

## NARROW BAND FM-IF AMPLIFIER

### FEATURES

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

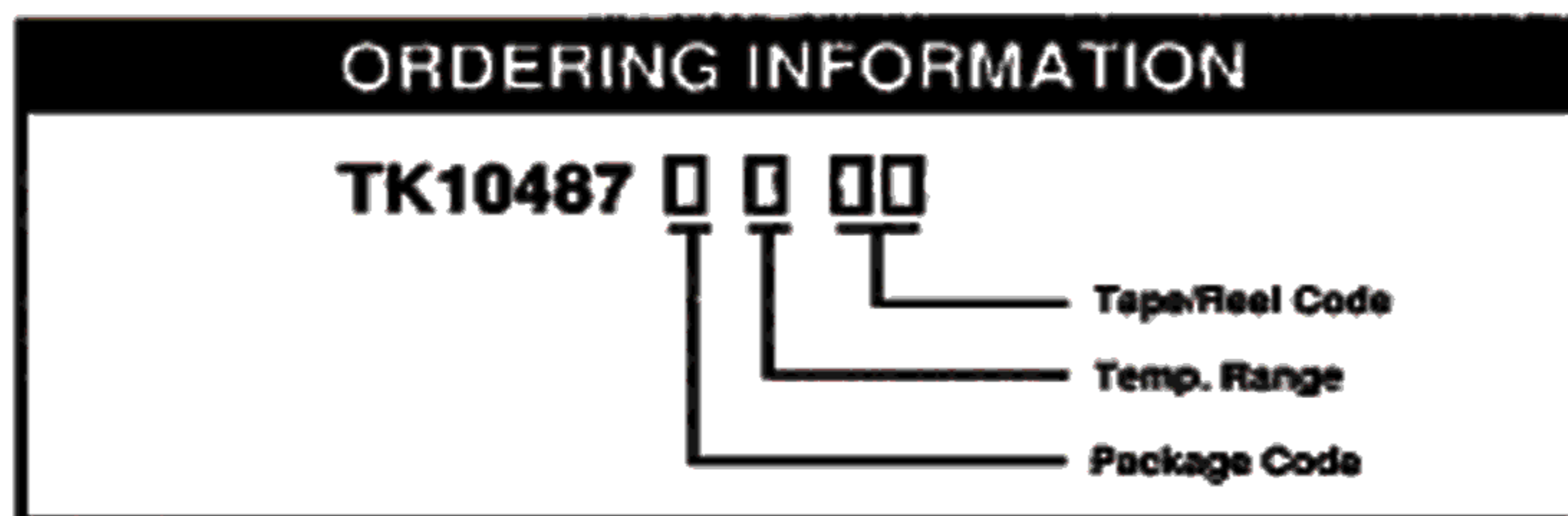
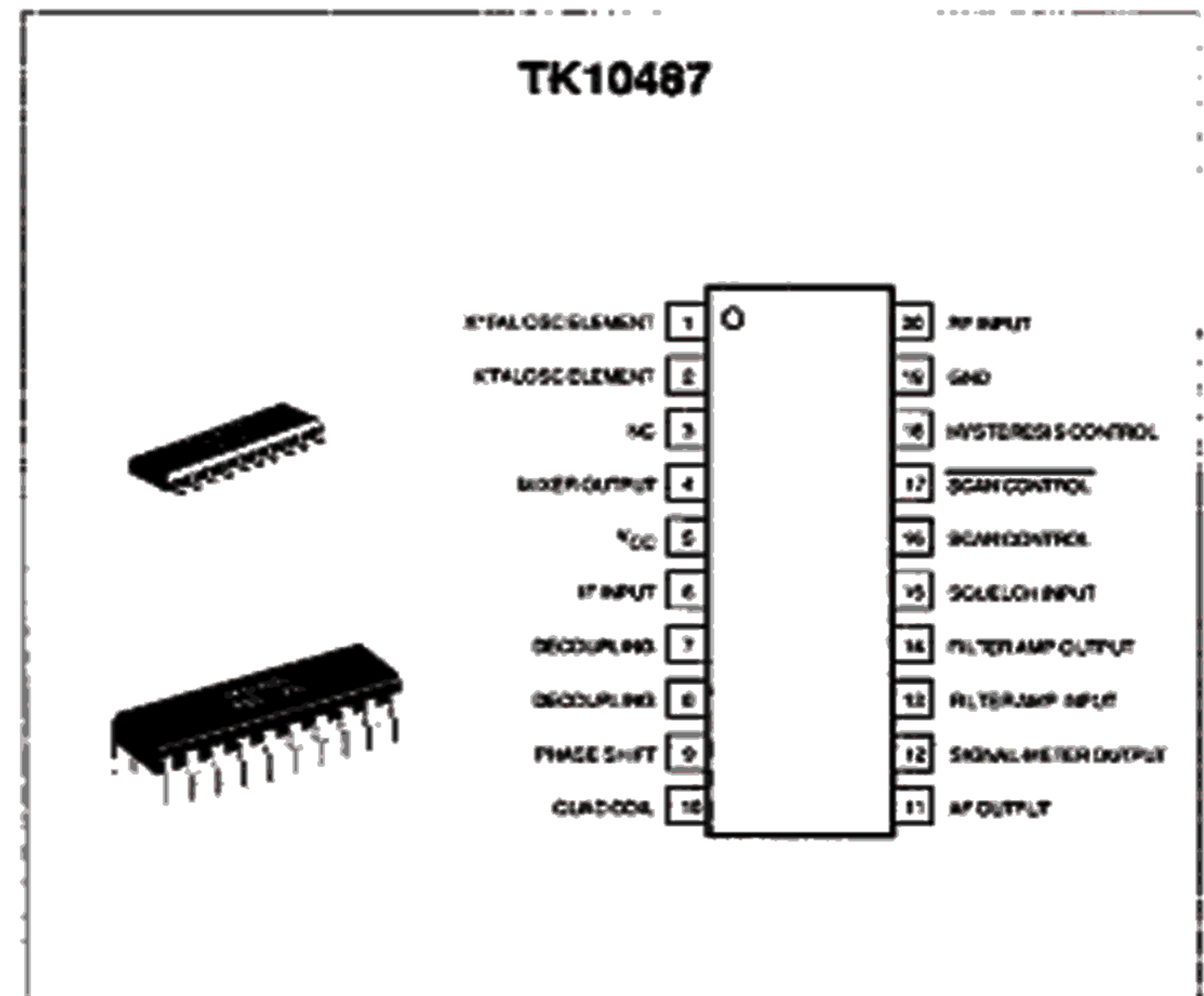
### APPLICATIONS

- 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 dB $\mu$ .

