

NARROW BAND FM-IF AMPLIFIER

FEATURES

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

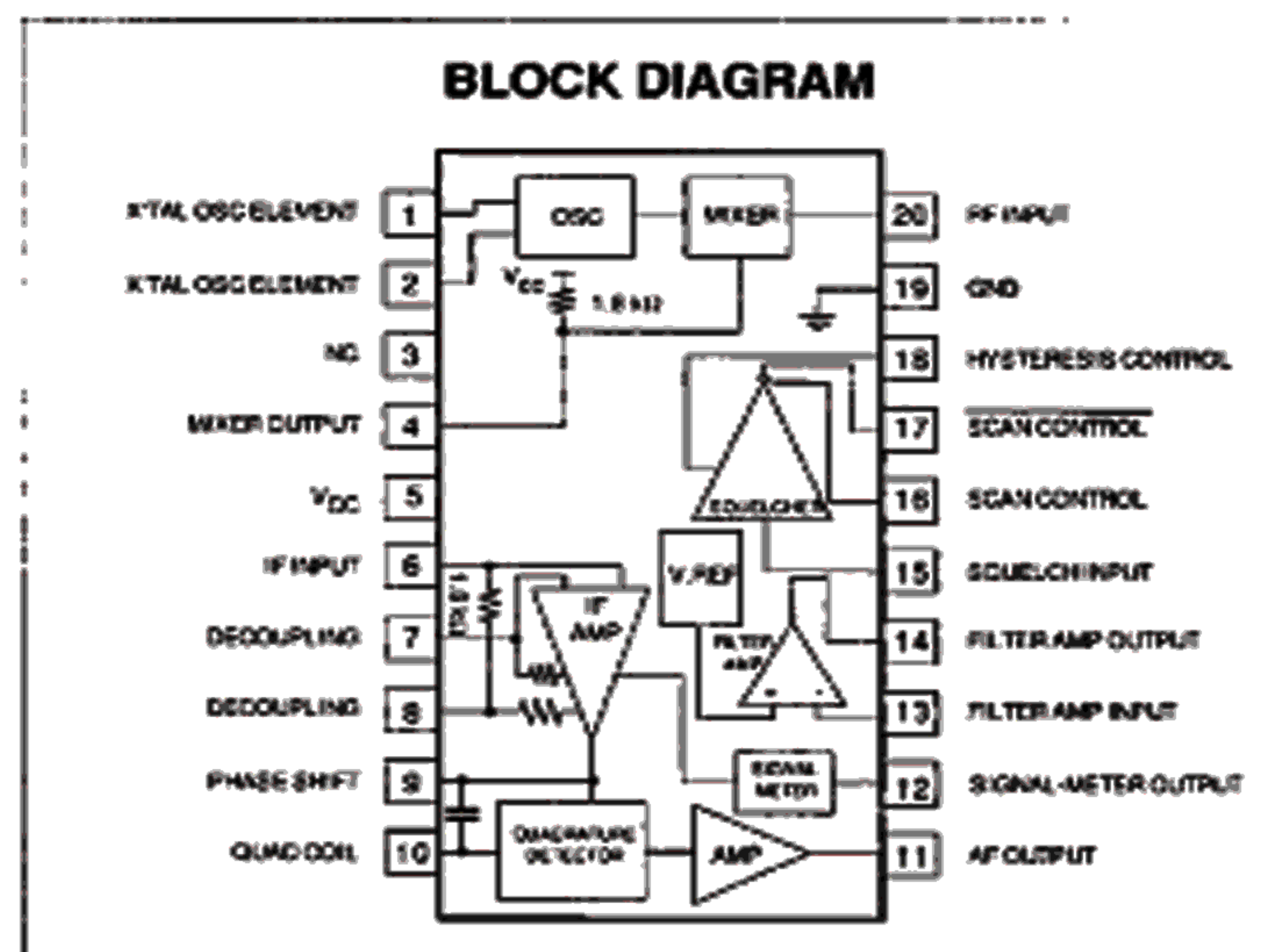
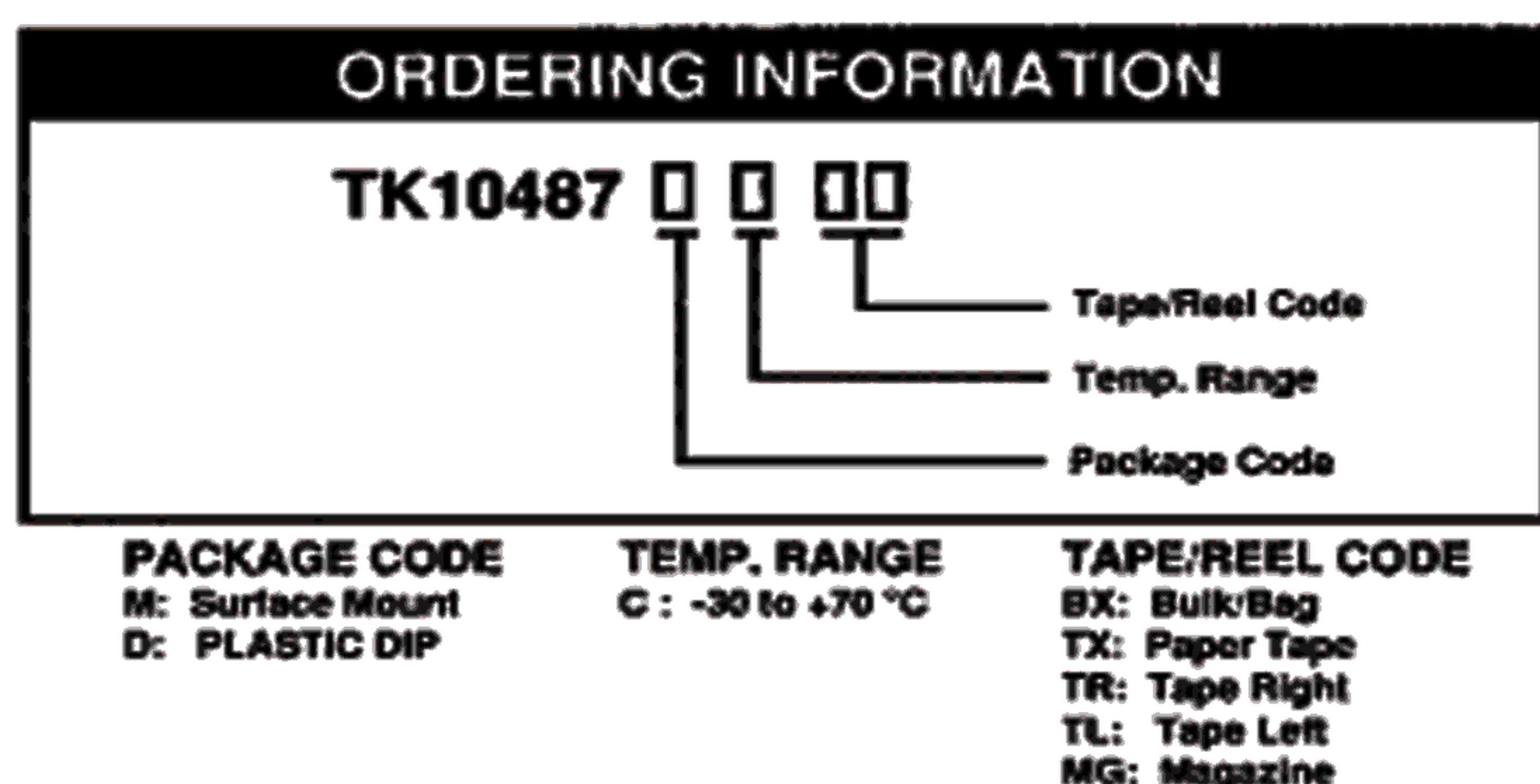
