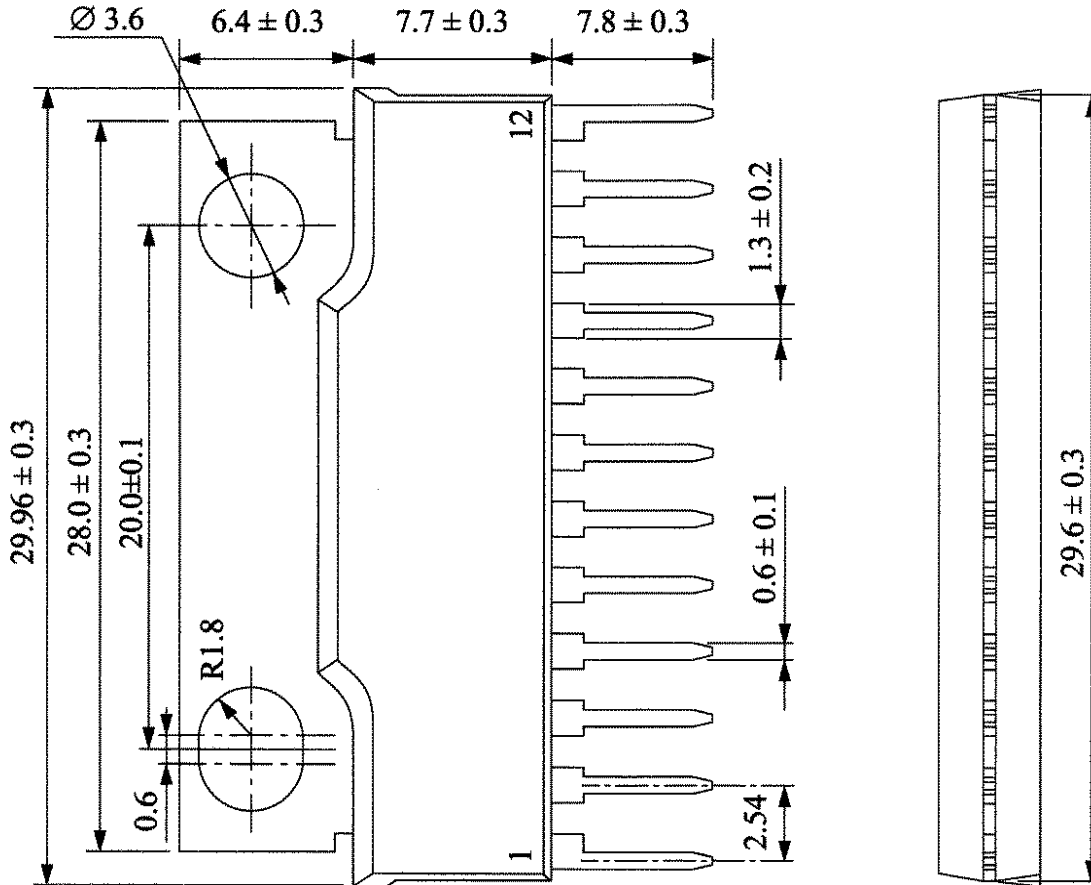
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# Product Specifications

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Package Name	FP 12S
Unit : mm	



( ) : Reference value

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Prepared	Yiap Shi Hui	<b>Product Specifications</b> (Leadfree) <b>AN7135</b>	Ref. No. <b>APPROVED</b>	Rev. No. <b>D</b>
Checked	John Ng		Total Page 7	<b>EXTERNAL ISSUE</b>
Approved	T. Sugimura		Page No.	6A

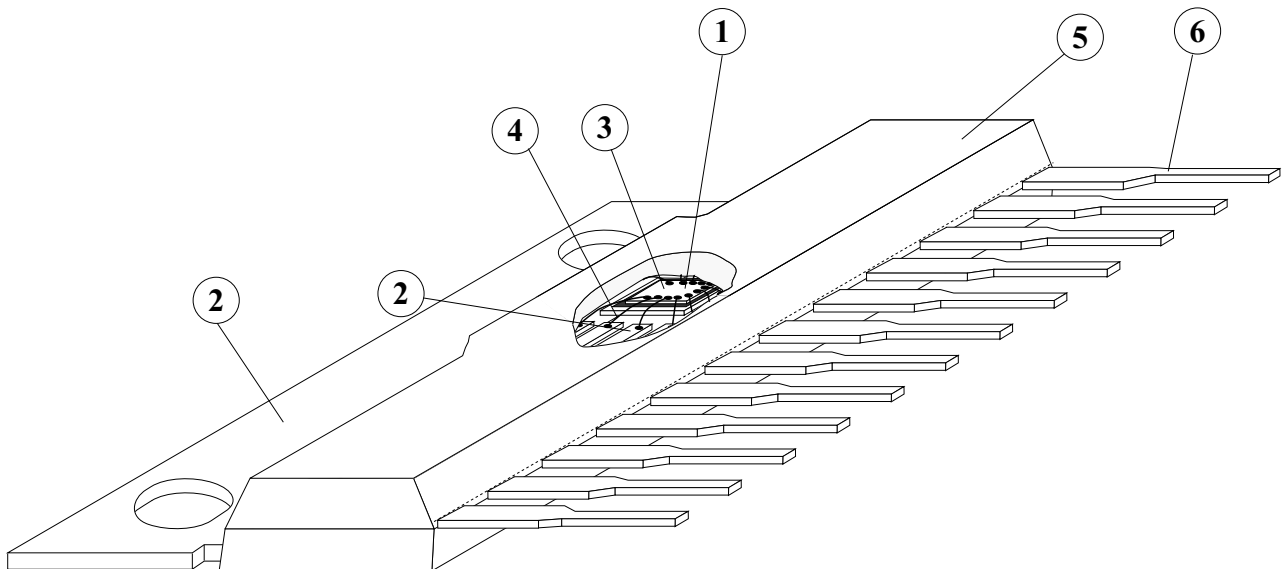
**(Structure Description)**

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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> , Others ( )	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> , 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**



