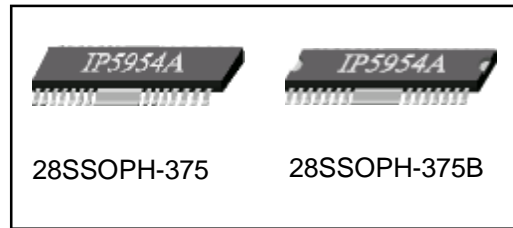


# IP5954A

## 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.



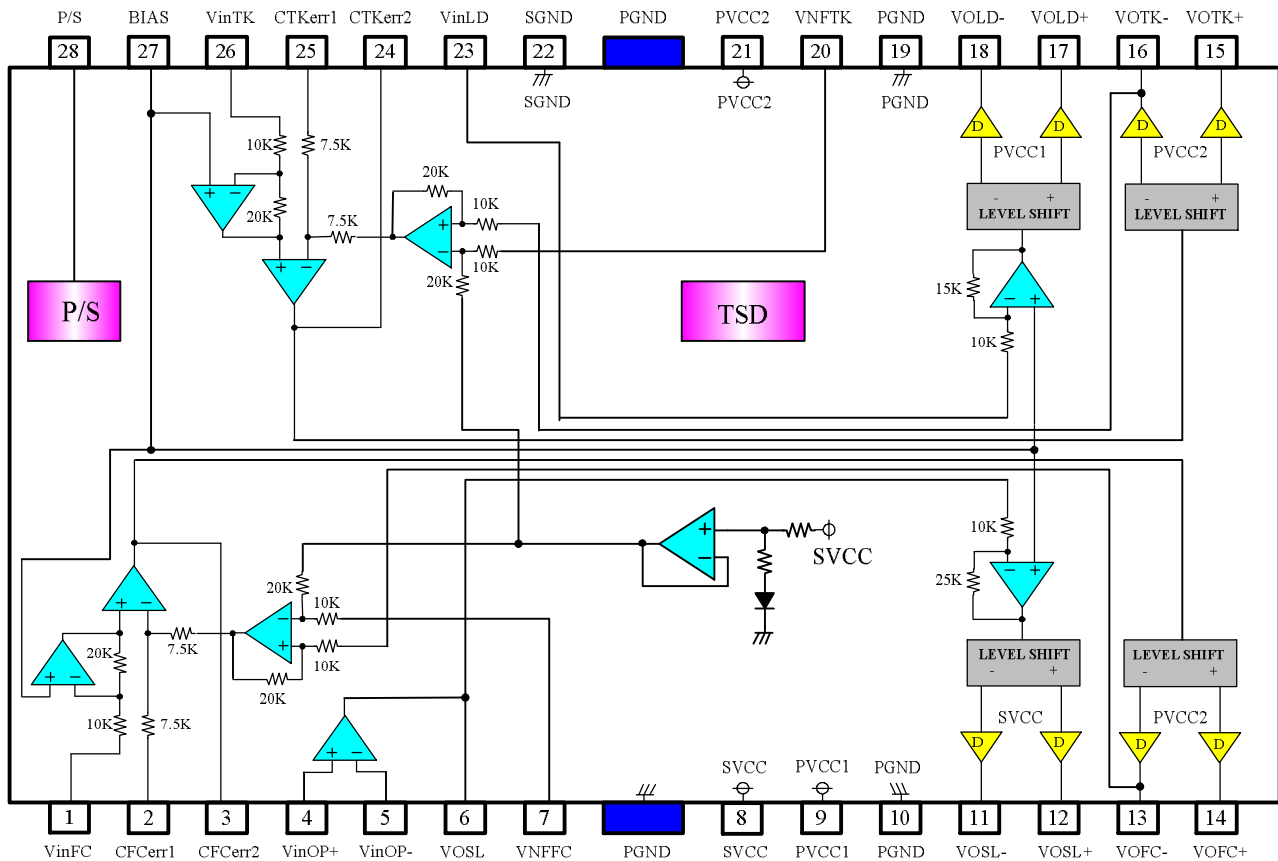
### FEATURES

- 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).

