FEATURES

- **Built-in Signal Meter Driver**
- **Wide Operating Voltage Range**
- **High Limiting Sensitivity**
- **Wide Frequency Range**
- **Built-in Mixer**

APPLICATIONS

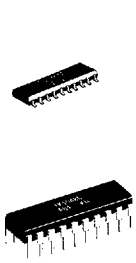
- **Cellular Phones**
- **Cordless Telephones**
- **VHF Radio**
- **Scanners**

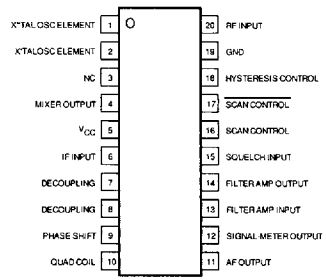
DESCRIPTION

The TK10487 has been developed for double conversion FM receivers. It has a built-in mixer, oscillator, IF amplifier, FM demodulator, received signal strength indicator drive and squelch circuitry. IF frequencies up to 30 MHz can be accommodated. Supply current and supply voltage has been minimized for use in battery powered systems. The signal meter output is typically 38 dBμ.

The TK10487 is available in MFP20 and DIP20 packages.

TK10487





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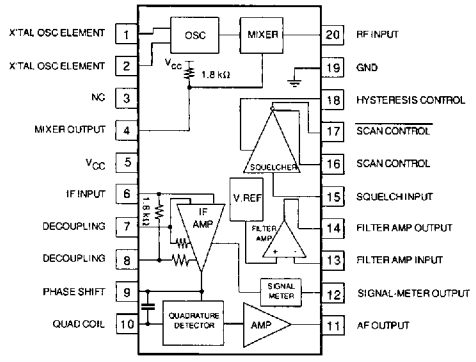
ORDERING INFORMATION

TK10487 □ □ □□

- Tape/Reel Code
- Temp. Range
- Package Code

PACKAGE CODE	TEMP. RANGE	TAPE/REEL CODE
M: Surface Mount	C : -30 to +70 °C	BX: Bulk/Bag
D: PLASTIC DIP		TX: Paper Tape
		TR: Tape Right
		TL: Tape Left
		MG: Magazine

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Input Voltage V_{CCMAX} ..... 10 V
Power Dissipation (M Package) Note 1 ..... 410 mW
Power DIssipation (D Package) Note 2 ..... 1000 mW
Junction Temperature ..... 150 °C
Storage Temperature Range ..... -55 to +150 °C
Operating Temperature Range ..... -30 to +70 °C
Lead Soldering Temp. (10 sec.) ..... 300 °C

ELECTRICAL CHARACTERISTICS

Test conditions: V_{CC} = 6.0 V, T_A = 25 °C, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CC1}	Supply Current	No input, squelch off		4.4	6.6	mA
I_{CC2}	Supply Current	No input, squelch on		5.0	7.6	mA
Limit	Limiting Sensitivity	-3 dB V_{OUT}		2.0	8.0	µV
V_{OUT}	Detector Output	V_{IN} = 10 mV; dev., ± 3 kHz	100	180	250	mV(rms)
Detector Output						
V_{DC}	Terminal Voltage	V_{IN} = 10 mV, unmodulated	0.8	1.3	2.0	V
Z_{OUT}	Impedance	V_{IN} = 10 mV		500	1500	Ω
THD	Distortion	V_{IN} = 10 mV		1.0	2.0	%
Filter Amplifier						
F_G	Filter Amplifier Gain	F_{IN} = 10 kHz; V_O = 100 mV(rms)	33	38		dB
F_{DC}	Output Voltage	No input	0.8	1.2	1.5	V
HYS	Squelch Hysteresis	R_{HYS} = 1 kΩ		80		mV
Scan Control						
S_H	High Level	Squelch input = 0 V	2.3			V
S_L	Low Level	Squelch input = 2.5 V			0.5	V
S_H	High Level	Squelch input = 2.5 V	2.3			V
S_L	Low Level	Squelch input = 0 V			0.5	V

Note 1: Power dissipation must be derated at the rate of 4.8 mW/°C at T_A = 25 °C and above.
Note 2: Power dissipation must be derated at the rate of 8 mW/°C at T_A = 25 °C and above.

ELECTRICAL CHARACTERISTICS (CONT.)

