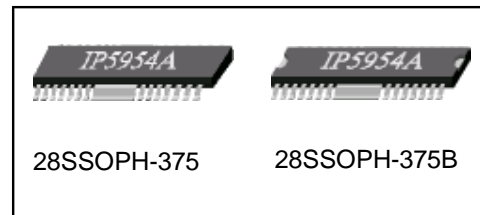


IP5954A

4-CH MOTOR DRIVE IC

DESCRIPTIONS

IP5954A is a 4-CH motor driver for CDP/VCDP/DVDP systems. It is composed of 2-CH BTL driver with one input opamp and 2-CH BTL driver with current mode feedback.



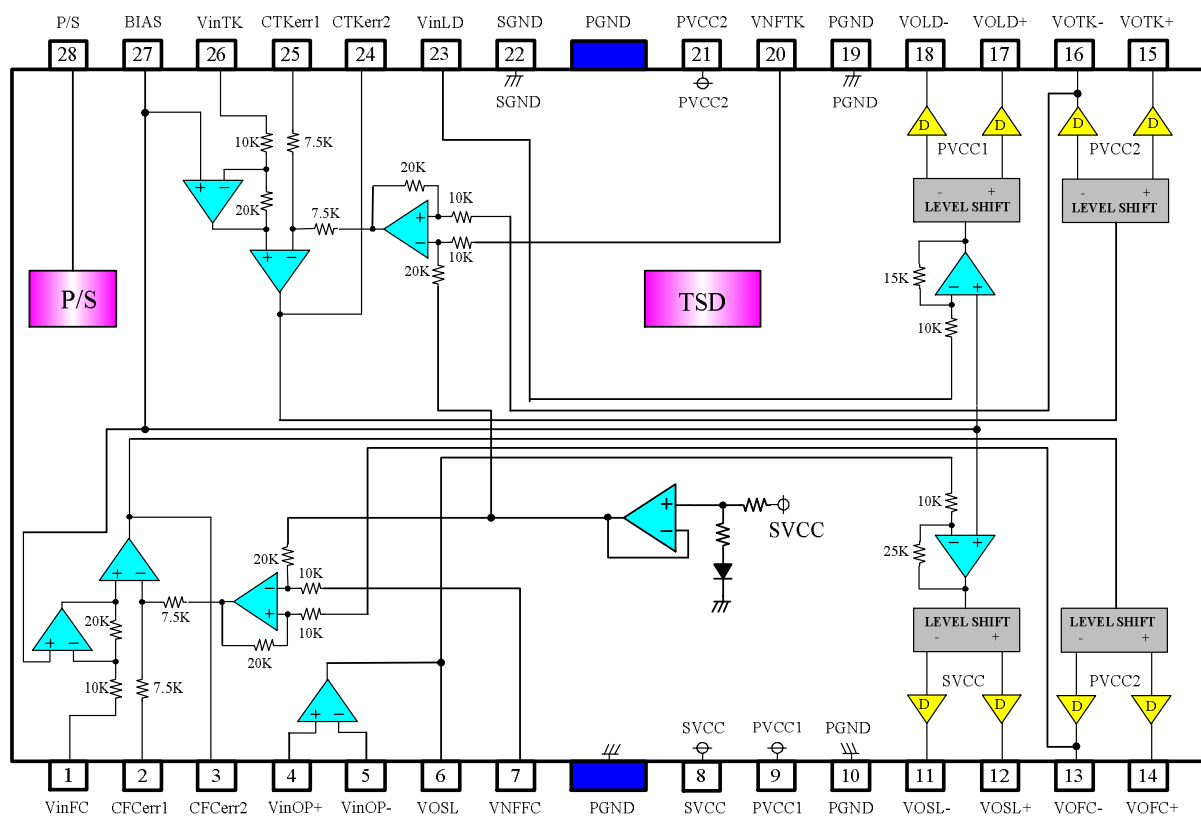
FEATURES

- 2-CH BTL driver
- 2-CH BTL driver with current mode feedback
- Built-in TSD (thermal shut down) circuit.
- Built-in power save circuit
- Built-in input opamp for SLED channel
- Operating supply voltage (4.5V~13.2V).

