UNDER DEVELOPMENT

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

T A 2 1 2 2 A F N

RF AMPLIFIER FOR DIGITAL SERVO CD SYSTEM

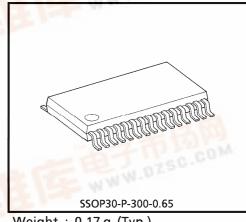
TA2122AFN is a 3-beam type PUH and 1-beam type PUH compatible RF Amplifier for Digital Servo to be used in the CD system.

In combination with a CMOS single chip processor TC9432AF, TC9462F and TC9495F, a CD system can be composed very simply.

FEATURES

- Built in amplifier for reference (VRFF, 2VRFF) supply.
- Built in Auto Laser Power Control circuit.
- Built in RF amplifier.
- Built in focus error amp and tracking error amp.
- Built in sub-beam adder signal amplifier.
- Capable of tracking balance control with TC9432AF, TC9462F and TC9495F.
- WWW.DZSC.COM Capable of RF gain adjustment circuit with TC9432AF, TC9462F and TC9495F.
- Built in signal amplifier for track counter.
- Capable of 4 times speed operation.
- WWW.BZSC.COM 30 pin mini flat package.

f.dzsc.com



Weight: 0.17 g (Typ.)

The products described in this document are subject to the foreign exchange and foreign trade laws.

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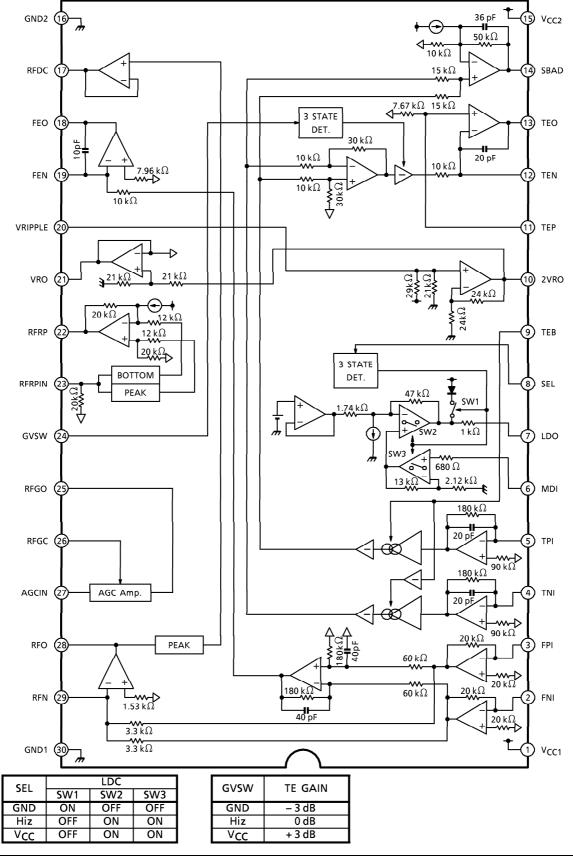
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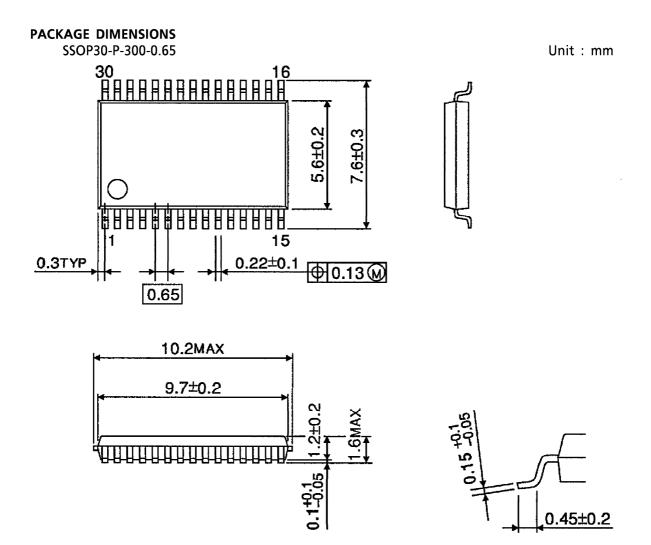
TOSHIBA TA2122AFN