Test conditions: V_{CC} = 6.0 V, T_A = 25 °C, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Mixer						
M_G	Mixer Conversion Gain			25		dB
M_{INR}	Mixer Input Resistance	DC measurement		3.6		kΩ
M_{INC}	Mixer Input Capacitance			2.2		pF
Signal Meter Output						
S_{OUT1}	Signal Meter Output	V_{IN} = 10 mV, R_S = 3 kΩ	1.3	2.0	2.7	V
S_{OUT0}	Signal Meter Output	V_{IN} = 0 mV, R_S = 3 kΩ			0.3	V
$S_{OUT\ 1/2}$	Signal Meter Output	RF Input at 1/2 S_{OUT1}	33	38	45	dBμ

METER OUTPUT RANGE

RANK/SPEC	SIGNAL OUTPUT		
	MIN (V)	TYP(V)	MAX(V)
A	1.3		1.72
B	1.70		2.32
C	2.30		2.70

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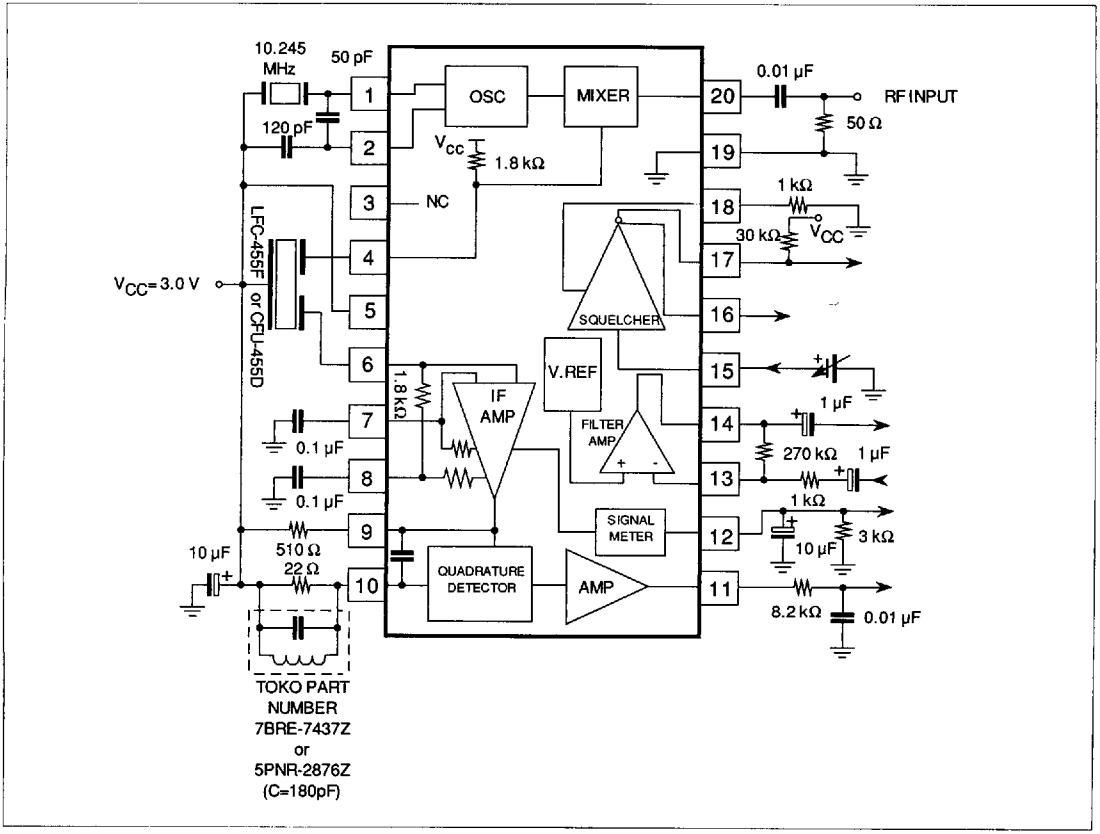
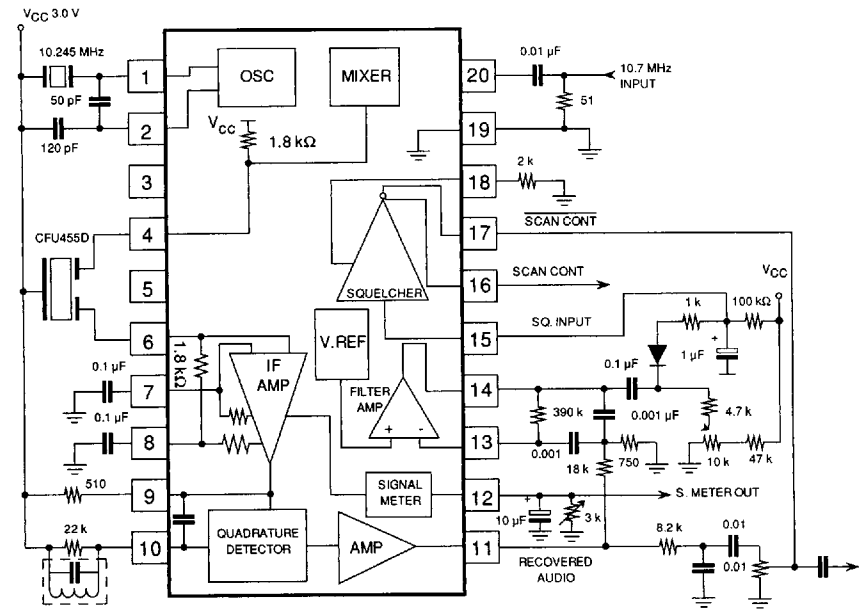
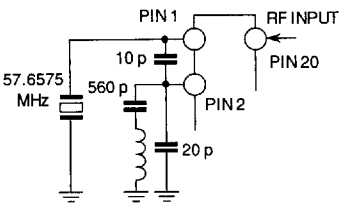
TEST CIRCUIT

