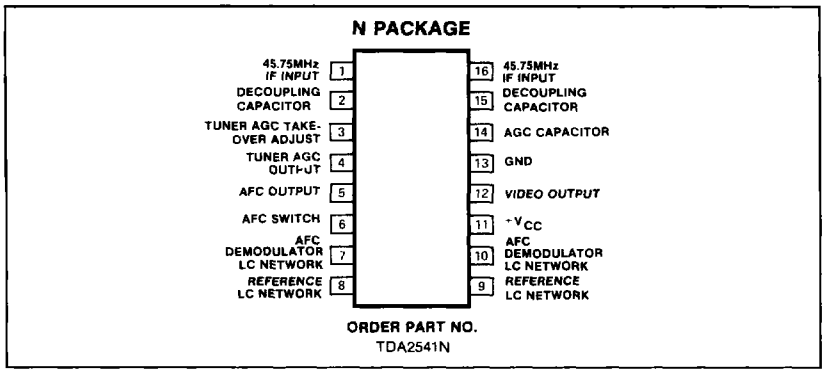
TDA2541-N

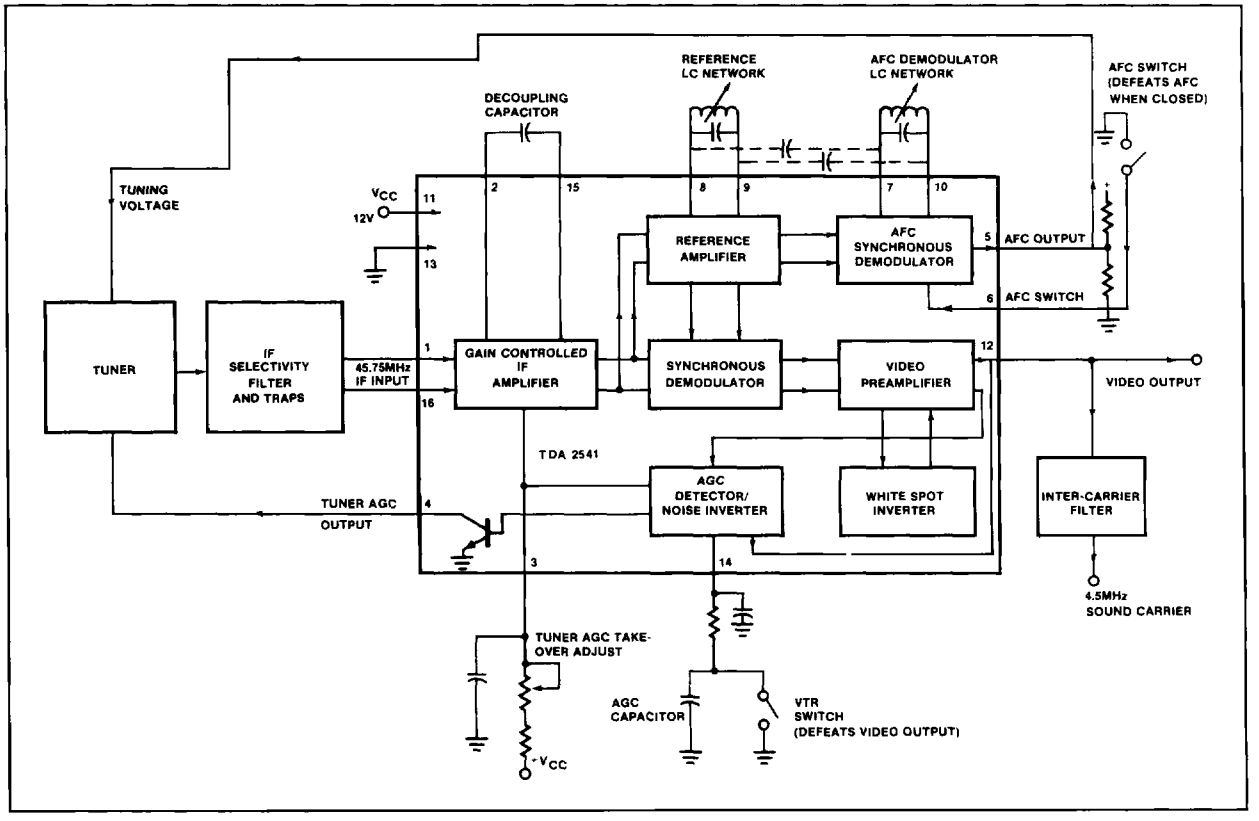
## FEATURES

- Performs all video IF functions
- Provides 63dB IF AGC range
- Tuner AGC output
- Black and white noise inverting circuits
- AFC output
- High input sensitivity—100$\mu$V typical
- 53dB S/N ratio at 40dB gain control
- Minimal external components and adjustments required
- Switch disabling of video to allow direct video interface with VTR