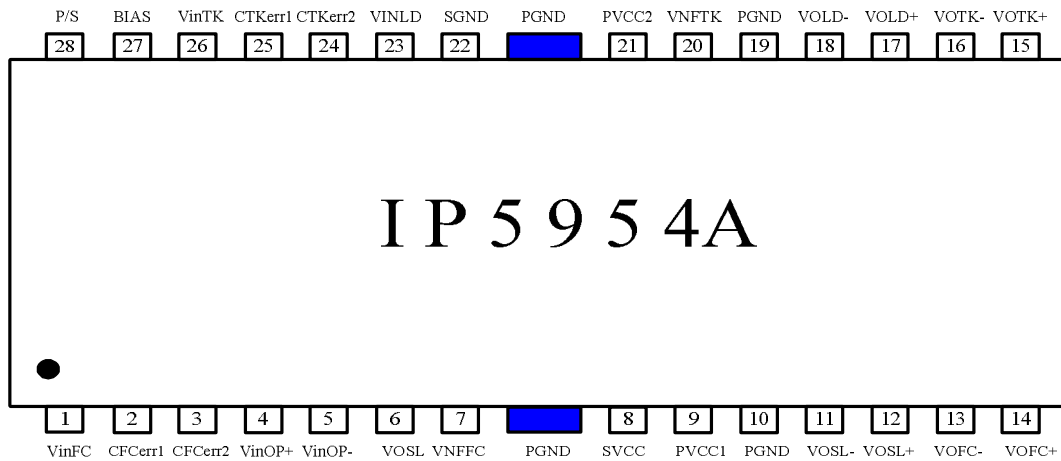
### ORDER INFORMATION

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(+)
				18	VOLD-	O	Loading driver output(-)
4	VinOP+	I	OPamp IN(+) for sled driver	19	PGND	-	Power Ground
5	VinOP-	I	OPamp IN(-) for sled driver	20	VNFTK	I	Current feedback pin for Tracking actuator
6	VOSL	O	OPamp out for sled driver				
7	VNFFC	I	Current feedback pin for focus actuator	21	PVCC2	-	Power supply voltage 2
				22	SGND	-	Signal ground
8	SVCC	-	Signal supply voltage	23	VinLD	I	Loading input
9	PVCC1	-	Power supply voltage 1	24	CTKerr2	-	Error amp filter connection 2 for Tracking actuator
10	PGND	-	Power ground				
11	VOSL-	O	Sled driver output(-)	25	CTKerr1	-	Error amp filter connection 1 for Tracking actuator
12	VOSL+	O	Sled driver output(+)				
13	VOFC-	O	Focus driver output(-)	26	VinTK	I	Tracking input
14	VOFC+	O	Focus driver output(+)	27	BIAS	I	Bias input
				28	P/S	O	Power save

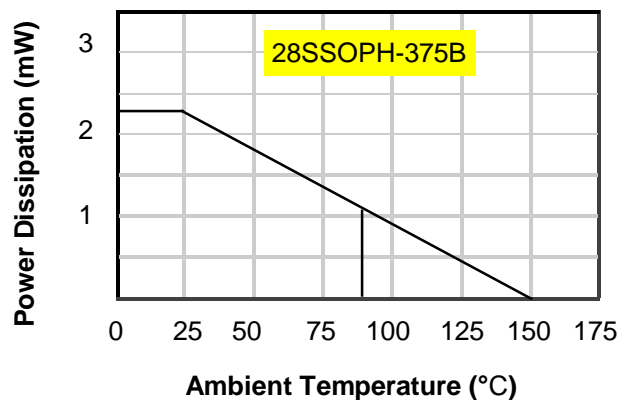
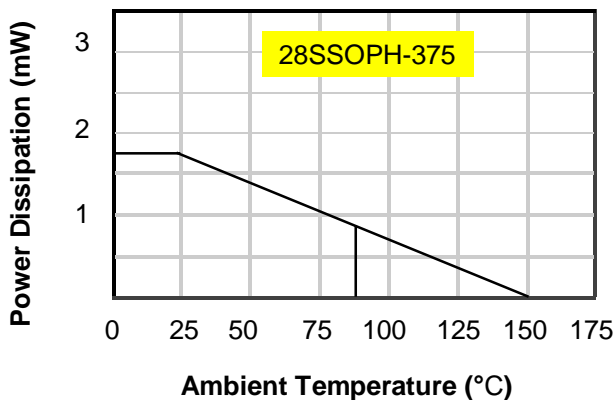
**ABSOLUTE MAXIMUM RATINGS**

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.)