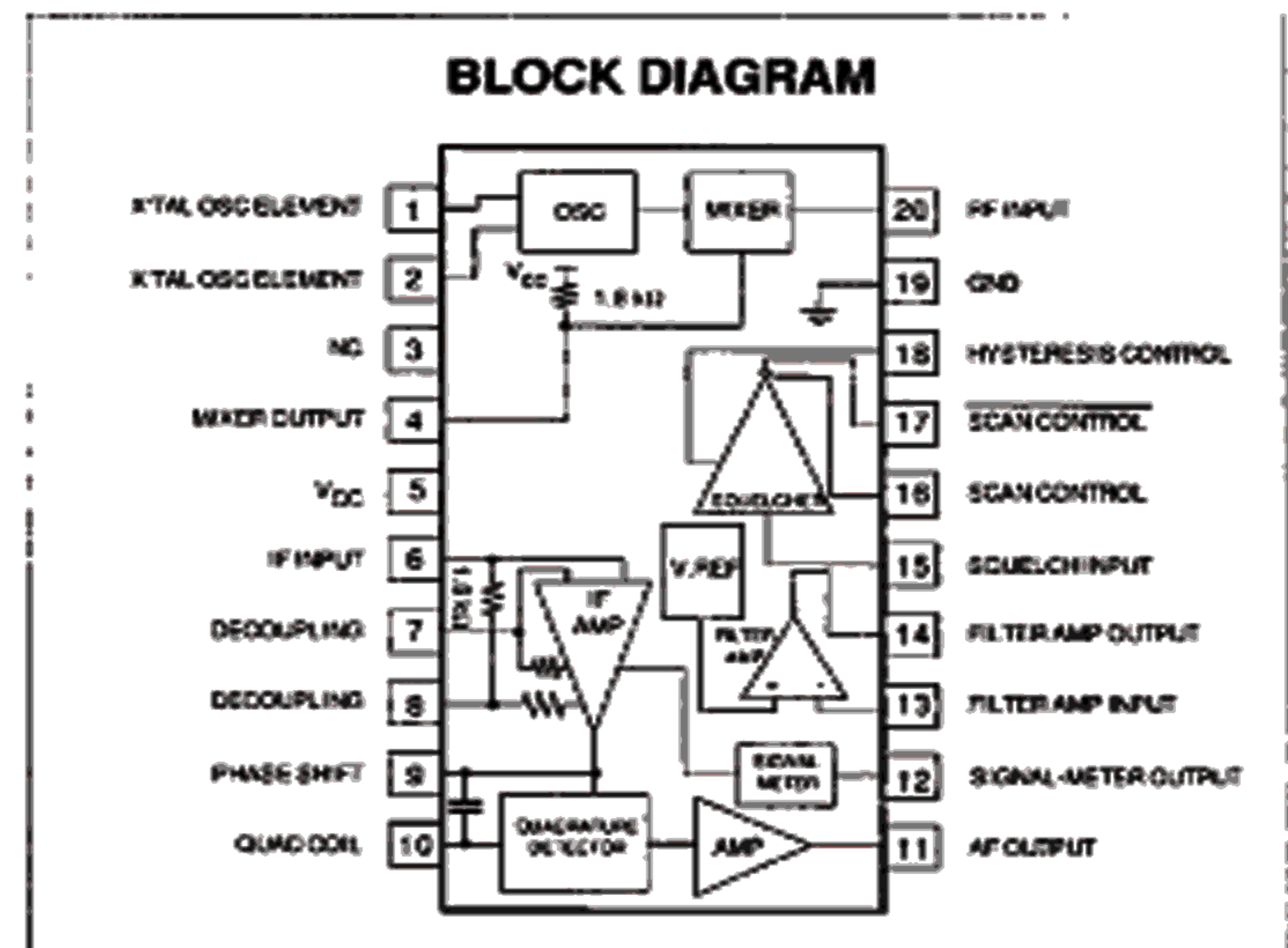
The TK10487 is available in MFP20 and DIP20 packages.



**PACKAGE CODE**  
M: Surface Mount  
D: PLASTIC DIP

**TEMP. RANGE**  
C: -30 to +70 °C

**TAPE/REEL CODE**  
BX: Bulk/Bag  
TX: Paper Tape  
TR: Tape Right  
TL: Tape Left  
MG: Magazine



# TK10487

## 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	$\mu$ V
$V_{OUT}$	Detector Output	$V_{IN} = 10$ mV; dev., $\pm 3$ kHz	100	180	250	mV(rms)
<b>Detector Output</b>						
$V_{DC}$	Terminal Voltage	$V_{IN} = 10$ mV, unmodulated	0.8	1.3	2.0	V
$Z_{OUT}$	Impedance	$V_{IN} = 10$ mV		500	1500	$\Omega$
THD	Distortion	$V_{IN} = 10$ mV		1.0	2.0	%
<b>Filter Amplifier</b>						
$F_G$	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
<b>Squelch Hysteresis</b>						
HYS	Squelch Hysteresis	$R_{HYS} = 1$ k $\Omega$		80		mV
<b>Scan Control</b>						
$S_H$	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.