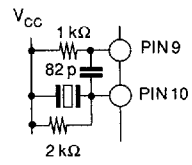


NOTES

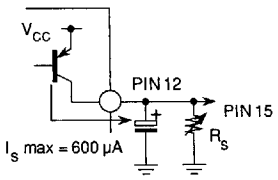
TYPICAL APPLICATION





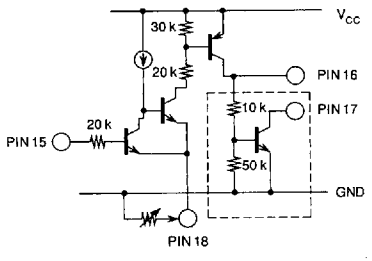


MURATA PART NUMBER
CDB455C7

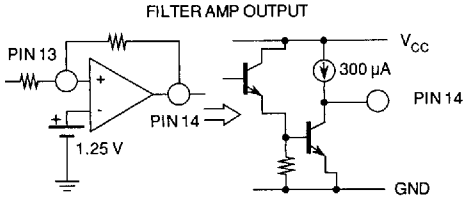


R_S: USE R_S WITH TEMPERATURE COEFFICIENT OF +2400 PPM/°C FOR THERMAL COMPENSATION IN OUTPUT LEVEL.

SQUELCH CIRCUIT



FILTER AMP OUTPUT



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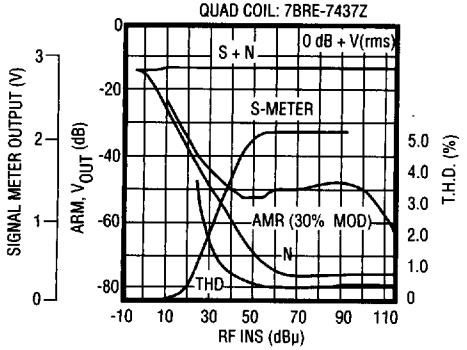
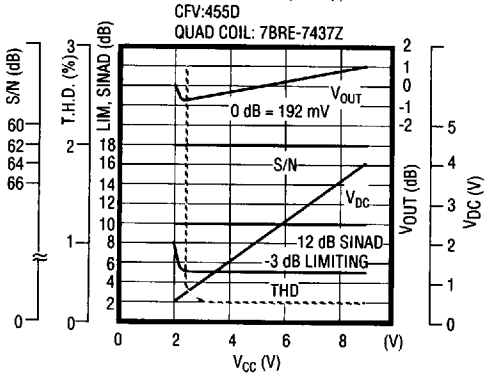
TYPICAL PERFORMANCE CHARACTERISTICS

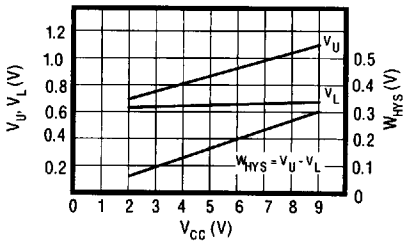
RECEIVER CHARACTERISTICS
V_{CC}: 3 V
RF:10.7 MHz (Mix IN)
QUAD COIL: 7BRE-7437Z



SUPPLY VOLTAGE CHARACTERISTICS WITH QUAD COIL
RE: RF10.7 MHz (80 dBμ)
CFV:455D
QUAD COIL: 7BRE-7437Z



V_{CC} vs V_U, V_L



R_{HYS} vs V_U, V_L