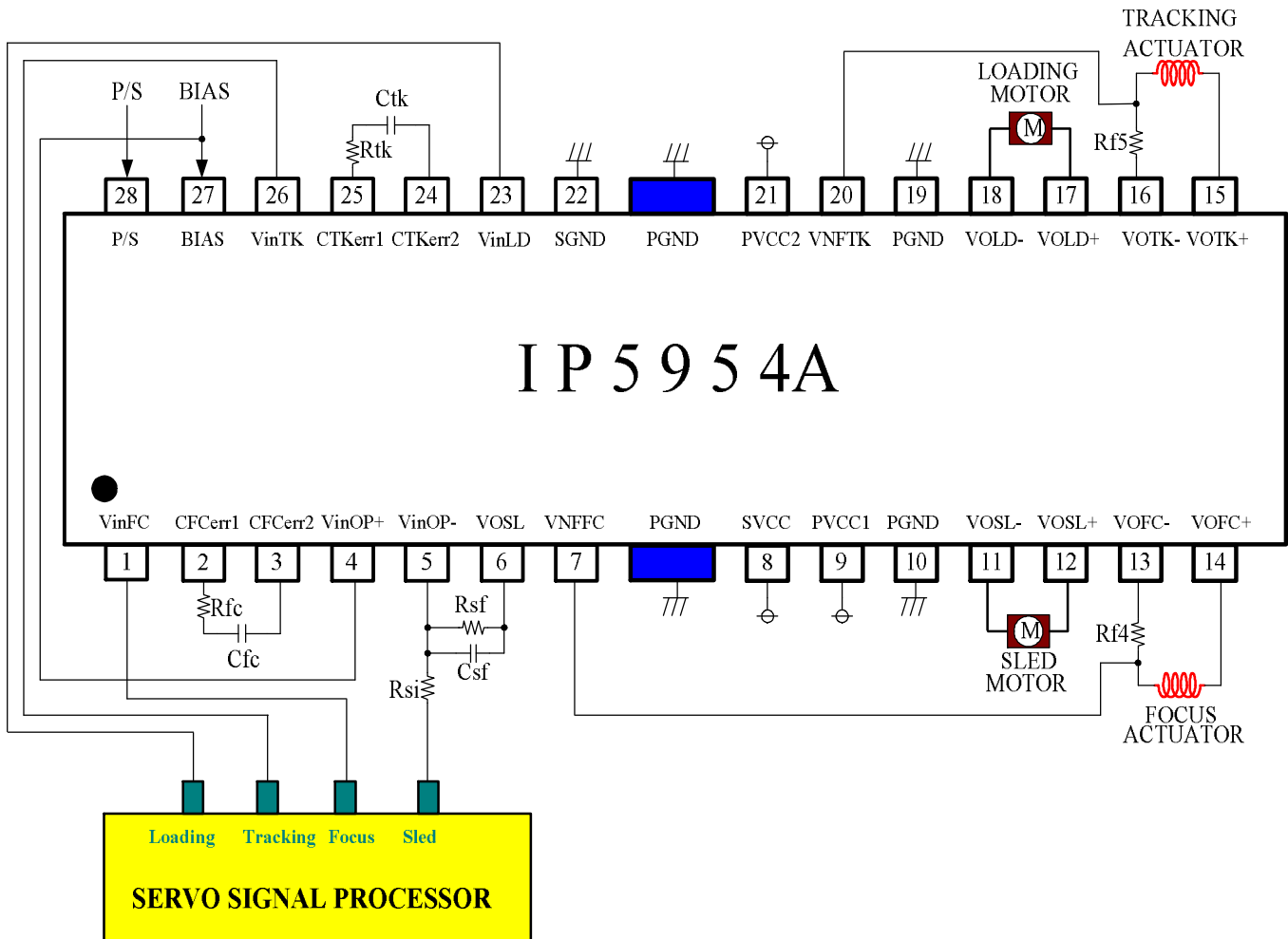
CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent circuit current	Icc	No Load	-	14	-	mA
Power save on current	Ips	Pin28=GND	-	-	1	mA
Power save on voltage	Vmon	Pin28=variation	-	-	0.5	V
Power save off voltage	Vmoff	Pin28=variation	2.0	-	-	V
Reference mute on voltage	Vrmon	Pin27=variation	-	-	0.7	V
Reference mute off voltage	Vrmoff	Pin27=variation	1.3	-	-	V
<b>[ ACTUATOR DRIVE PART ]</b>						
Output offset current	Iooa	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
<b>[ LOADING DRIVE PART ]</b>						
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)**