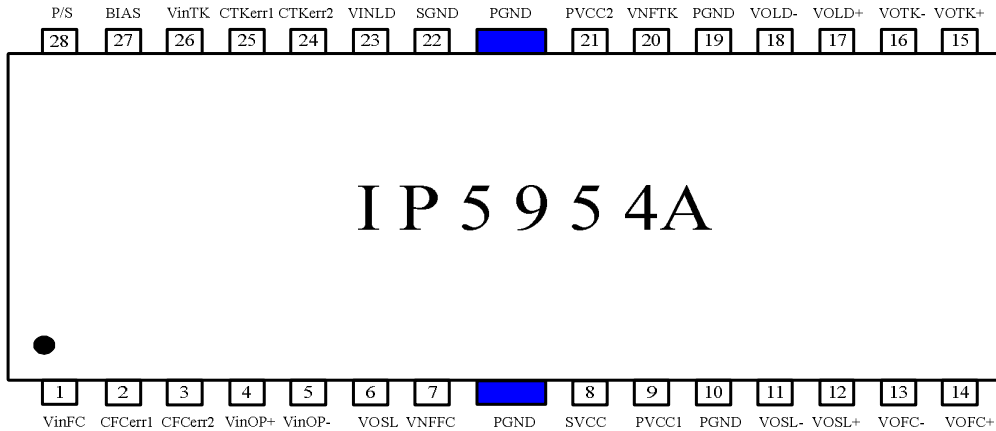
ORDER INFORMATION

Device	Order Code	Package	Packing
IP5954A	IP5954A	28SSOPH-375	Tube
	IP5954A-TF		T&R
	IP5954AL		Tube, Lead Free
	IP5954AL-TF		T&R, Lead Free
	IP5954AB	28SSOPH-375B	Tube
	IP5954AB-TF		T&R
	IP5954ABL		Tube, Lead Free
	IP5954ABL-TF		T&R, Lead Free

BLOCK DIAGRAM



PIN CONNECTIONS



PIN DESCRIPTIONS

NO	SYMBOL	I/O	DESCRIPTION	NO	SYMBOL	I/O	DESCRIPTION
1	VinFC	I	Focus input	15	VOTK+	O	Tracking driver output(+)
2	CFCerr1	-	Error amp filter connection 1 for focus actuator	16	VOTK-	O	Tracking driver output(-)
3	CFCerr2	-	Error amp filter connection 2 for focus actuator	17	VOLD+	O	Loading driver output(+)
4	VinOP+	I	OPamp IN(+) for sled driver	18	VOLD-	O	Loading driver output(-)
5	VinOP-	I	OPamp IN(-) for sled driver	19	PGND	-	Power Ground
6	VOSL	O	OPamp out for sled driver	20	VNFTK	I	Current feedback pin for Tracking actuator
7	VNFFC	I	Current feedback pin for focus actuator	21	PVCC2	-	Power supply voltage 2
8	SVCC	-	Signal supply voltage	22	SGND	-	Signal ground
9	PVCC1	-	Power supply voltage 1	23	VinLD	I	Loading input
10	PGND	-	Power ground	24	CTKerr2	-	Error amp filter connection 2 for Tracking actuator
11	VOSL-	O	Sled driver output(-)	25	CTKerr1	-	Error amp filter connection 1 for Tracking actuator
12	VOSL+	O	Sled driver output(+)	26	VinTK	I	Tracking input
13	VOFC-	O	Focus driver output(-)	27	BIAS	I	Bias input
14	VOFC+	O	Focus driver output(+)	28	P/S	O	Power save

