GL 6551
COMPANDER

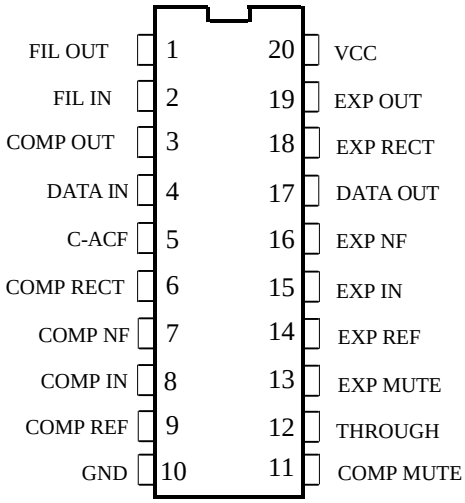
Description

The GL6551 is a compander IC to expand dynamic range at transmission/reception systems and to improve the tone quality by means of restricting noise. Two functions are loaded on the IC, the one is the compressor which has the 2/1 ratio of input/output ratio by logarithm, and the expander which has the 1/w ratio input/ output ratio by logarithm. The GL6551equipped with input & filter Amp, DATA IN OUT terminal. The GL6551 is well suited for use in cellular radio MCA and handy telephone set, radio communication systems.

Features

- Low operating supply voltage.
- Equipped with mute function and through function.
- Equipped with compressor MIC Amp and Expander INPUT Amp
- Equipped with Filter Buffer Amp
- Equipped with DATA IN OUT terminal.
- Operation Voltage (2.4 ~ 7.0V)
- Total gain (10~ 100dB)

Pin Configuration



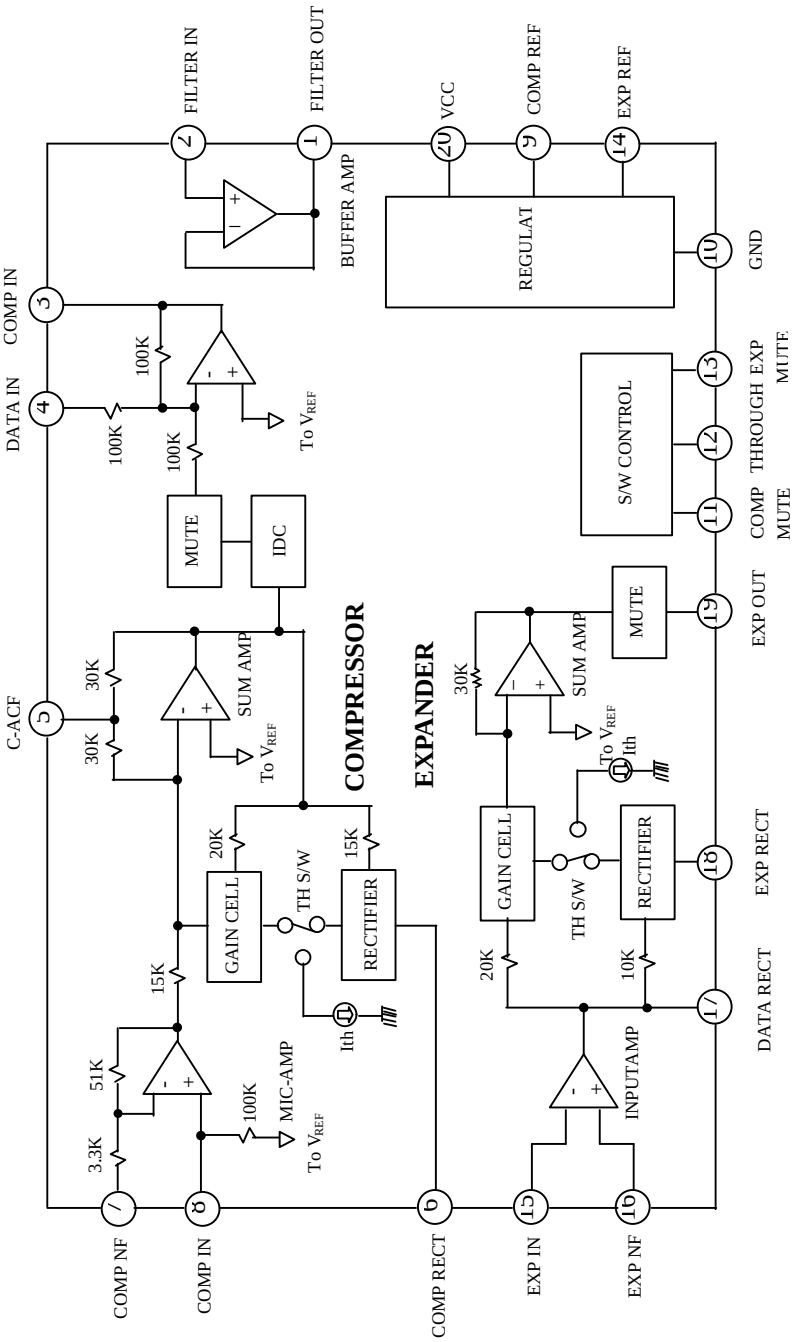
Maximum Ratings

Parameter	symbol	Spec.	Unit	Remark
Supply Voltage	$V_{CC, MAX}$	10	V	
Power Dissipation	$P_{D.MAX}$	350	mW	
Storage Temperature	T_{STG}	-5 ~ 125	¡ É	