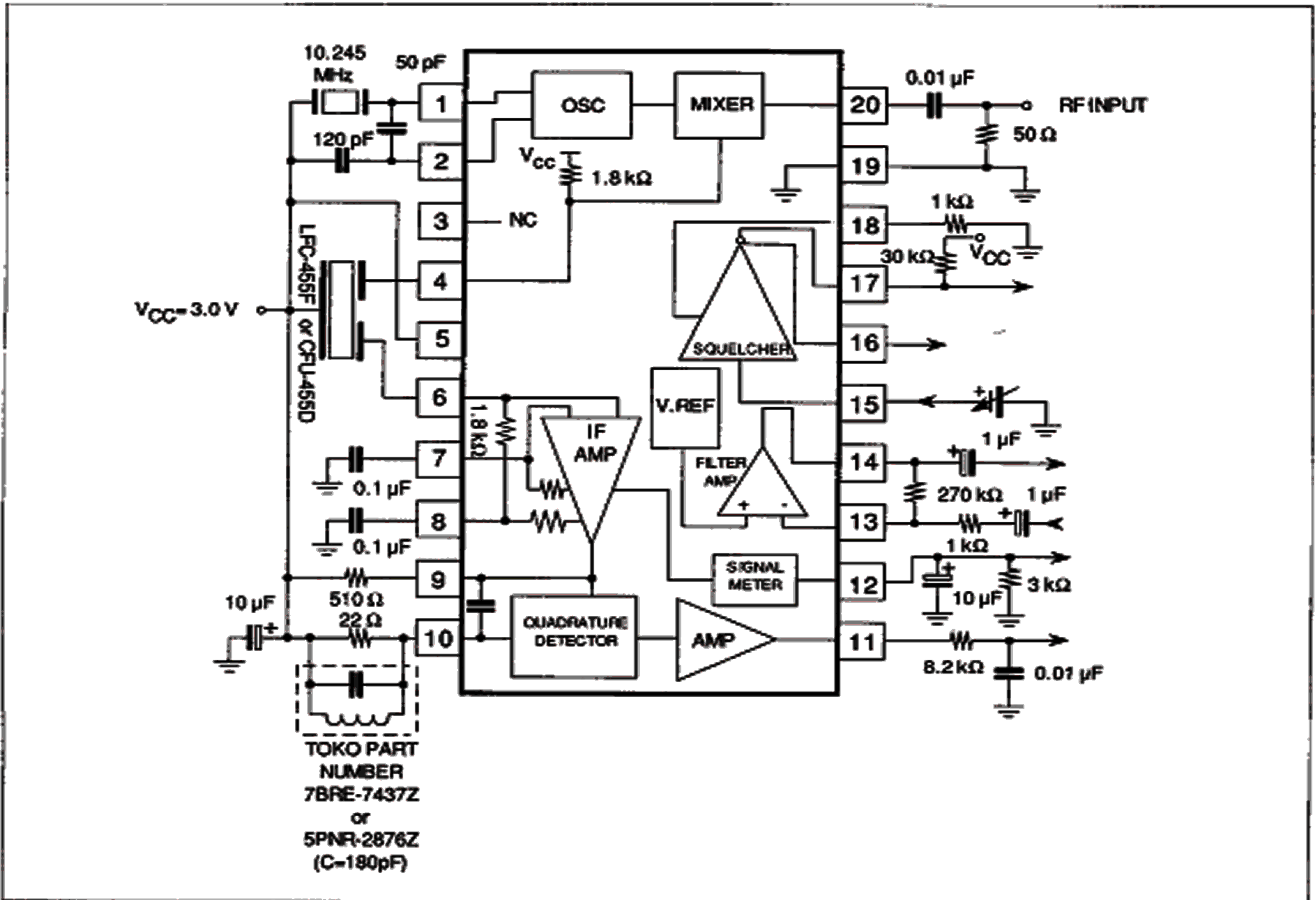
**ELECTRICAL CHARACTERISTICS (CONT.)**Test conditions:  $V_{CC} = 6.0\text{ V}$ ,  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified.

