

FM-IF LIMITER AMPLIFIER AND DETECTOR FOR HiFi AND CAR RADIOS

Technology: Bipolar

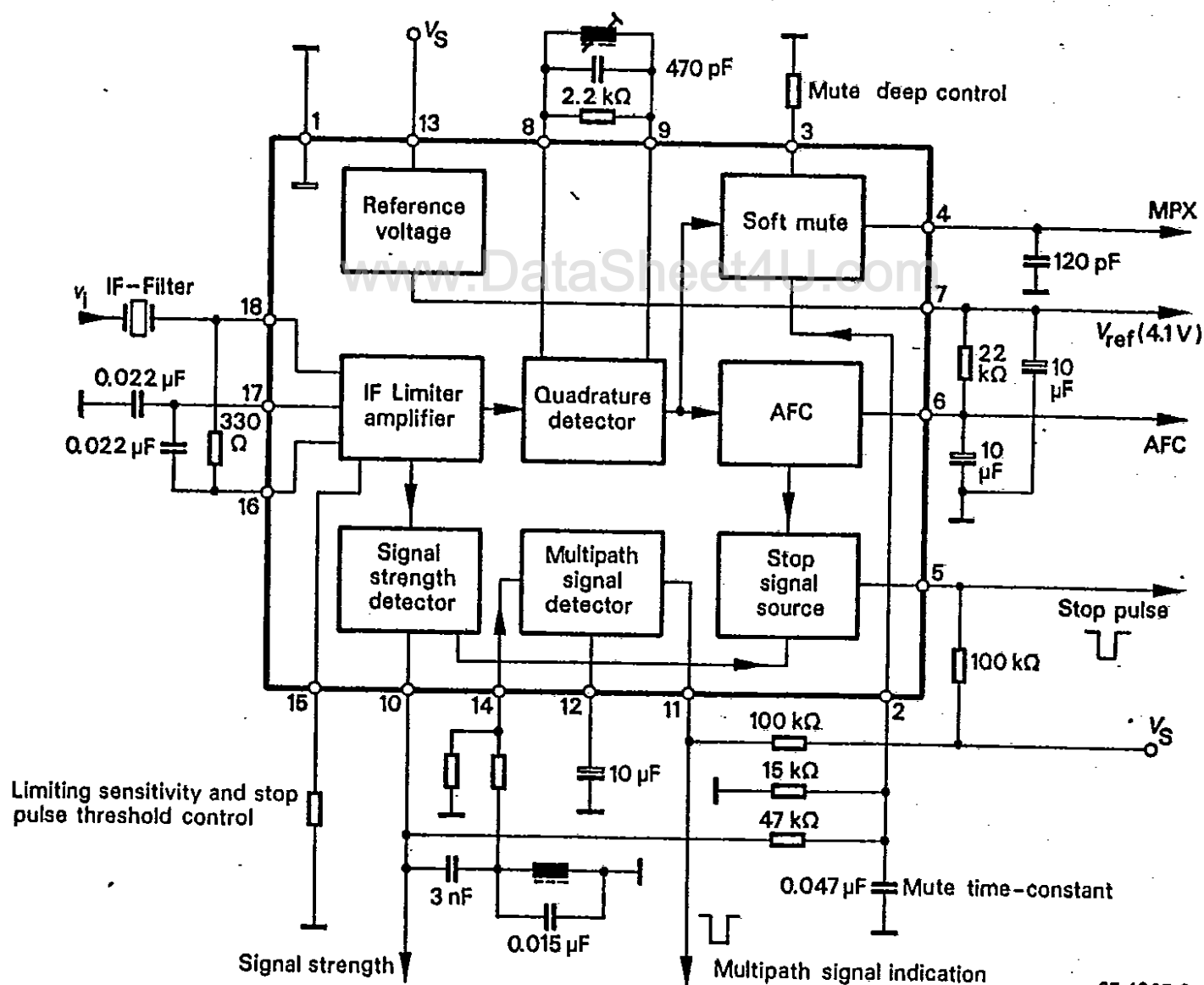
T-77-05-07

Features:

- 7 stage limiter amplifier
- Multi-path signal detector
- Controllable limiting sense and stop pulse threshold
- Controllable mute function
- High (S + N)/N ratio and low signal distortion
- Signal strength output

Case:

18 pin dual inline plastic



87 4967 6

Fig. 1 Block diagram and application circuit

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Absolute maximum ratings

Reference point Pin 1, unless otherwise specified

Supply voltage	Pin 13	V_S	18	V
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-40...+150	°C
Ambient temperature range		T_{amb}	-25...+85	°C

Maximum thermal resistance

Junction ambient		R_{thJA}	100	K/W
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Electrical characteristics

Min. Typ. Max.

 $V_S = 8.5$ V, reference point Pin 1, $f_i = 10.7$ MHz, $V_i = 10$ mV, FM ± 75 kHz $f_{mod} = 1$ kHz, $Q_o \approx 20$, $T_{amb} = 25$ °C, unless otherwise specified

Supply voltage range	Pin 13	7.5	15	V
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Supply current	Pin 13	24	29	mA
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IF-limiter amplifier

Pin 18

Limiting threshold (~ 3 dB),Pin 15 connected to V_{Ref}

Pin 15 connected to ground

V_i	15	40	μ V
V_i	2.4		mV

Audio signal

Pin 4

Audio output voltage level	V_o	270	380	520	mV
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Frequency response (-1 dB)	f_r	0.02...150			kHz
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Distortion	d	0.7	1.5		%
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(S+N)/N ratio	$\frac{S+N}{N}$	70	78		dB
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AFC current signal

Pin 6

$\Delta f_i = \pm 50$ kHz	$\pm \Delta I_o$	110			μ A
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Stop signal generation

Pin 5

"Low" voltage, $I_5 \leq 0.5$ mA	Pin 5	V_5 Low	1.3		V
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"High" voltage	Pin 5	V_5 High	7		V
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Input voltage threshold, $V_5 = \text{Low}$

Pin 15 connected to V_{Ref}	FM	Pin 18	V_{imax}	70	μ V
	AM	Pin 18	V_{imax}	500	μ V

Frequency window, $R_{6-7} = 22$ k Ω

$V_5 = \text{Low}$	Pin 5	Δf_{st}	± 18		kHz
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AM rejection, $m = 0.3$	Pin 4	AMR	60		dB
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			Min.	Typ.	Max.	
Signal strength output	Pin 10					
$V_i = 0 \mu V$		V_o			0.1	V
$V_i = 50 \text{ mV}$		V_o	3.0	3.8		V
Mute function						
Mute "off" voltage,	Pin 2	V_{off}		0.5	0.75	V
Minimum mute range, $R_{3-1} = \infty$			4	7	10	dB
Maximum mute range, $R_{3-1} = 0$			32	39	46	dB
Multi-path signal detector	Pin 11					
Input voltage for full output swing $f = 20 \text{ kHz}$	Pin 14	V_i		5		mV
Charge current Pin 14 connected to ground	Pin 12	I		3		mA
Discharge current Pin 14 open circuit or $V_{12} < 1 \text{ V}$	Pin 12	I		10		μA
Saturation voltage, $I_{11} = 0.5 \text{ mA}$	Pin 11	V_{sat}			1	V
Reference voltage supply						
Reference voltage $I_o = 500 \mu A$	Pin 7	V_{Ref}	3.6	4.1	4.6	V
Load current	Pin 7	I_{load}		3	5	mA

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Electrical characteristics for switching operation

Noise voltage	Pin 9, 10	$V_{on}^{4)}$		30	80	μV
Total harmonic distortion $f_{AF} = 1 \text{ kHz}$	Pin 9, 10	THD ^{1) 6)}			0.5	%
Channel balance	Pin 9, 10	$B_{al}^{2)}$			0.5	dB
Switching noise mono/stereo S1 closed-open	Pin 9, 10	ΔV_o			60	mV



Fig. 2: Test circuit

Dimensions in mm