Operating Conditions

Parameter	symbol	Spec.	Unit	Remark
Operating Voltage	V_{OP}	2.4 ~ 7	V	
Operating Temperature	T_{OP}	-30 ~ 70	¡ É	

Block Diagram



Electrical Characteristics **Ta=25¡ É Vcc=3.0V, f=1kHz, R1=10k**W

PARAMETER	SYMBOL	SPEC.			UNIT	CONDITION
		MIN	TYP	MAX		
Current Dissipation	I_{cc}	-	4.0	6.5	mA	No Signal
Threshold Voltage	Vth	0.9	1.15	1.30	V	11, 12, 13 Pin
Compressor						
Input impedance	Zinc	90	120	-	KΩ	
Input Reference Level	Vinc	8	12.5	17	mVrms	Voc=30mVrms, Vin=0dB*
Gain Deviation (1)	ΔGc1	-0.5	0	0.5	dB	Vin=-20dB *
Gain Deviation (2)	ΔGc2	-1.0	0	1.0	dB	Vin=-40dB *
Through ON OFF Diff.	ΔGtc	-1.5	0	1.5	dB	Vin=-0dB, Pin12=0V*
T.H.D	THDc	-	0.5	1.0	%	Vin=0dB
Output Noise Voltage	Vnc	-	3.0	5.5	mVrms	Rg=620Ω *
Mute Attenuation	Attc	60	80	-	dB	Vin=0dB, Pin11=0V *
Limiting Voltage	Vlimc	1.15	1.35	1.5	Vp-p	
Data Pin Voltage Gain	Gdata	-0.5	0	0.5	dB	Pin4=300mVrms
Data Pin Max. Output	VDmax	800	900	-	mVrms	THD=10% Point
Cross Talk	CTc	-	-35	-30	dB	ExpVin=30mVrms,Rg=620Ω*
Buffer Amp (LPF)						
Voltage Gain	Gb	-0.5	0	0.5	dB	Vin=300mVrms
Freq. Charact (1)	Δf1	-	-3	-	dB	Vin=300mVrms, f=3kHz
Freq. Charact (2)	Δf2	-	-60	-	dB	Vin=300mVrms, f=30kHz
T.H.D.	THDb	-	0.02	0.1	%	Vin=300mVrms
Maximum Output Voltage	VBmax	550	700	-	mVrms	THD=10% Point
Expander						
Output Reference Volt.	Voe	110	130	160	mVrms	Vin=300mVrms=0dB *
Gain Deviation (1)	ΔGe1	-0.5	0	0.5	DB	Vin=-10dB *
Gain Deviation (2)	ΔGe2	-1.0	0	1.0	DB	Vin=-20dB *
Gain Deviation (3)	ΔGe3	-1.5	0	2.0	DB	Vin=-30dB *
Through ON OFF Diff.	ΔGte	-2.5	-1	0.5	DB	Vin=0dB , Pin12=0V *
T.H.D	THDe	-	0.5	1.5	%	Vin=0dB
Output Noise Voltage	Vne	-	10	30	uVrms	Rg=620Ω *
Mute Attenuation	VEmax	60	80	-	DB	Vin=0dB, Pin13=0V *
Maximum Output Voltage	Gi	700	800	-	mVrms	THD 10% Point
Input Amp Voltage Gain	VImax	14.5	15.5	16.5	DB	Vin=0dB
Input Amp Max. Voltage	CTe	450	500	-	mVrms	THD=10% Point
Cross Talk		-	-70	-60	DB	CompVin=Vinc,Rg=620Ω *

* Measured by Noise Filter (CCITT Recommandation P. 53)

NO	SYMBOL	FUNCTION
1	FILTER OUT	Filter Amp Output Terminal.
2	FILTER IN	Filter Amp (+) Input Terminal. Make a various kinds Filters.
3	COMP OUT	Compressor Output Terminal.
4	DATA IN	Connected to (-) Input terminal of Compressor Output Amp through resistor Signal which is input to this terminal is output to COMP OUT (Pin3). (not compress)
5	C-ACF	Coupling capacitor connect Terminal. Determined Low cutoff frequency of Compressor block by capacitance.
6	COMP RECT	Rectifing Capacitor external connect Terminal. Determined Recovery time and Attack time of Compressor by Capacitance.
7	COMP NF	Input resistor and decoupling capacitor of Compressor Mic Amp external connect Terminal. Determined Mic Amp Gain by resistor. Max gain condition is not connect resistor.
8	COMP IN	Compressor Mic Amp (+) Input Terminal. Same potential with COMP REF (Pin 9).
9	COMP REF	Reference voltage of Compressor Internal Amp Output Terminal.
10	GND	Ground Terminal.
11	COMP MUTE	"L" state – Compressor Output Mute. Input signal of Data In terminal is output to COMP OUT (Pin3). "H" state – open.
12	THROUGH	"L"state – Compressor and Expander Logalithm 1 (Constant Gain) "H" state – open.
13	EXP MUTE	"L" state = Expander Output is muting. Data out to DATA OUT (Pin 17) Terminal. "H" state – open.
14	EXP REF	Reference voltage of Expander Internal Amp output Terminal.
15	EXP IN	Expander Input Amp (+) Input Terminal.
16	EXP NF	Expander Input Amp (-) Input Terminal.
17	DATA OUT	Expander Input Amp Input Terminal.
18	EXP RECT	Rectifing capacitor external connect Terminal. Determine Attack time and Recovery time of Expander by Capacitance.
19	EXP OUT	Expander Output Terminal.
20	Vcc	Power Supply.

Application Circuit

