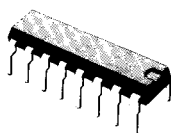


FM-IF HIGH QUALITY RADIO SYSTEM

- 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)

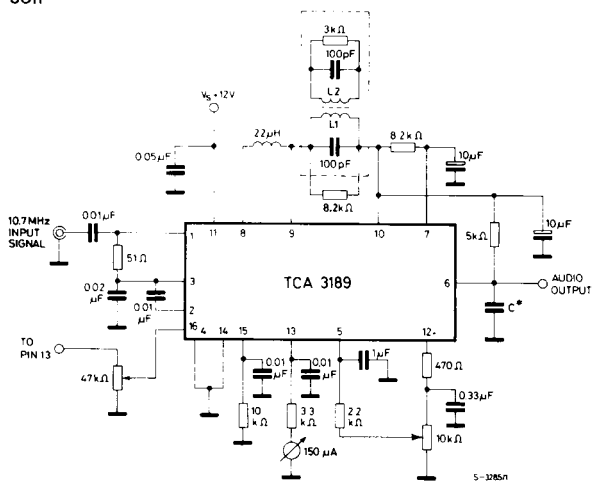
ORDERING NUMBER: TCA3189

ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage
I_o	Output current (from pin 15)
P_{tot}	Total power dissipation at $T_{amb} \leq 70^\circ\text{C}$
T_{stg}	Storage temperature
T_{op}	Operating temperature

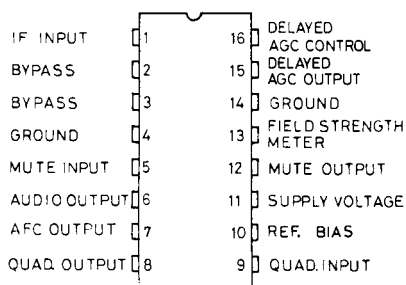
16	V
2	mA
800	mW
-55 to 150	$^\circ\text{C}$
-25 to 85	$^\circ\text{C}$

Double tuned detector coil



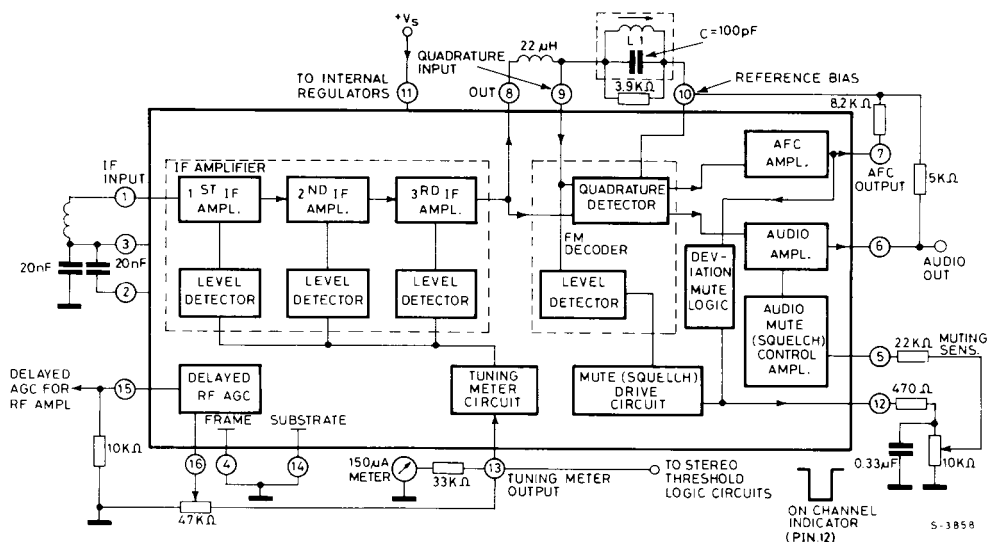
CONNECTION DIAGRAM

(top view)



S-3286

BLOCK DIAGRAM



THERMAL DATA

$R_{th\ j-amb}$	Thermal resistance junction-ambient	max.	100	°C/W
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ELECTRICAL CHARACTERISTICS (Refer to the test circuit, $V_s = 12V$, $T_{amb} = 25^\circ C$)