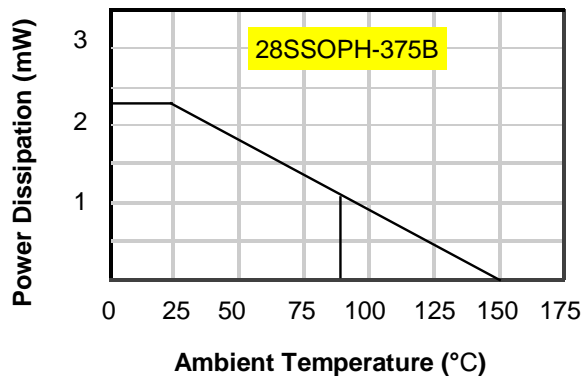
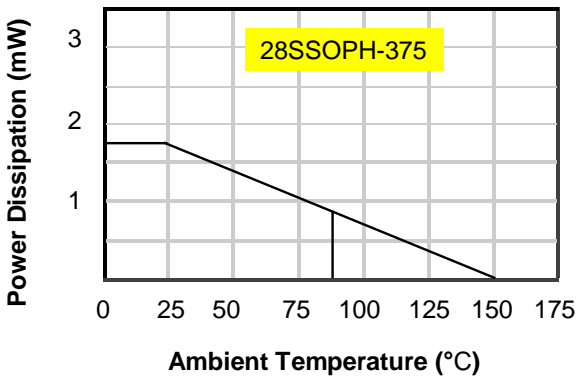
ABSOLUTE MAXIMUM RATINGS

CHARACTERISTICS	SYMBOL	VALUE	UNIT	
Maximum supply voltage	VCCmax	15	V	
Power dissipation	Pd	28SSOPH-375	1.7	W
		28SSOPH-375B	2.3	W
Operating temperature	Topr	-35 ~ +85	°C	
Storage temperature	Tstg	-55 ~ 150	°C	

Note>

1. When mounted on 70mm X 70mm X 1.6mm PCB (Phenolic resin material).
2. Power dissipation reduces 13.6 mW/°C for using above Ta=25°C
3. Do not exceed Pd and SOA.

POWER DISSIPATION CURVE



RECOMMENDED OPERATING CONDITIONS

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Signal supply Voltage	VCC1	4.5 ~ 13.2	V
Power supply Voltage 1	PVCC1	4.5 ~ 13.2	V
Power supply Voltage 2	PVCC2	4.5 ~ 13.2	V

ELECTRICAL CHARACTERISTICS

(SVCC=8.0V, PVCC1=PVCC2=5V, f = 1kHz, RL=12ohm, Rs=0.5ohm, Ta = 25°C unless otherwise specified.)