BLOCK DIAGRAM



PIN FUNCTION

4 TNI I Sub beam I-V amp input terminal Connected to pin diode E 5 TPI I Sub beam I-V amp input terminal Connected to pin diode F	PIN No.	SYMBOL	1/0	FUNCTIONAL DESCRIPTION	REMARK
FPI	1	V _{CC1}		Power supply input terminal	_
TNI	2	FNI	1	Main beam I-V amp input terminal	Connected to pin diode A, C
S	3	FPI	I	Main beam I-V amp input terminal	Connected to pin diode B, D
6 MDI I Monitor photo diode amp input terminal Connected to monitor photo diode amp output terminal Connected to monitor photo diode amp output terminal Connected to laser control circuit 8 SEL I Laser diode control signal input terminal and APC circuit ON/OFF control signal input terminal and APC circuit ON/OFF control signal input terminal Controlled by 3 PVMM signal (PVMC carrier = 88.2 kHz) 10 2VRO O Reference voltage (2VR) output terminal 2VR = 4.2 V when V _{CC} = 5 V 11 TEP I TE amp negative input terminal Connected to TEO through feedback register 13 TEO O TE error signal output terminal Connected to TEO through feedback register 13 TEO O TE error signal output terminal Connected to TEO through feedback register 14 SBAD O Sub beam adder signal output terminal Connected to TEO through feedback register 15 V _{CC2} — Power supply input terminal Connected to TEO through feedback register 16 GND2 — Ground terminal Connected to TEO through feedback register 17 RFDC O RF signal peak detect output terminal Connected to TEO through feedback register 18 FEO O Focus error signal output terminal Connected to TEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor Connected to TEO through feedback register 21 VRO O Reference voltage (VR) output terminal Connected to TEO through feedback register 22 RFRP O Track count signal output terminal Connected to TEO through condenser 23 RFIS I RFRP detect circuit input terminal Connected to TEO through condenser 24 GVSW I TE amp gain control signal input terminal Connected to RFO through terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 25 RFGO O RF gain signal output terminal Connected to RFO through terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 26 RFGC I RF signal amplitude adjustment amp input terminal Connected to RFO through condenser	4	TNI	I	Sub beam I-V amp input terminal	Connected to pin diode E
6 MDI I Monitor photo diode amp input terminal Connected to monitor photo diode amp output terminal Connected to monitor photo diode amp output terminal Connected to laser control circuit 8 SEL I Laser diode control signal input terminal and APC circuit ON/OFF control signal input terminal and APC circuit ON/OFF control signal input terminal Controlled by 3 PVMM signal (PVMC carrier = 88.2 kHz) 10 2VRO O Reference voltage (2VR) output terminal 2VR = 4.2 V when V _{CC} = 5 V 11 TEP I TE amp negative input terminal Connected to TEO through feedback register 13 TEO O TE error signal output terminal Connected to TEO through feedback register 13 TEO O TE error signal output terminal Connected to TEO through feedback register 14 SBAD O Sub beam adder signal output terminal Connected to TEO through feedback register 15 V _{CC2} — Power supply input terminal Connected to TEO through feedback register 16 GND2 — Ground terminal Connected to TEO through feedback register 17 RFDC O RF signal peak detect output terminal Connected to TEO through feedback register 18 FEO O Focus error signal output terminal Connected to TEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor Connected to TEO through feedback register 21 VRO O Reference voltage (VR) output terminal Connected to TEO through feedback register 22 RFRP O Track count signal output terminal Connected to TEO through condenser 23 RFIS I RFRP detect circuit input terminal Connected to TEO through condenser 24 GVSW I TE amp gain control signal input terminal Connected to RFO through terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 25 RFGO O RF gain signal output terminal Connected to RFO through terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 26 RFGC I RF signal amplitude adjustment amp input terminal Connected to RFO through condenser	5	TPI	I	Sub beam I-V amp input terminal	Connected to pin diode F
A LDO O Laser diode amp output terminal circuit	6	MDI	I	Monitor photo diode amp input terminal	Connected to monitor photo diode
8 SEL I and APC circuit ON/OFF control signal input terminal (VCC, Hiz, GND) 9 TEB I Tracking error balance adjustment signal input terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 10 2VRO O Reference voltage (2VR) output terminal 2VR, VR, GND) 11 TEP I TE amp positive input terminal —— 12 TEN I TE amp negative input terminal —— 13 TEO O TE error signal output terminal —— 14 SBAD O Sub beam adder signal output terminal —— 15 VCC2 —— Power supply input terminal —— 16 GND2 —— Ground terminal —— 17 RFDC O RF signal peak detect output terminal —— 18 FEO O Focus error signal output terminal —— 19 FEN I FE amp negative input terminal —— 20 VRIPPLE O Reference voltage (2VR) filter capacitor connecting terminal —— 21 VRO O Reference voltage (VR) output terminal —— 22 RFRP O Track count signal output terminal —— 23 RFIS I RFRP detect circuit input terminal —— 24 GVSW I TE amp gain control signal input terminal —— 25 RFGO O RF gain signal output terminal —— 26 RFGC I RF signal amplitude adjustment amp input terminal (PWM carrier = 88.2 kHz) 27 AGCI I RF signal amplitude adjustment amp input terminal (Connected to RFO through condenser as 2.1 v terminal (PWM carrier = 88.2 kHz) 28 RFO O RF signal output terminal (PWM carrier = 88.2 kHz)	7	LDO	0	Laser diode amp output terminal	