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

**METER OUTPUT RANGE**

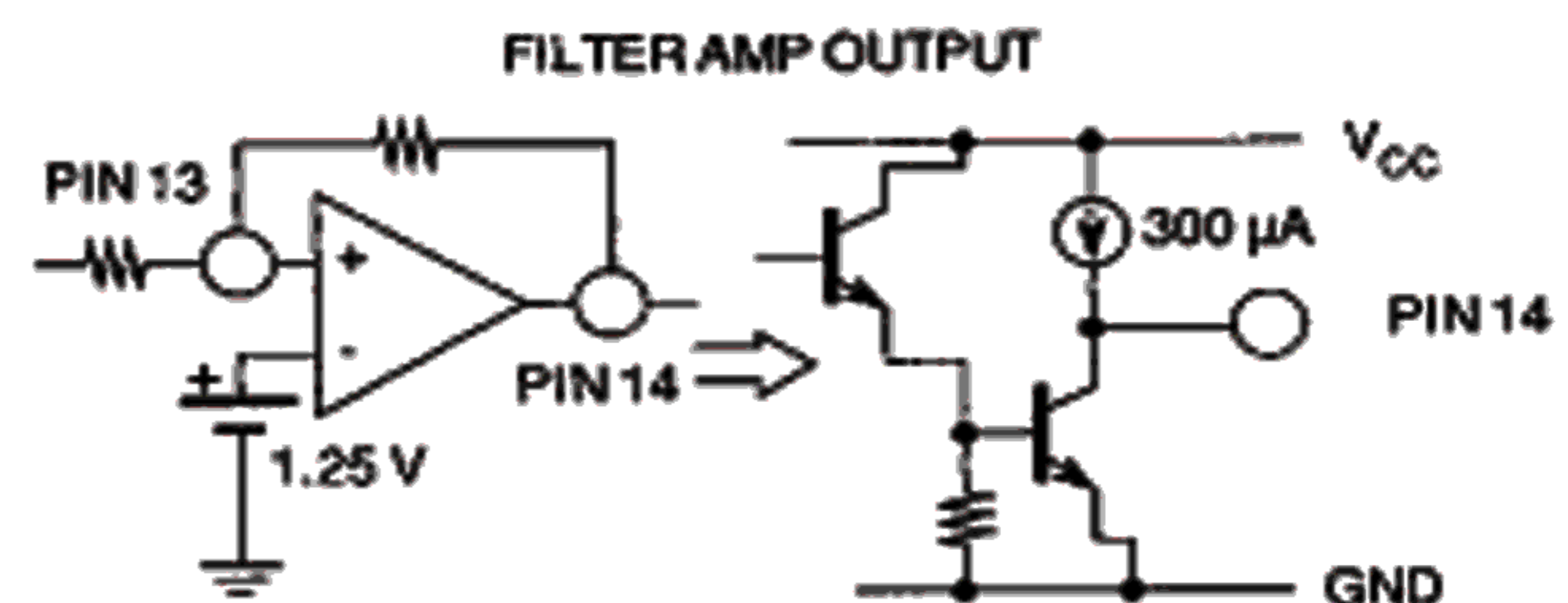