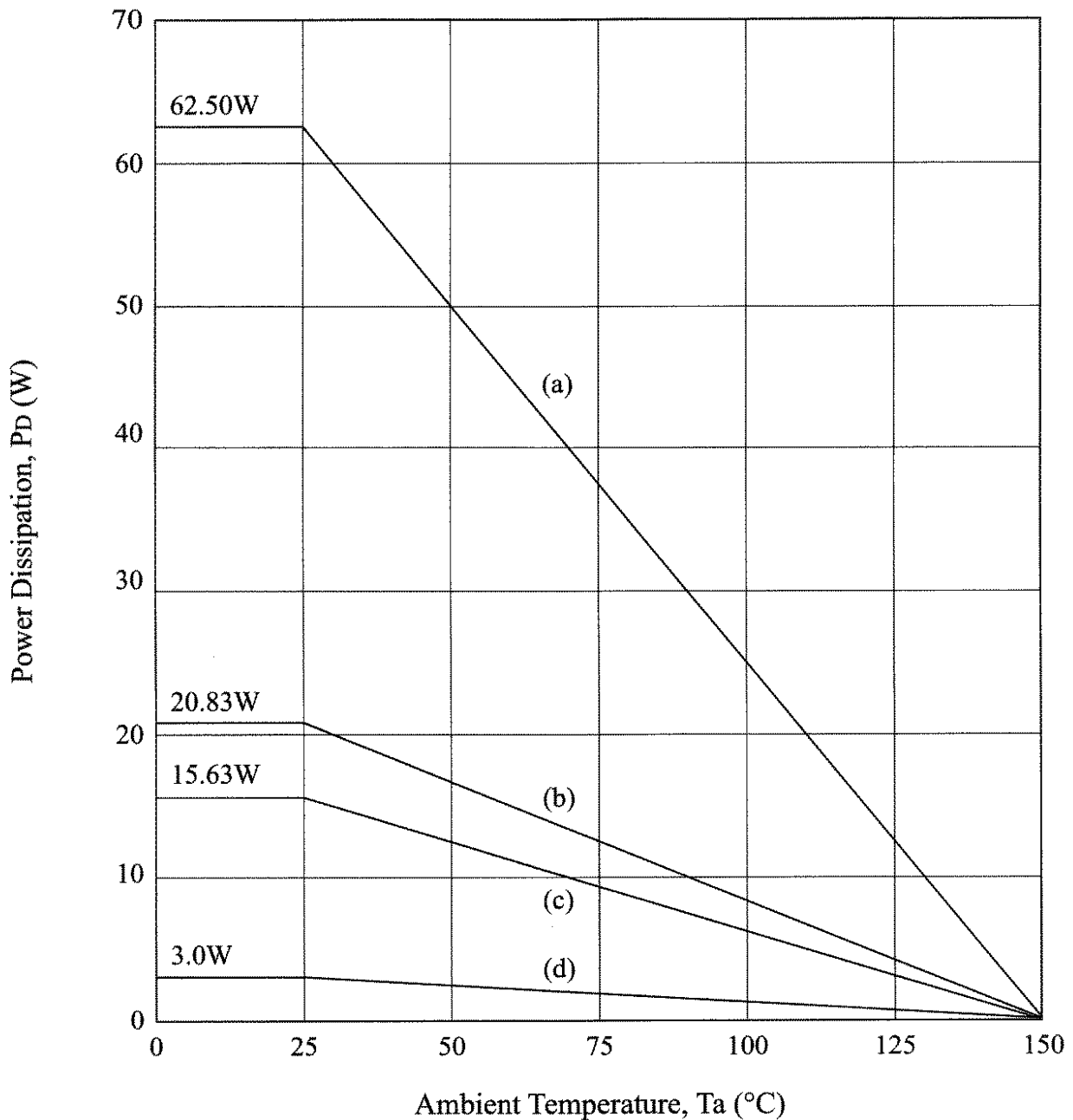
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15-DEC-04	23-FEB-06		

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- (a) 62.50W Unlimited heatsink ( $\theta_{j-c} = 2^{\circ}\text{C/W}$ )
- (b) 20.83W ( $\theta_f = 4.0^{\circ}\text{C/W}$ )  
Heat sink of 100cm<sup>2</sup> x 3mm Al (black lacquer) or  
200cm<sup>2</sup> x 2mm Al (without lacquer)
- (c) 15.63W ( $\theta_f = 6.0^{\circ}\text{C/W}$ )  
Heat sink of 100cm<sup>2</sup> x 2mm Al (without lacquer)
- (d) 3.0W at  $T_a = 30^{\circ}\text{C}$  ( $\theta_{j-a} = 40^{\circ}\text{C/W}$ ) No Heat sink

### Power Dissipation $P_D$ - $T_a$



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