TEB	8	SEL	I	and APC circuit ON/OFF control signal input terminal	
10 ZVRO	9	TEB	I	terminal Controlled by 3 PWM signal	
TEN	10	2VRO	0		_
TEAMP Regative input terminal feedback register	11	TEP		TE amp positive input terminal	_
14 SBAD O Sub beam adder signal output terminal — 15 VCC2 — Power supply input terminal — 16 GND2 — Ground terminal — 17 RFDC O RF signal peak detect output terminal — 18 FEO O Focus error signal output terminal — 19 FEN I FE amp negative input terminal Connected to FEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor connecting terminal — 21 VRO O Reference voltage (VR) output terminal — 21 VRO O Reference voltage (VR) output terminal — 22 RFRP O Track count signal output terminal — 23 RFIS I RFRP detect circuit input terminal Connected to RFO through condenser 24 GVSW I TE amp gain control signal input terminal Input range : VR ± 2.1 V 26 RFGC I RF amplitude adjustment control signal input terminal Input range : VR ± 2.1 V 27 AGCI	12	TEN	I	TE amp negative input terminal	
15	13	TEO	0	TE error signal output terminal	_
16 GND2	14	SBAD	0	Sub beam adder signal output terminal	_
17 RFDC O RF signal peak detect output terminal — 18 FEO O Focus error signal output terminal — 19 FEN I FE amp negative input terminal Connected to FEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor connecting terminal — 21 VRO O Reference voltage (VR) output terminal — 22 RFRP O Track count signal output terminal — 23 RFIS I RFRP detect circuit input terminal Connected to RFO through condenser 24 GVSW I TE amp gain control signal input terminal 3 signal input (V _{CC} , Hiz, GND) 25 RFGO O RF gain signal output terminal — 26 RFGC I RF amplitude adjustment control signal input terminal (PWM carrier = 88.2 kHz) Input range: VR ± 2.1 V 27 AGCI I RF signal amplitude adjustment amp input terminal Connected to RFO through condenser 28 RFO O RF signal output terminal —	15	V_{CC2}	_	Power supply input terminal	_
18 FEO O Focus error signal output terminal — 19 FEN I FE amp negative input terminal Connected to FEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor connecting terminal — 21 VRO O Reference voltage (VR) output terminal VR = 2.1 V when VCC = 5 V — 22 RFRP O Track count signal output terminal Connected to RFO through condenser 23 RFIS I RFRP detect circuit input terminal 3 signal input (VCC, Hiz, GND) 25 RFGO O RF gain signal output terminal — 26 RFGC I RF amplitude adjustment control signal input terminal (PWM carrier = 88.2 kHz) Input range : VR ± 2.1 V 27 AGCI I RF signal amplitude adjustment amp input terminal Connected to RFO through condenser 28 RFO O RF signal output terminal —	16	GND2	_	Ground terminal	_
19 FEN I FE amp negative input terminal Connected to FEO through feedback register 20 VRIPPLE O Reference voltage (2VR) filter capacitor connecting terminal — 21 VRO O Reference voltage (VR) output terminal — 22 RFRP O Track count signal output terminal — 23 RFIS I RFRP detect circuit input terminal — 24 GVSW I TE amp gain control signal input terminal 3 signal input (VCC, Hiz, GND) 25 RFGO O RF gain signal output terminal — 26 RFGC I RF amplitude adjustment control signal input terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 27 AGCI I RF signal amplitude adjustment amp input terminal — 28 RFO O RF signal output terminal — Connected to RFO through Input range: VR ± 2.1 V	17	RFDC	0	RF signal peak detect output terminal	_
FEN	18	FEO	0	Focus error signal output terminal	_
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22 RFRP O Track count signal output terminal — Connected to RFO through condenser 23 RFIS I RFRP detect circuit input terminal Condenser 24 GVSW I TE amp gain control signal input terminal (V _{CC} , Hiz, GND) 25 RFGO O RF gain signal output terminal — RF amplitude adjustment control signal input terminal (PWM carrier = 88.2 kHz) 27 AGCI I RF signal amplitude adjustment amp input terminal Condenser 28 RFO O RF signal output terminal — Connected to RFO through condenser 29 RFO O RF signal output terminal — Connected to RFO through condenser	20	VRIPPLE	0		_
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RF amplitude adjustment control signal input terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) RF signal amplitude adjustment amp input terminal Connected to RFO through condenser RF amplitude adjustment control signal input terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) RF signal amplitude adjustment amp input condenser RF signal output terminal —	24	GVSW	ı	TE amp gain control signal input terminal	,
26 RFGC I terminal Controlled by 3 PWM signal (PWM carrier = 88.2 kHz) 27 AGCI I RF signal amplitude adjustment amp input terminal Connected to RFO through condenser 28 RFO O RF signal output terminal —	25	RFGO	0		_
27 AGCI terminal condenser 28 RFO O RF signal output terminal —	26	RFGC	ı	terminal Controlled by 3 PWM signal	Input range : VR ± 2.1 V
· · · · · · · · · · · · · · · · · · ·	27	AGCI	I	RF signal amplitude adjustment amp input	
29 RFN I RF amp negative input terminal —	28	RFO	0	RF signal output terminal	_
	29	RFN	I	RF amp negative input terminal	_
30 GND1 — Ground terminal —	30	GND1	_	Ground terminal	



Weight: 0.17 g (Typ.)