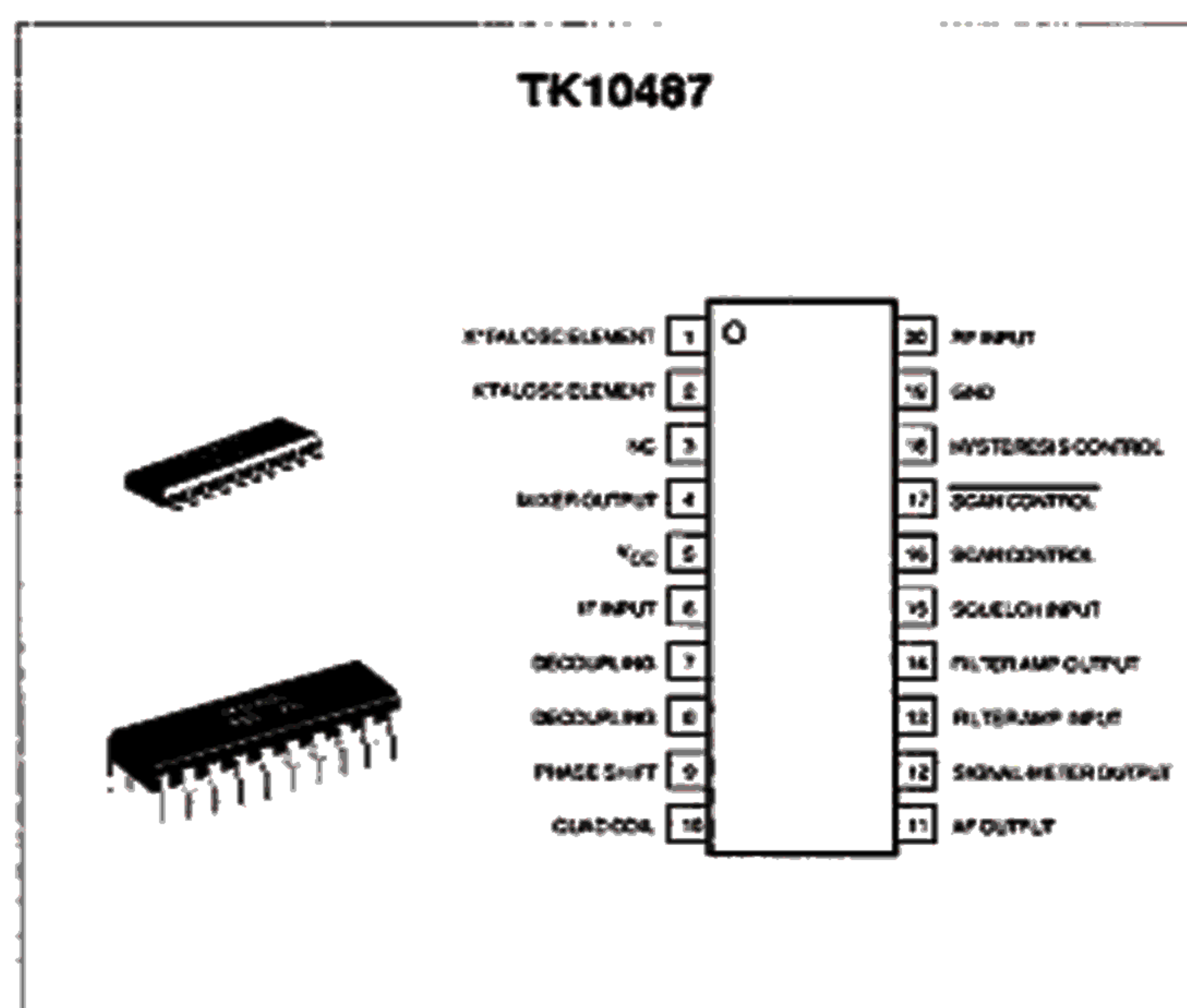
APPLICATIONS

- 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 dBμ.

