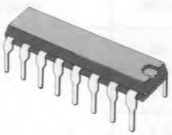
SGS-THOMSON MICROELECTRONICS

TCA3189

FM-IF HIGH QUALITY RADIO SYSTEM

- EXCEPTIONAL LIMITING SENSITIVITY
- VERY LOW DISTORTION (0.1% - DOUBLE TUNED DETECTOR COIL)
- IMPROVED S/N RATIO
- EXTERNALLY PROGRAMMABLE AUDIO LEVEL
- ON CHANNEL STEP FOR SEARCH CONTROL
- PROGRAMMABLE AGC VOLTAGE AND AFC FOR TUNER
- INTERCHANNEL MUTING (SQUELCH)
- DEVIATION MUTING
- DIRECT DRIVE OF TUNING METER
- DIRECT DRIVE OF FIELD STRENGTH METER

The TCA3189 is a monolithic integrated circuit in a 16-lead dual in-line plastic package, which provides a **complete subsystem** for amplification of 10.7MHz FM signal in Hi-Fi, car-radios and communications receivers.



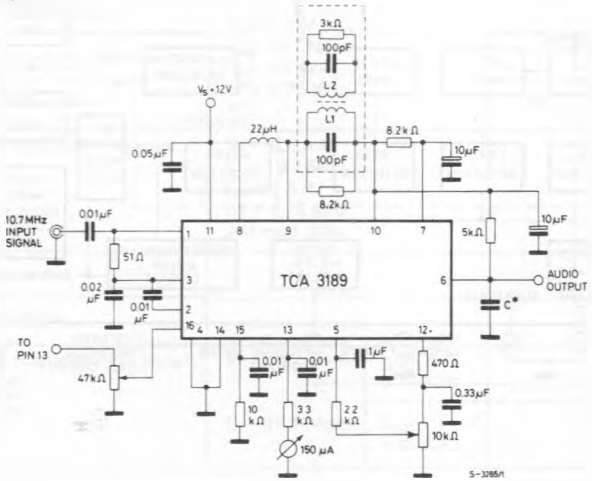
DIP-16 Plastic (0.25)

ORDERING NUMBER: TCA3189

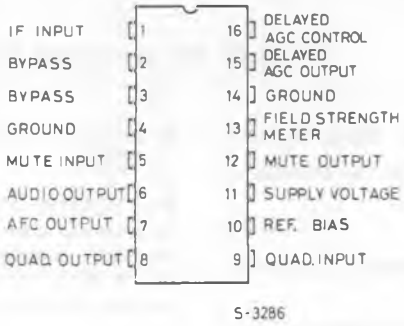
ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	16	V
I_o	Output current (from pin 15)	2	mA
P_{tot}	Total power dissipation at $T_{amb} \leqslant 70°C$	800	mW
T_{stg}	Storage temperature	-55 to 150	°C
T_{op}	Operating temperature	-25 to 85	°C

Double tuned detector coil



CONNECTION DIAGRAM
(top view)



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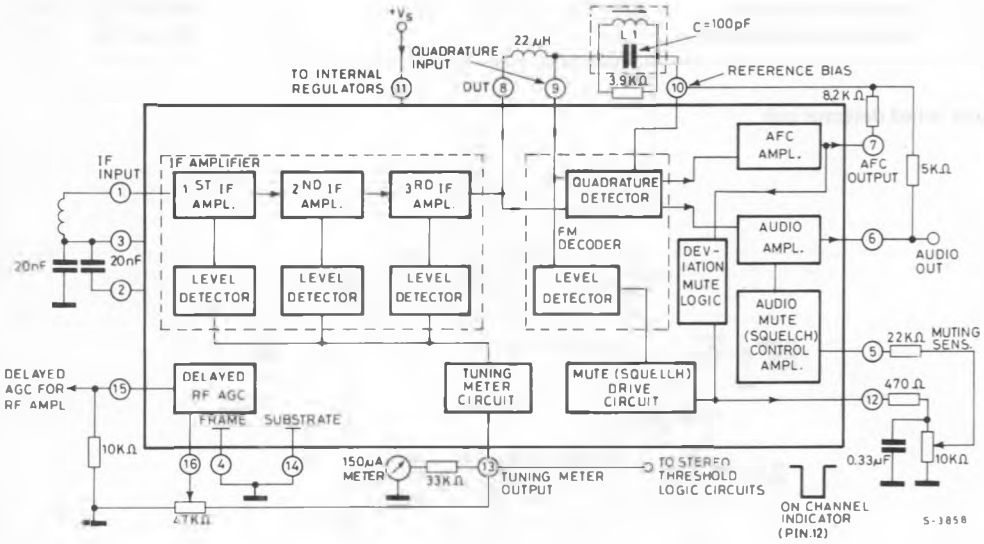
BLOCK DIAGRAM



THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max.	100	°C/W

ELECTRICAL CHARACTERISTICS (Refer to the test circuit, V_s = 12V, T_{amb} = 25°C)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
V_s	Supply voltage range	No signal input, non muted		9		16	V
I_s	Supply current			20	31	44	mA
V_1	Voltage at the IF amplifier input			1.2	1.9	2.4	V
V_2, V_3	Voltage at the input bypass			1.2.	1.9	2.4	V
V_{15}	Voltage at the pin 15 (RF AGC)			7.5	9.5	11	V
V_{10}	Reference bias voltage			5	5.6	6	V
V_i	Input limiting voltage (-3 dB) at pin 1	f_o = 10.7 MHz f_m= 1 KHz Δf= ± 75 KHz			12	25	μV
V_o	Recovered audio voltage (pin 6)	$V_i \geq 50\ \mu V$ f_o = 10.7 MHz f_m= 1 KHz Δf= ± 75 KHz		325	500	650	mV
d	Distortion (single tuned)	$V_i \geq 1$ mV f_o = 10.7 MHz f_m= 1 KHz Δf = ± 75 KHz			0.5	1	%
d	Distortion (double tuned)				0.1		%
$\frac{S+N}{N}$	Signal to noise ratio			65	72		dB
AMR	Amplitude modulation rejection	V_i = 100 mV f_o = 10.7 MHz f_m = 1 KHz Δf = ± 75 KHz AM mod. 30%		45	55		dB
V_{16}	RF AGC threshold				1.25		V
$\frac{\Delta I_7}{\Delta f}$	AFC control slope				1.9		$\frac{\mu A}{KHz}$
V_{12}	On channel step (deviation mute)	V_i = 100 mV f_o = 10.7 MHz	$f_{DEV.} <$ ± 40 KHz		0		V
			$f_{DEV.} >$ ± 40 KHz		5.6		V

TEST CIRCUIT

Fig. 1 - Single tuned detector coil

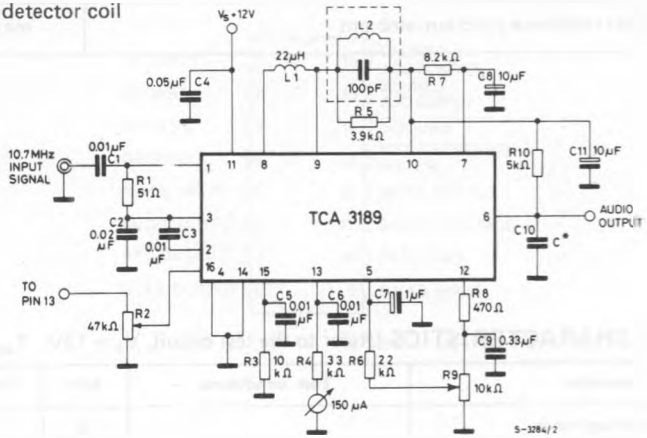


Fig. 2 - Limiting and noise characteristics

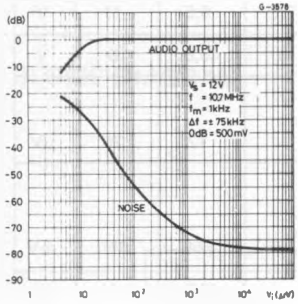


Fig. 3 - Deviation mute threshold vs. R_{7-10}

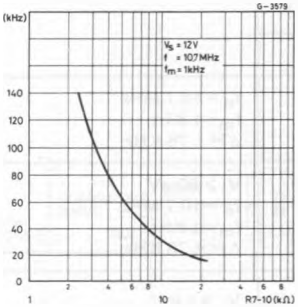


Fig. 4 - Recovered audio and muting action vs. input level

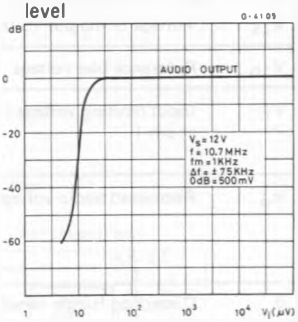


Fig. 5 - AFC characteristics

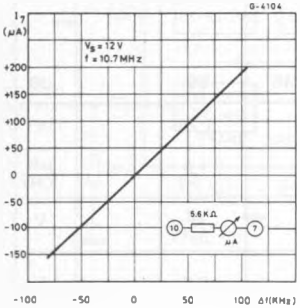


Fig. 6 - AGC voltage for FM tuner vs. input level

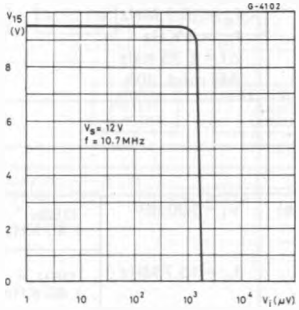


Fig. 7 - Field strength and tuning meter output vs. input level