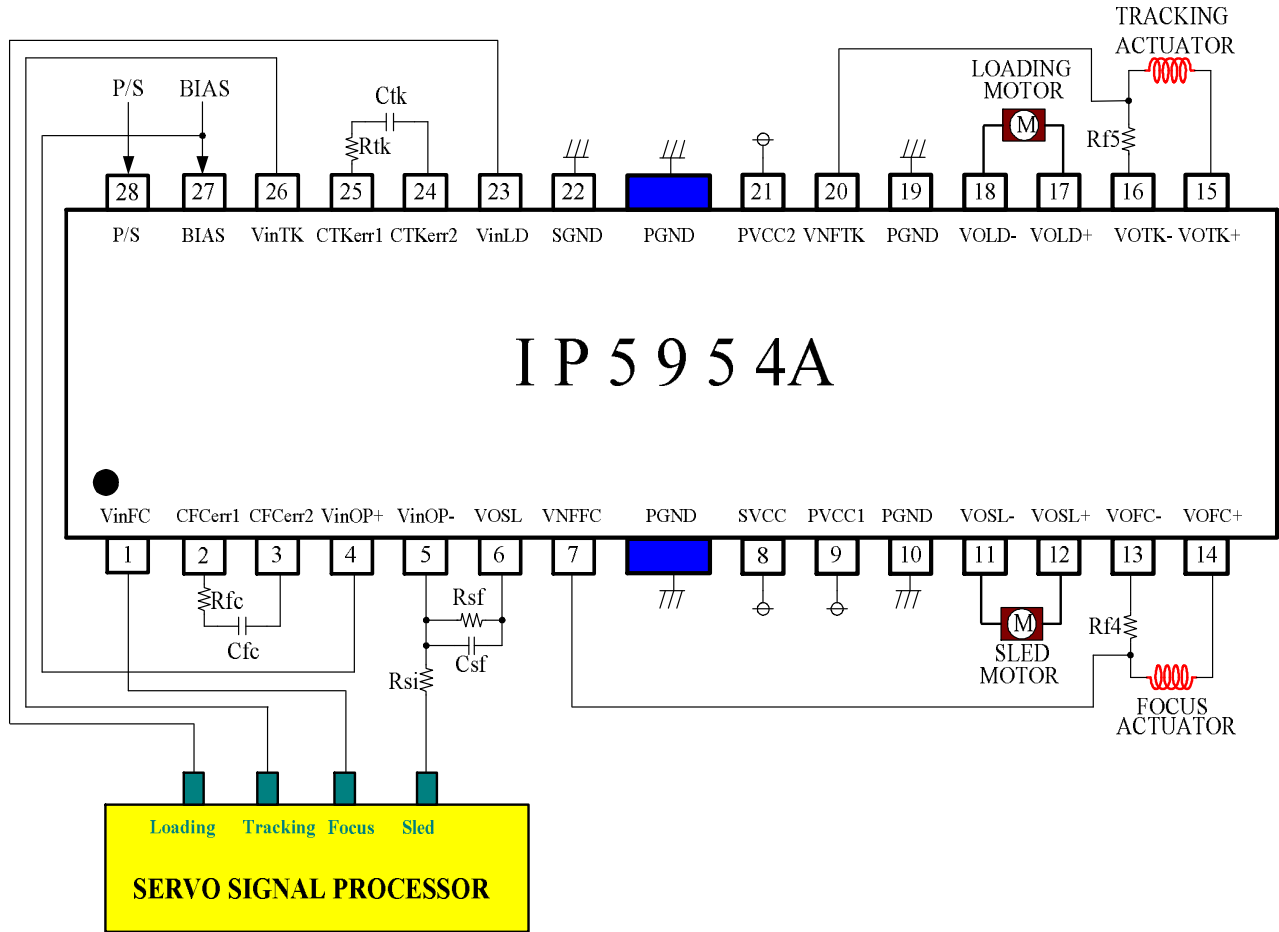
CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent circuit current	Icc	No Load	-	14	-	mA
Power save on current	Ips	Pin28=GND	-	-	1	mA
Power save on voltage	Vmon	Pin28=variation	-	-	0.5	V
Power save off voltage	Vmoff	Pin28=variation	2.0	-	-	V
Reference mute on voltage	Vrmon	Pin27=variation	-	-	0.7	V
Reference mute off voltage	Vrmoff	Pin27=variation	1.3	-	-	V
[ACTUATOR DRIVE PART]						
Output offset current	Ioa	Pin1=Pin9=Pin22=Vref	-15	0	15	mA
Maximum output voltage	Voma	-	3.6	4.0	-	V
Transmission gain 45	Gma	Vin=0.1Vrms, f=1kHz	-	1.5	-	A/V
[LOADING DRIVE PART]						
Output offset voltage	Vool	Vin=Vref	-80	-	+80	mV
Maximum output voltage	Voml	-	3.6	4.0	-	V
Closed-loop voltage gain	Avfl	Vin=0.1Vrms, f=1kHz	13.5	15.5	17.5	dB
Slew rate	SRI	Vout = 4.0Vpp, Square	-	1.5	-	V/usec
Ripple rejection ratio	RRI	Vin=0.1Vrms, f=120Hz	50	60	-	dB

ELECTRICAL CHARACTERISTICS (Continued)

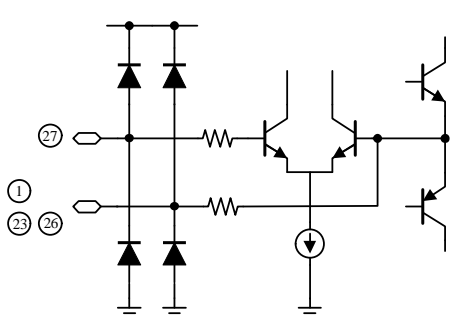
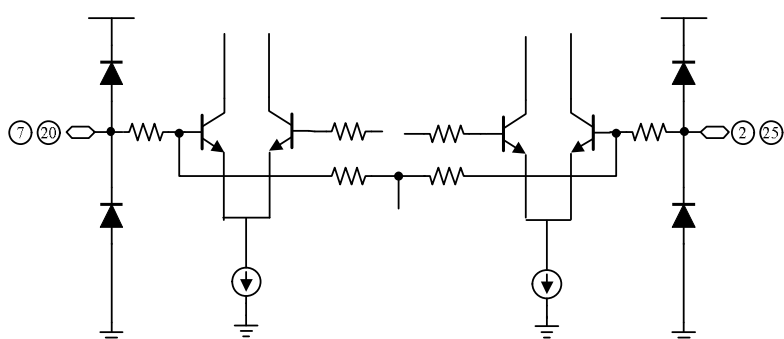
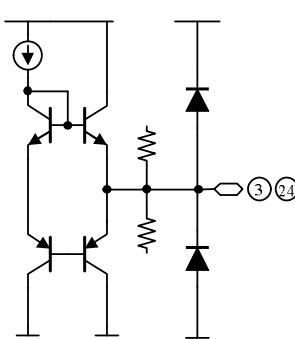
(SVCC=8.0V, PVCC1=PVCC2=5V, f = 1kHz, RL=12ohm, Rs=0.5ohm, Ta = 25°C unless otherwise specified.)

CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
[SLED DRIVE INPUT OPAMP PART]						
Common mode input range	V _{icm}	V _{bias} =4.0V	-0.3	-	7.0	V
Input bias current	I _b	-		30	300	nA
Low level output voltage	V _{ol}	-		0.1	0.3	V
Output source current	I _{src}	-	0.2	0.5	-	mA
Output sink current	I _{snk}	-	1	-	-	mA
[SLED DRIVE PART]						
Output offset voltage	V _{oos}	V _{in} =V _{ref}	-100	-	+100	mV
Maximum output voltage	V _{oms}	SVCC=8.0V, PVCC1=PVCC2=5V, RL=12ohm	-	6.0	-	V
Closed-loop voltage gain	A _{vfs}	V _{in} =0.1V _{rms} , f=1kHz	18	20	22	dB
Slew rate	SR _s	V _{out} = 4.0V _{pp} , Square	-	1.5	-	V/usec
Ripple rejection ratio	RR _s	V _{in} =0.1V _{rms} , f=120Hz	50	60	-	dB

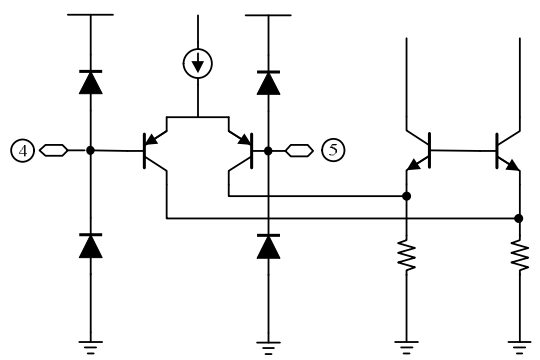
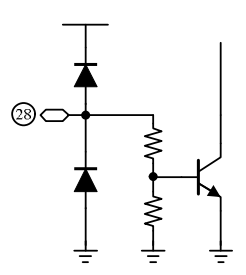
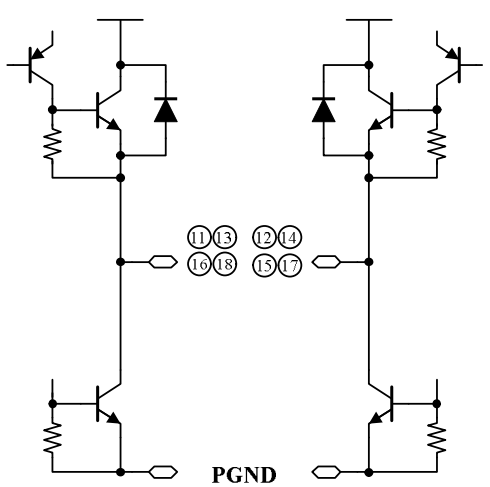
TYPICAL APPLICATION CIRCUIT



INTERNAL CIRCUIT

Pin no	Pin name	Internal circuit
1,23, 26,27	VinFC, VinLD, VinTK, Bias	
2, 7, 20, 25	CFCerr1, VNFFC, VNFTK, CTKerr1	
3, 24	CFCerr2, CTKerr2	

INTERNAL CIRCUIT (Continued)

Pin no	Pin name	Internal circuit
4,5	VinOP+, VinOP-	
28	PS	
11, 12, 13, 14, 15, 16, 17, 18	VOSL- VOSL+ VOFC- VOFC+ VOTK+ VOTK- VOLD+ VOLD-	

PACKAGE DIMENSION (Continued)

28SSOPH-375B