The TK10487 is available in MFP20 and DIP20 packages.



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	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.

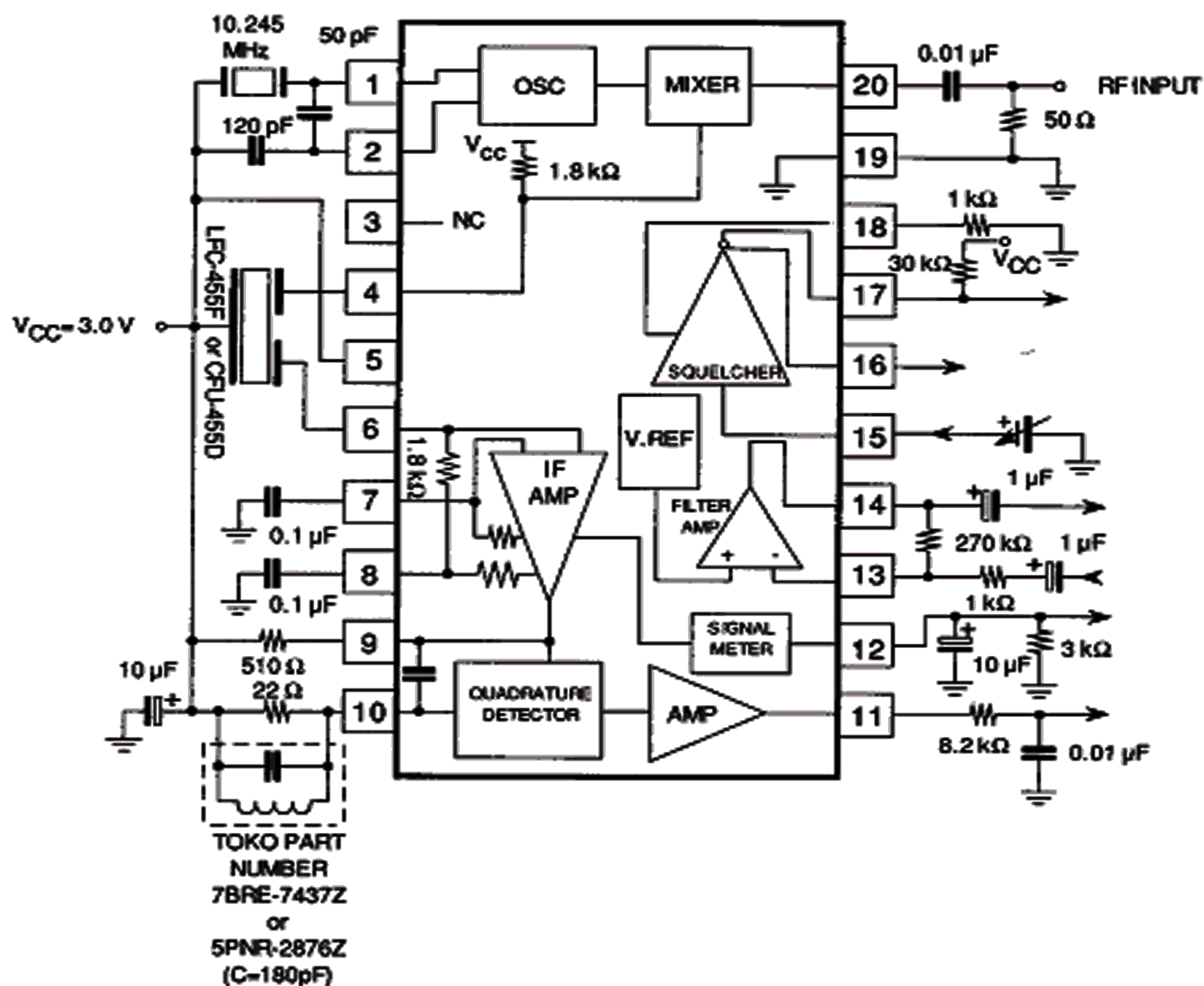
ELECTRICAL CHARACTERISTICS (CONT.)Test conditions: $V_{CC} = 6.0\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified.