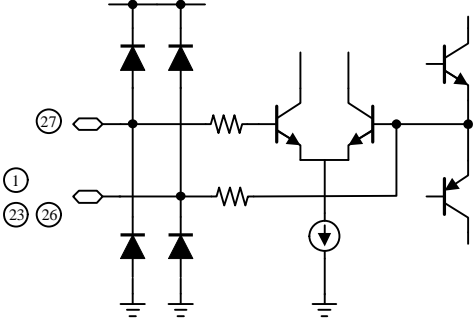
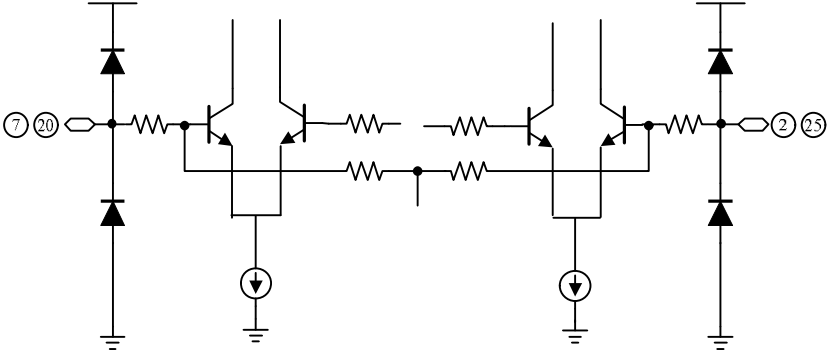
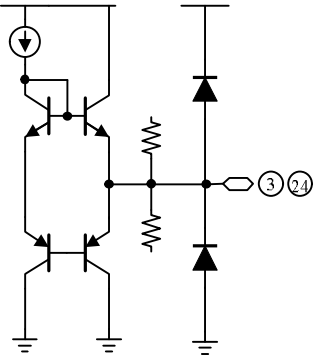
(SVCC=8.0V, PVCC1=PVCC2=5V, f = 1kHz, RL=12ohm, Rs=0.5ohm, Ta = 25°C unless otherwise specified.)

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

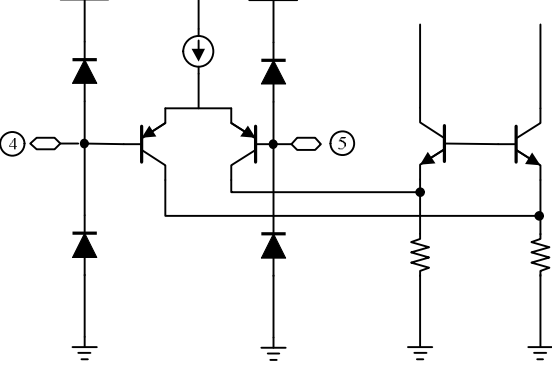
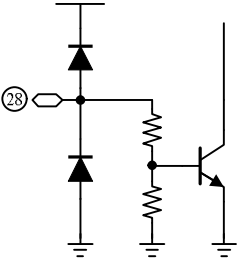
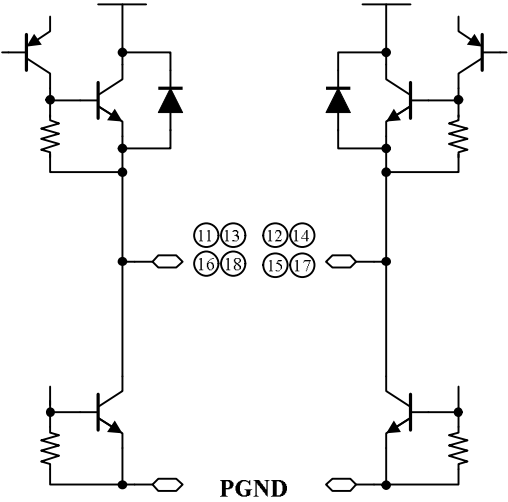
### TYPICAL APPLICATION CIRCUIT