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	$f_o = 10.7\text{ MHz}$ $f_m = 1\text{ KHz}$ $\Delta f = \pm 75\text{ KHz}$		12	25	μV
V_o Recovered audio voltage (pin 6)	$V_i \geq 50\ \mu V$ $f_o = 10.7\text{ MHz}$ $f_m = 1\text{ KHz}$ $\Delta f = \pm 75\text{ KHz}$	325	500	650	mV
d Distortion (single tuned)	$V_i \geq 1\text{ mV}$ $f_o = 10.7\text{ MHz}$ $f_m = 1\text{ KHz}$ $\Delta f = \pm 75\text{ KHz}$		0.5	1	%
d Distortion (double tuned)			0.1		%
$\frac{S+N}{N}$ Signal to noise ratio		65	72		dB
AMR Amplitude modulation rejection	$V_i = 100\text{ mV}$ $f_o = 10.7\text{ MHz}$ $f_m = 1\text{ KHz}$ $\Delta f = \pm 75\text{ KHz}$ 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)	$V_i = 100\text{ mV}$	$f_{DEV.} < \pm 40\text{ KHz}$	0		V
	$f_o = 10.7\text{ MHz}$	$f_{DEV.} > \pm 40\text{ KHz}$	5.6		V

TEST CIRCUIT

Fig. 1 – Single tuned detector coil

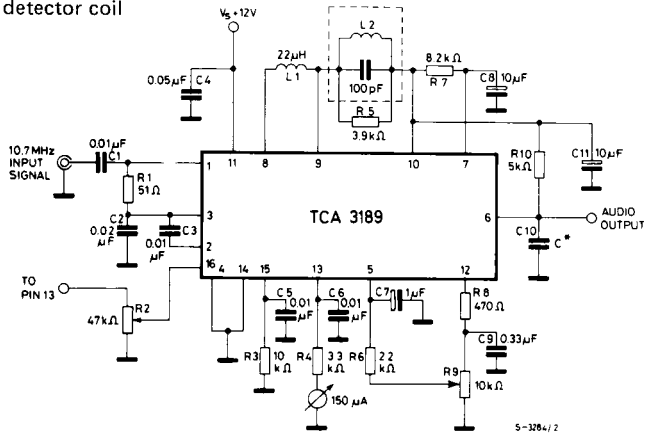


Fig. 2 – Limiting and noise characteristics

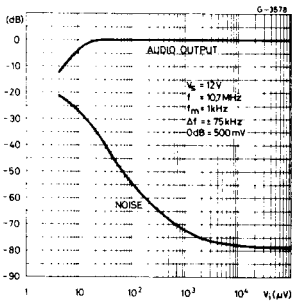


Fig. 3 – Deviation mute threshold vs. R7-10

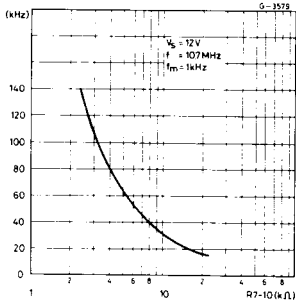


Fig. 4 – Recovered audio and muting action vs. input level

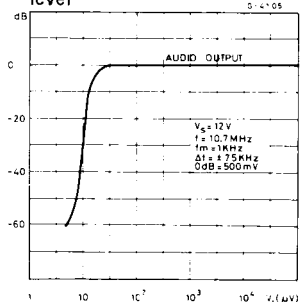


Fig. 5 – AFC characteristics

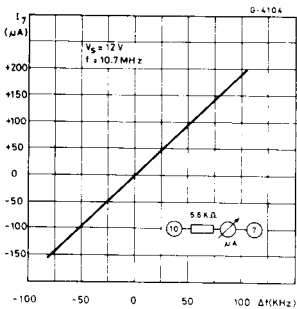


Fig. 6 – AGC voltage for FM tuner vs. input level

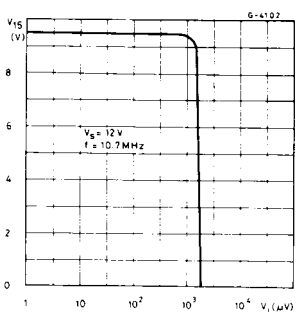


Fig. 7 – Field strength and tuning meter output vs. input level