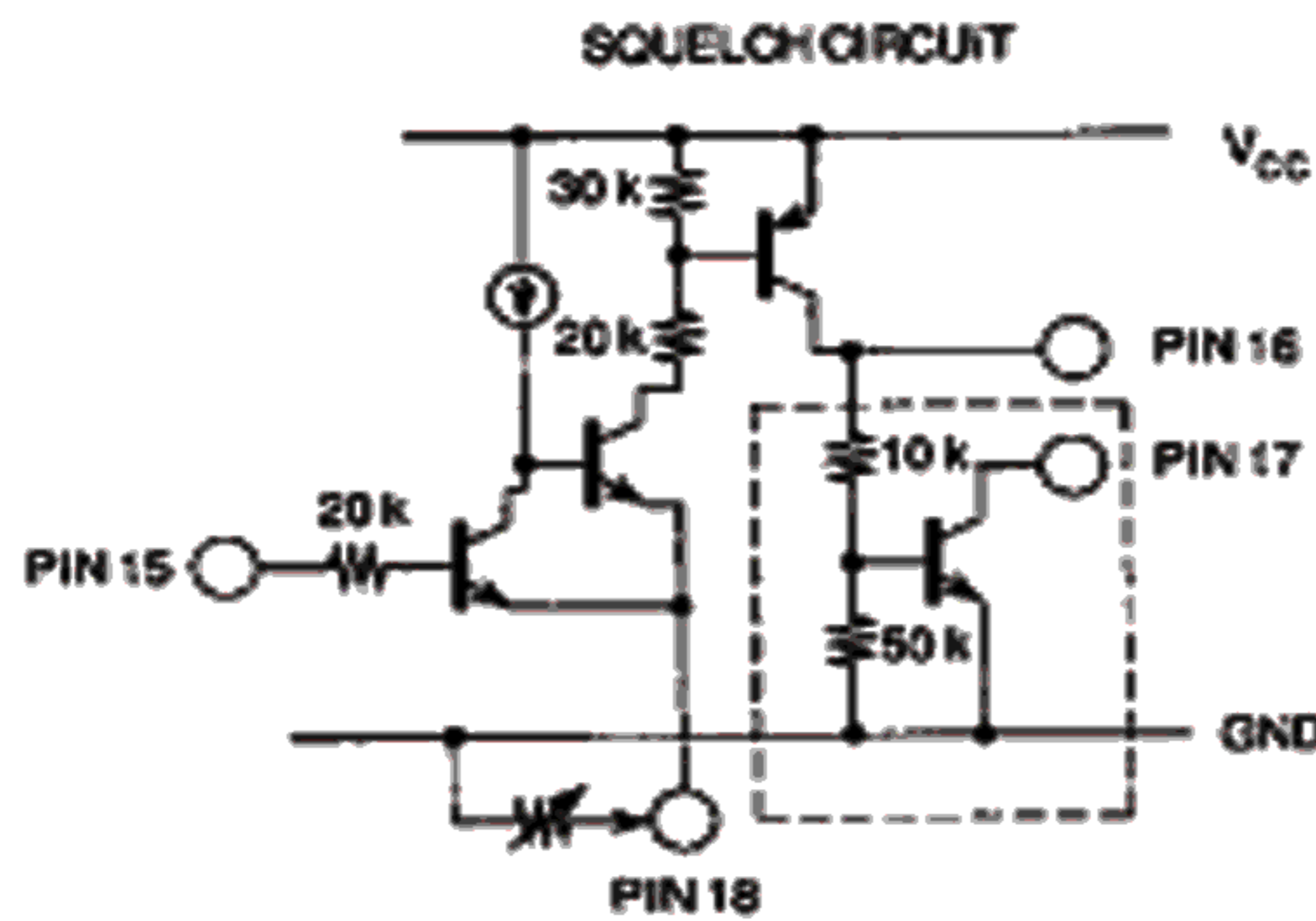
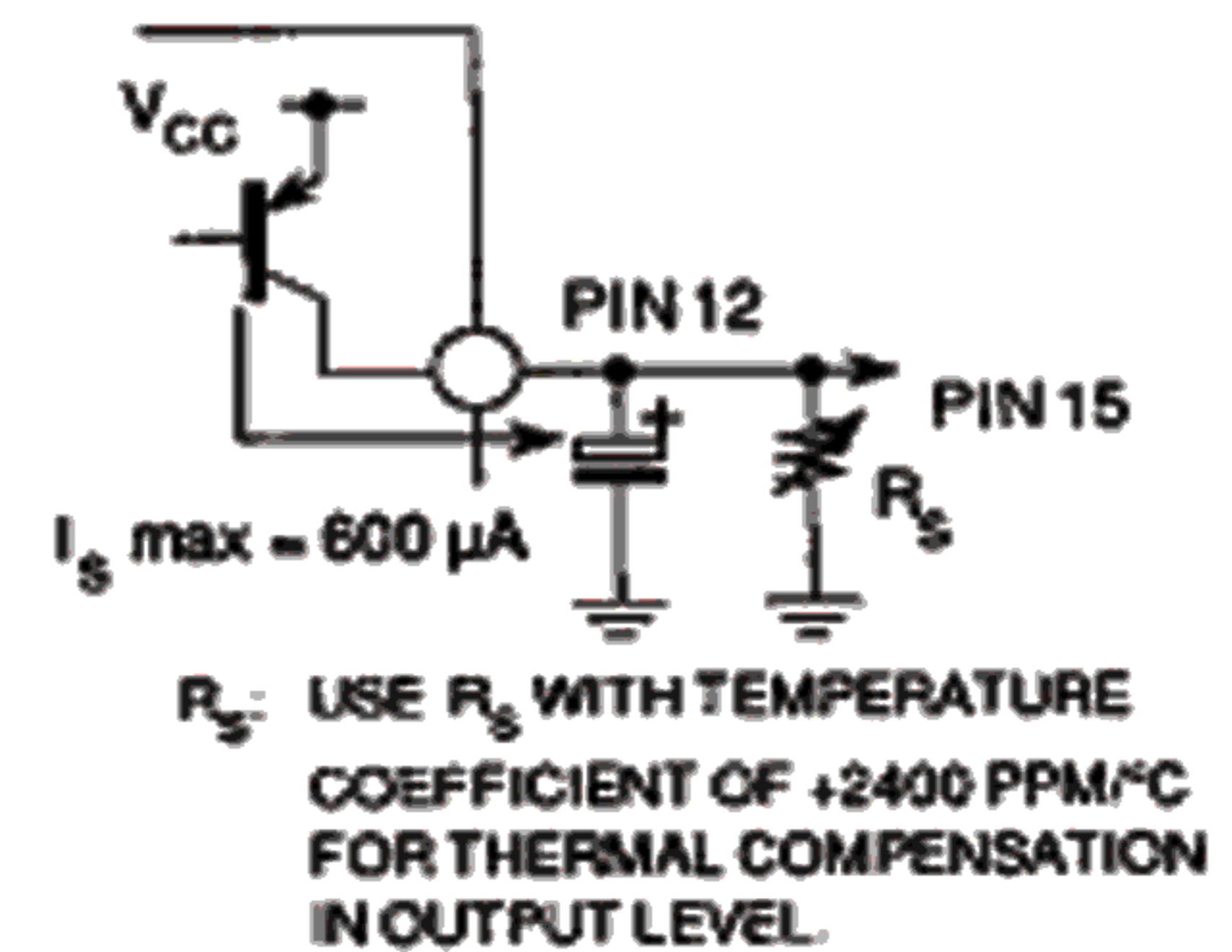
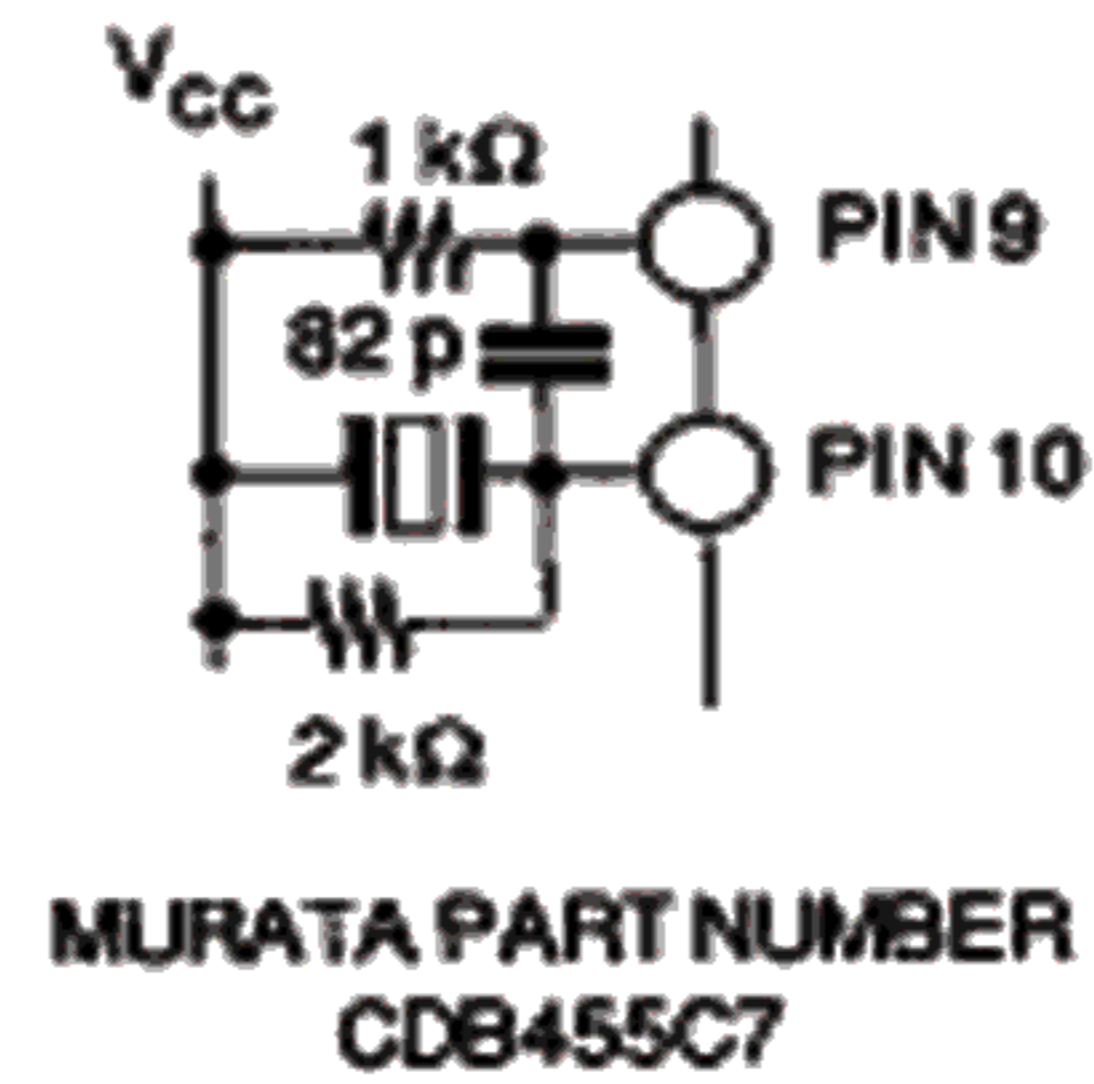
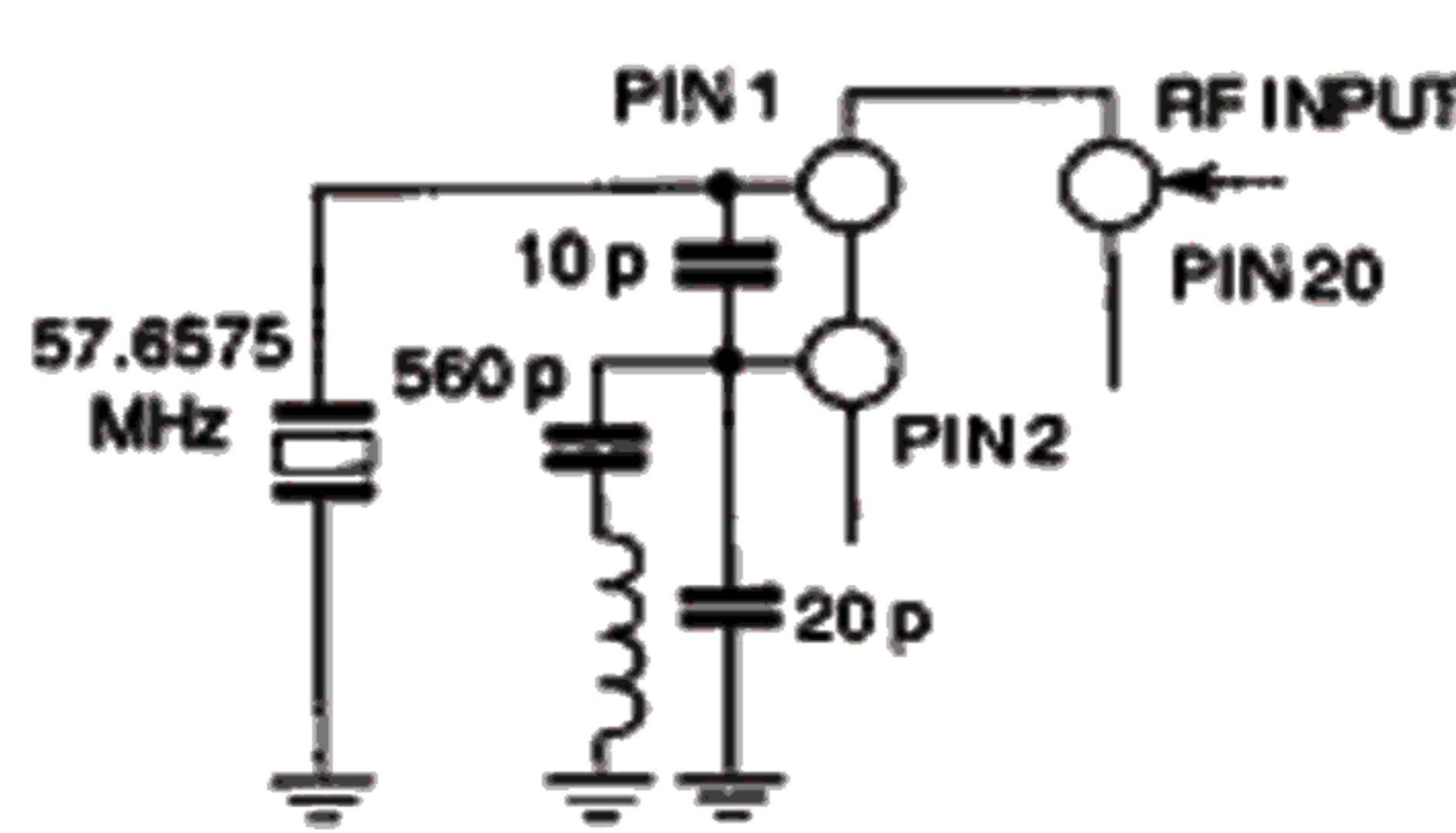