**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	

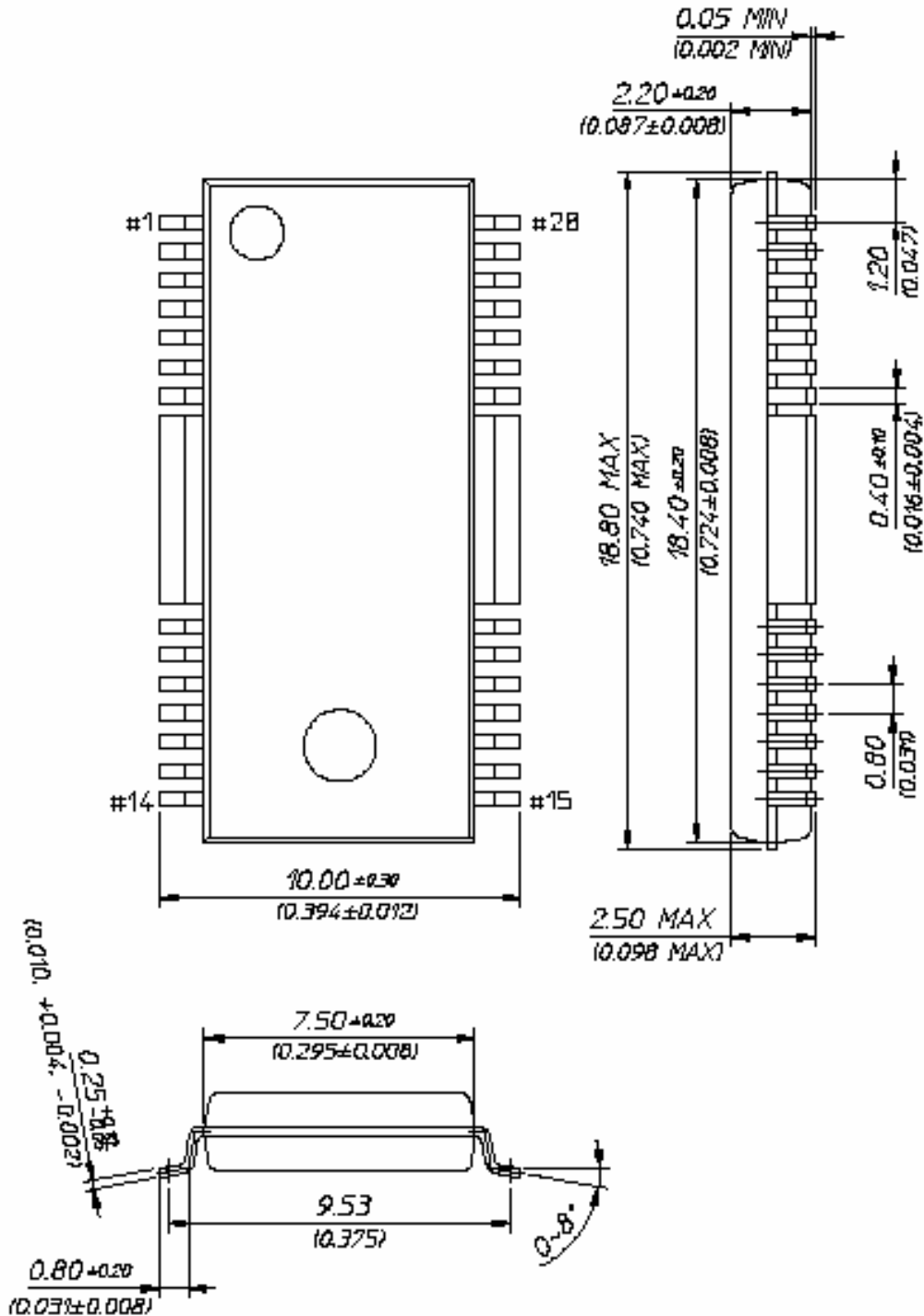
**INTERNAL CIRCUIT (Continued)**

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**

**28SSOPH-375**



**PACKAGE DIMENSION (Continued)**

**28SSOPH-375B**