## PIN CONFIGURATION




## SIMPLIFIED BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS

| PARAMETER | RATING | UNIT |
|---|---|---|
| Supply voltage $V_{CC}$ | 14 | V |
| Supply current ($V_{CC}$ = 14V) | 75 | mA |
| Power dissipation ($V_{CC}$ = 14V) | 1.0 | W |
| Operating temperature | 0 to +70 | °C |
| Storage temperature | -65 to +150 | °C |

## DC ELECTRICAL CHARACTERISTICS

$T_A$ = 25°C, $V_{CC}$ = 12V unless otherwise specified.

| PARAMETER | | TEST CONDITIONS | TDA 2541 | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| $I_{CC}$ | Supply current | | 37 | | 67 | mA |
| $V_{th(AFC)}$ | AFC switched off below | | | 2.5 | | V |
| $I_5$ | AFC symmetry | $V_i$ = 0, $V_{14}$ = 0 | -40 | | +40 | μA |
| $V_{th(VTR)}$ | VTR switch switches off below | | | 1.1 | | V |
| $V_{WS}$ | White spot inverter threshold level | | | 6.6 | | V |
| $V_{D(WS)}$ | White spot inversion clamping level | | | 4.6 | | V |
| $V_N$ | Noise inverter threshold level | | | 1.8 | | V |
| $V_{O(N)}$ | Noise inversion clamping level | | | 3.8 | | V |
| $I_4$ | Tuner AGC output ON current | | 10 | | | mA |
| $V_{4(SAT)}$ | Tuner AGC output voltage | $I_4$ = 10mA | | | 300 | mV |
| $I_4$ | Tuner AGC output OFF current | | | | 10 | μA |

## AC ELECTRICAL CHARACTERISTICS

$T_A$ = 25°C, $V_{CC}$ = 12V unless otherwise specified.

| PARAMETER | | TEST CONDITIONS | TDA 2541 | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| $V_i$ | IF input voltage for onset of AGC (f = 45.75MHz) | | 70 | 100 | 140 | μV |
| $V_{O(Z)}$ | Zero signal output level | | 5.7 | 6 | 6.3 | V |
| $V_{O(TS)}$ | Top sync level | | 2.9 | 3 | 3.2 | V |
| $V_5$ | AFC output voltage swing | | | 10 | | V |
| $\Delta V_i$ | IF gain control range | | 50 | 63 | | dB |
| S/N | S/N at $V_i$ = 10mV[1] | | | 58 | | dB |
| B | 3dB bandwidth of video amplifier | | | 6 | | MHz |
| dG | Differential gain[2] | | | 4 | 10 | % |
| d0 | Differential phase[2] | | | 3° | 10° | |
| | Intermodulation (1.1MHz)[3] | 1.1MHz blue | 46 | 60 | | dB |
| | | 1.1MHz yellow | 46 | 50 | | dB |
| | Intermodulation (3.3MHz)[4] | 3.3MHz | 46 | 54 | | dB |
| | Carrier signal at video output | | | 4 | 30 | mV |
| | 2nd harmonic of carrier at video output | | | 20 | | mV |
| Δf | Change of frequency for 10V AFC swing | | | 100 | 200 | kHz |

NOTES

1. $S/N = \frac{V_o \text{ black to white}}{V \text{ noise r.m.s. } B = 5MHz}$
2. Measured with the VZM-2 test set-up of Wandel & Goltermann or equivalent. Measured between 10 and 75% of topsync level
3. Intermodulation 1.1MHz = $20 \log \left( \frac{V_o \text{ B-W}}{V_o \text{ p-p } 1.1MHz} \right)$ dB = $20 \log \left( \frac{V_o \text{ 4.4MHz}}{V_o \text{ 1.1MHz}} \right) + 3.6dB$
4. Intermodulation 3.3MHz = $20 \log \left( \frac{V_o \text{ 4.4MHz}}{V_o \text{ 3.3MHz}} \right)$ dB

## TYPICAL APPLICATION