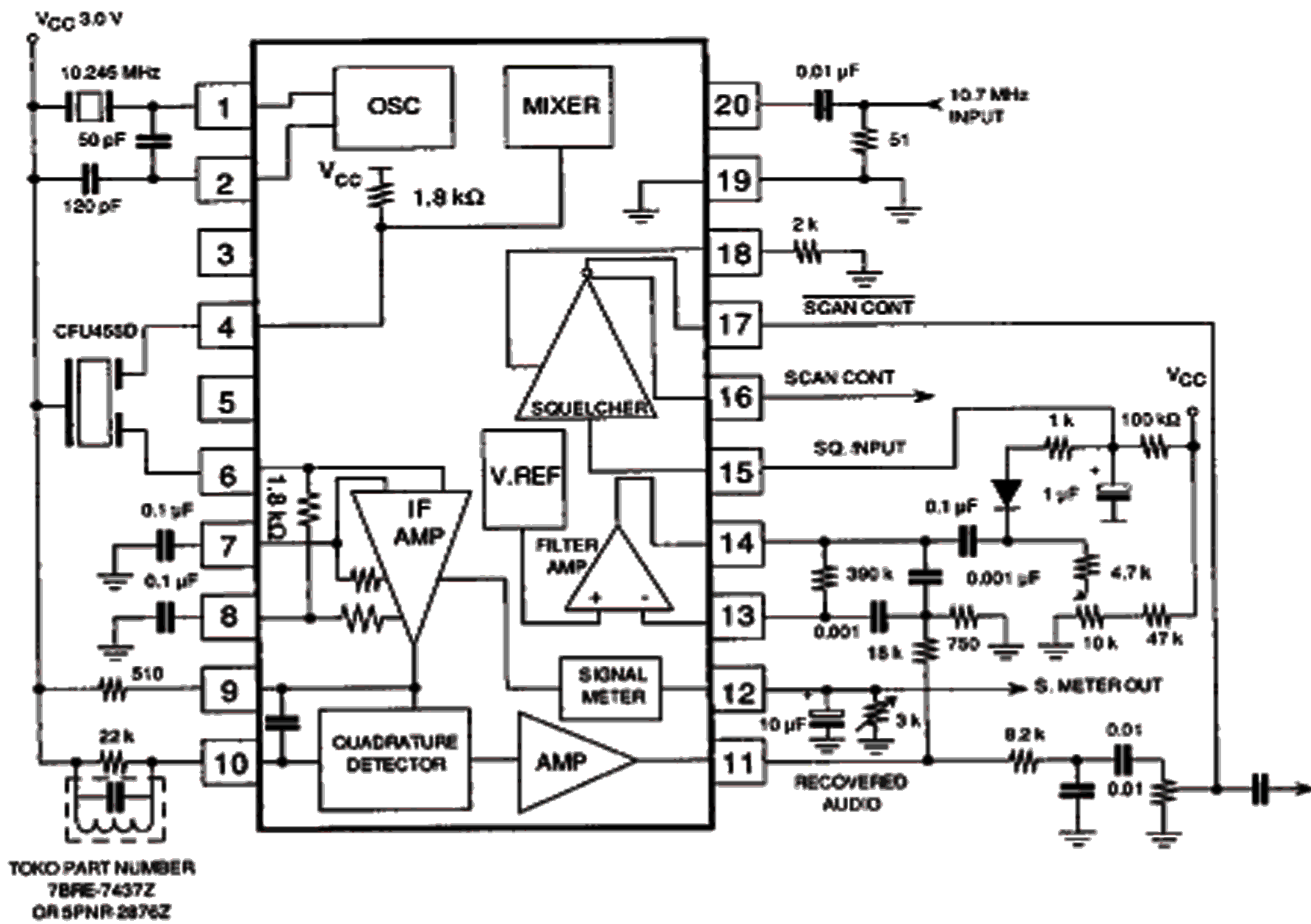
RANK/SPEC	SIGNAL OUTPUT		
	MIN (V)	TYP(V)	MAX(V)
A	1.3		1.72
B	1.70		2.32
C	2.30		2.70

TEST CIRCUIT



NOTES

TYPICAL APPLICATION

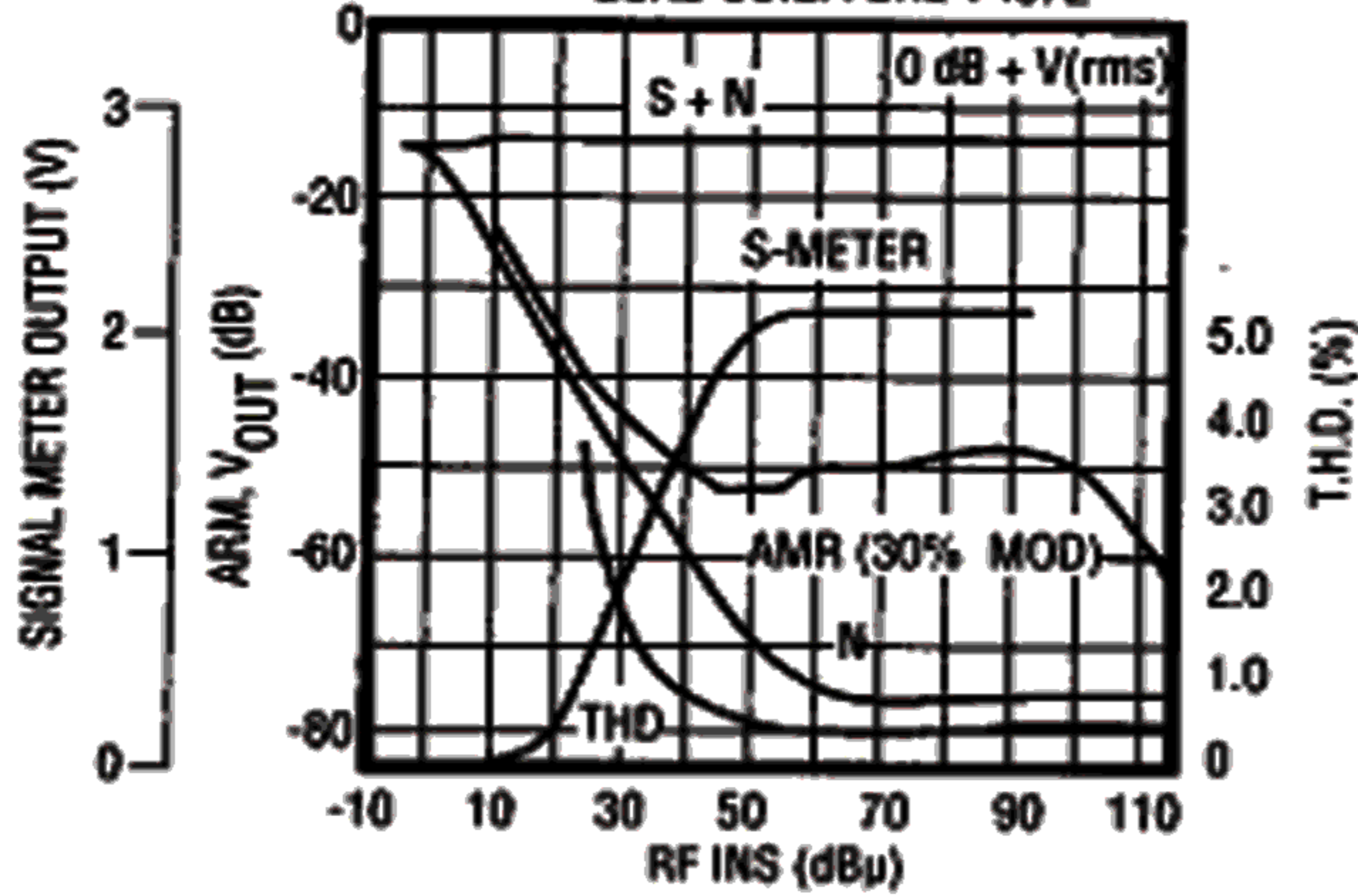


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TYPICAL PERFORMANCE CHARACTERISTICS

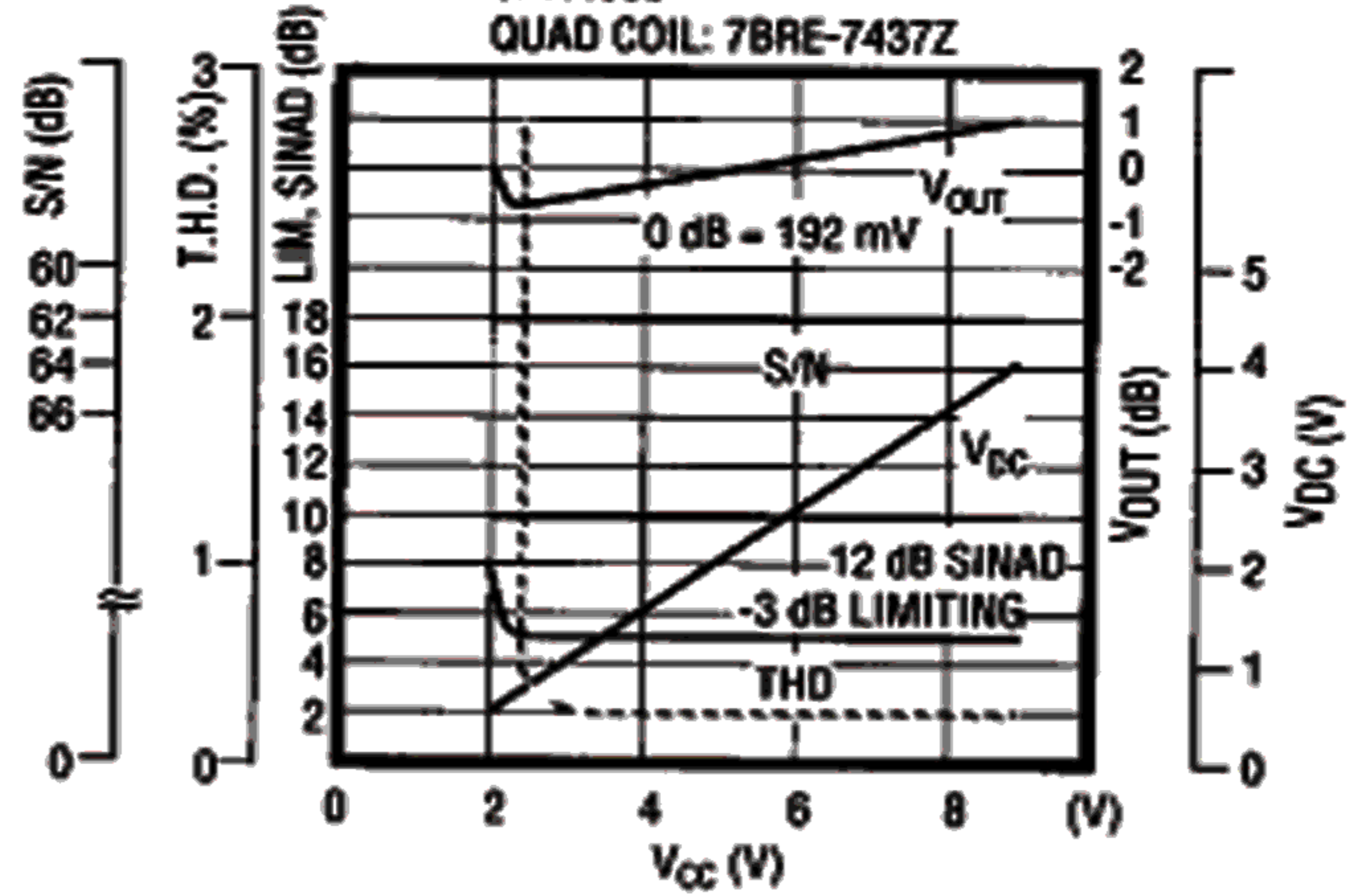
RECEIVER CHARACTERISTICS

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

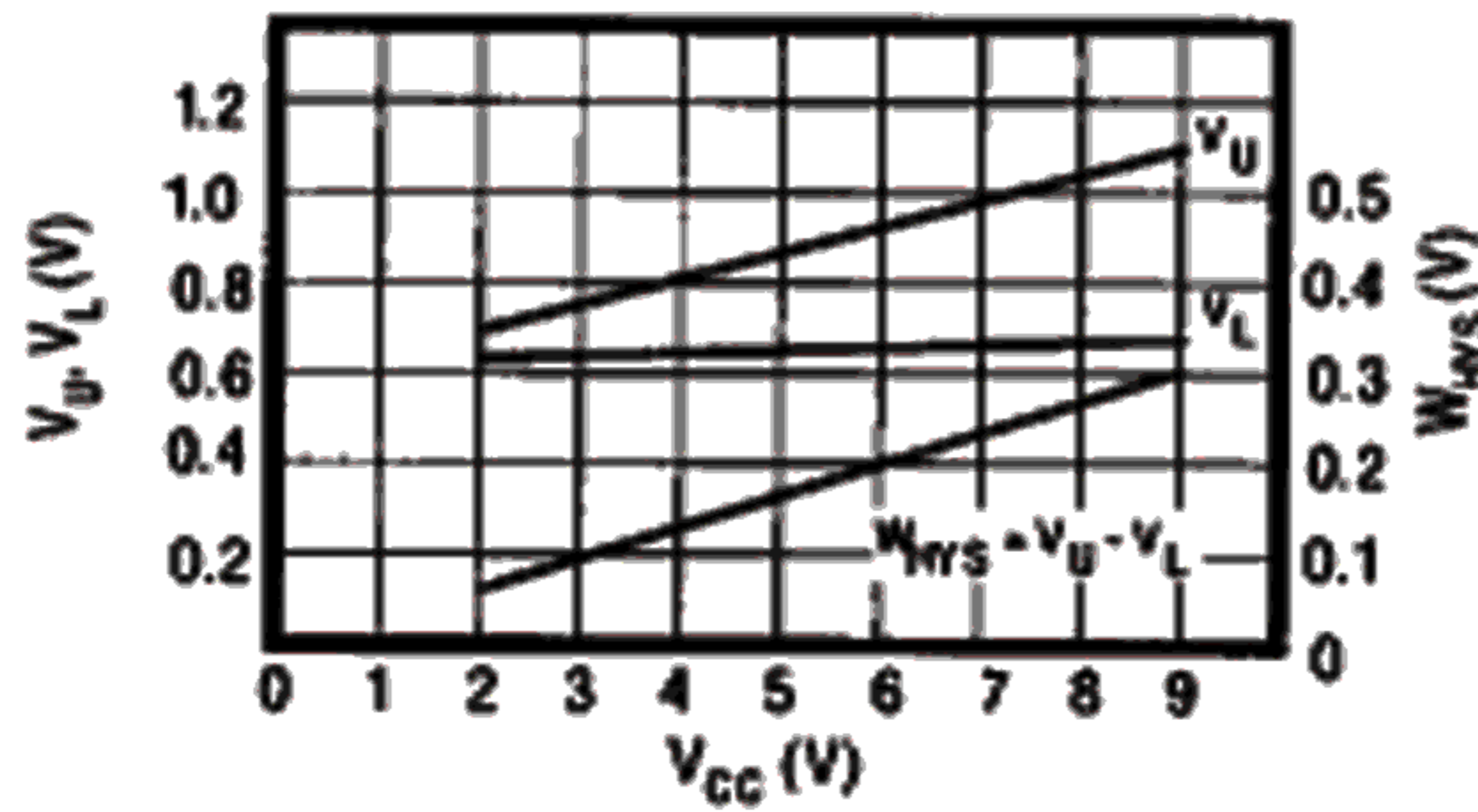


SUPPLY VOLTAGE CHARACTERISTICS WITH QUAD COIL

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



$V_{CC}$  vs  $V_U, V_L$



$R_{HYS}$  vs  $V_U, V_L$