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		k Ω
M_{INC}	Mixer Input Capacitance			2.2		pF
Signal Meter Output						
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 μ

METER OUTPUT RANGE

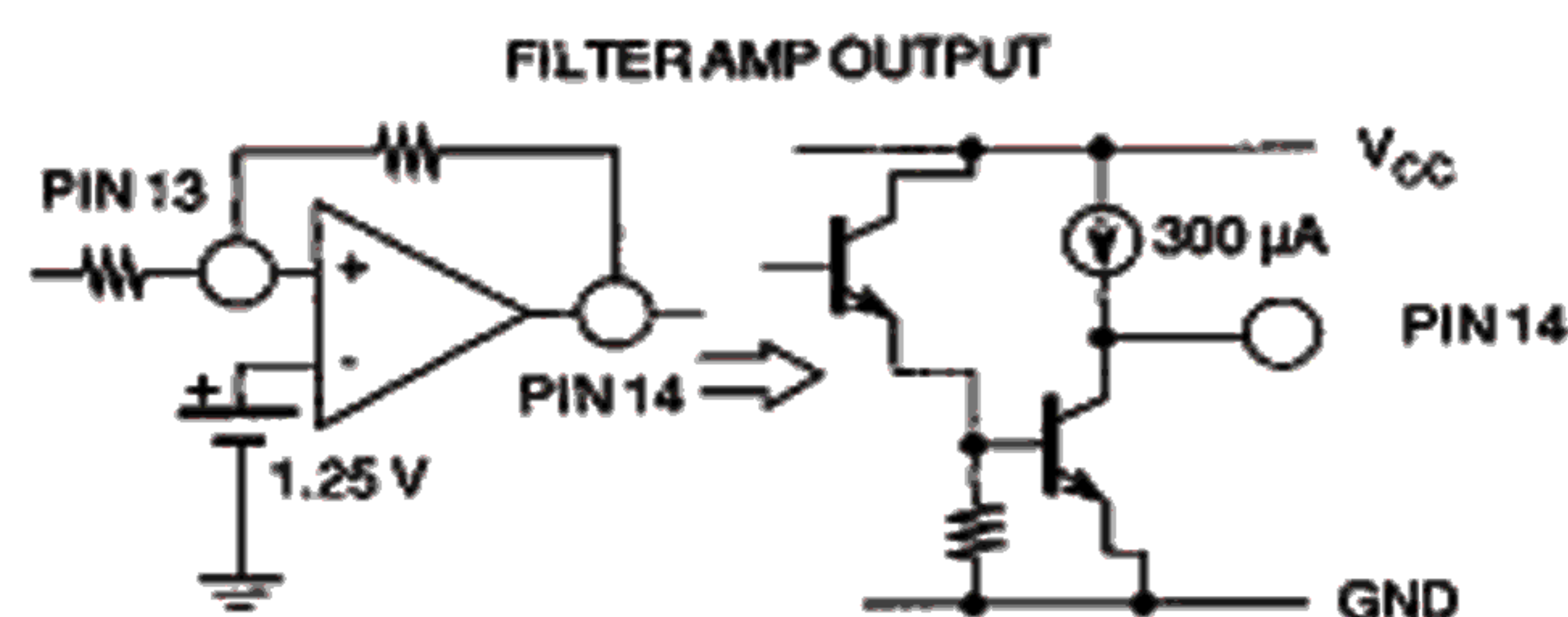
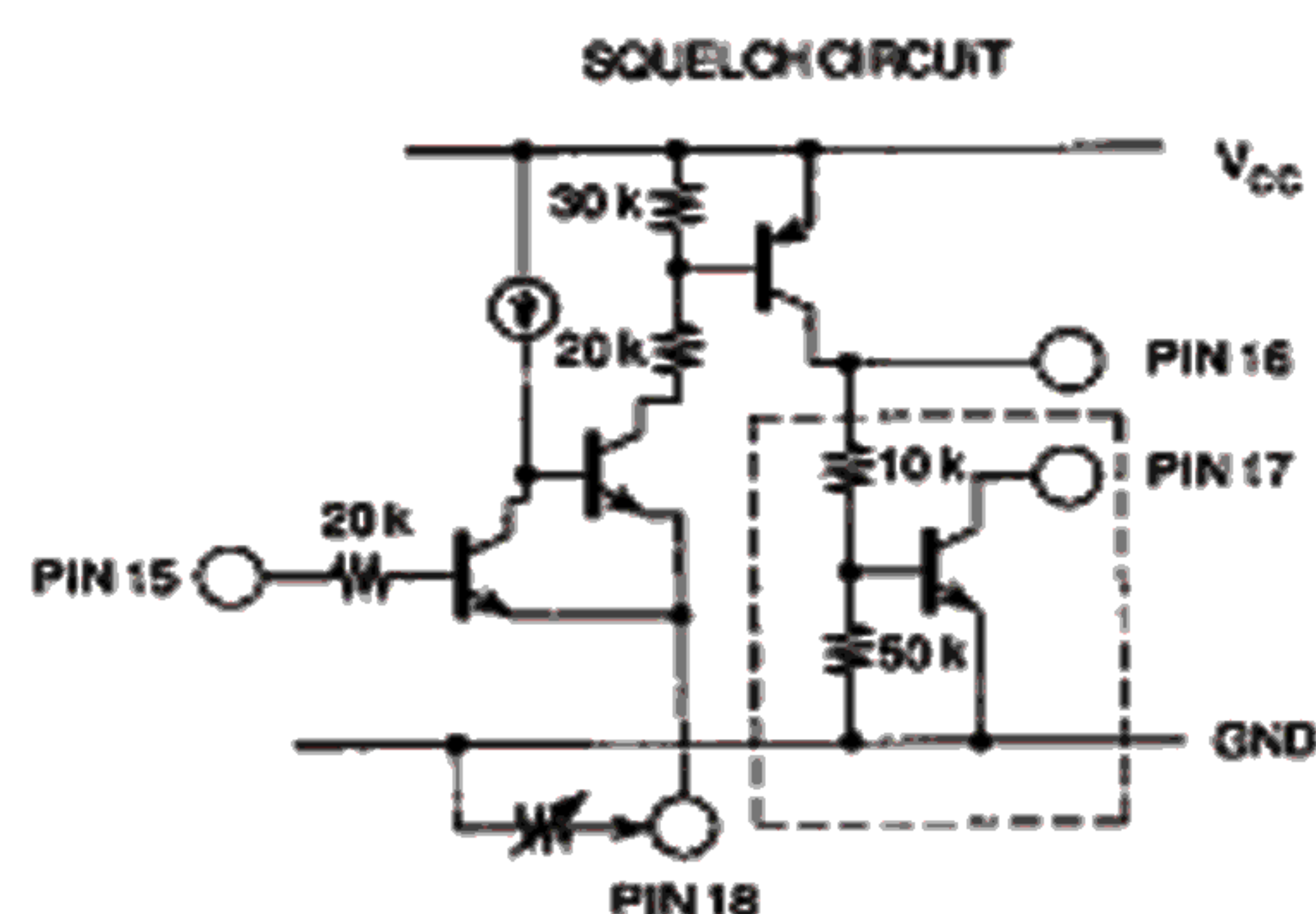
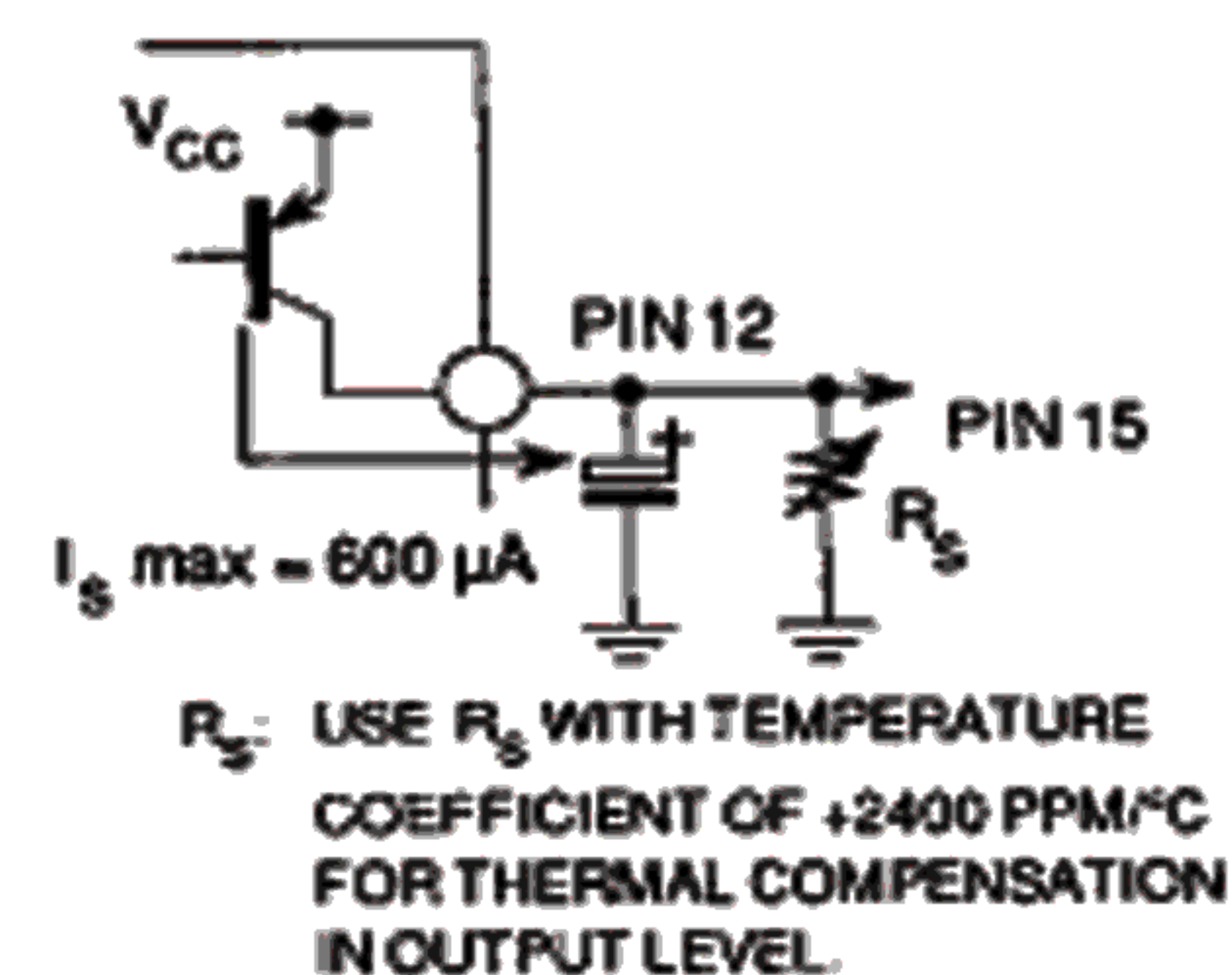
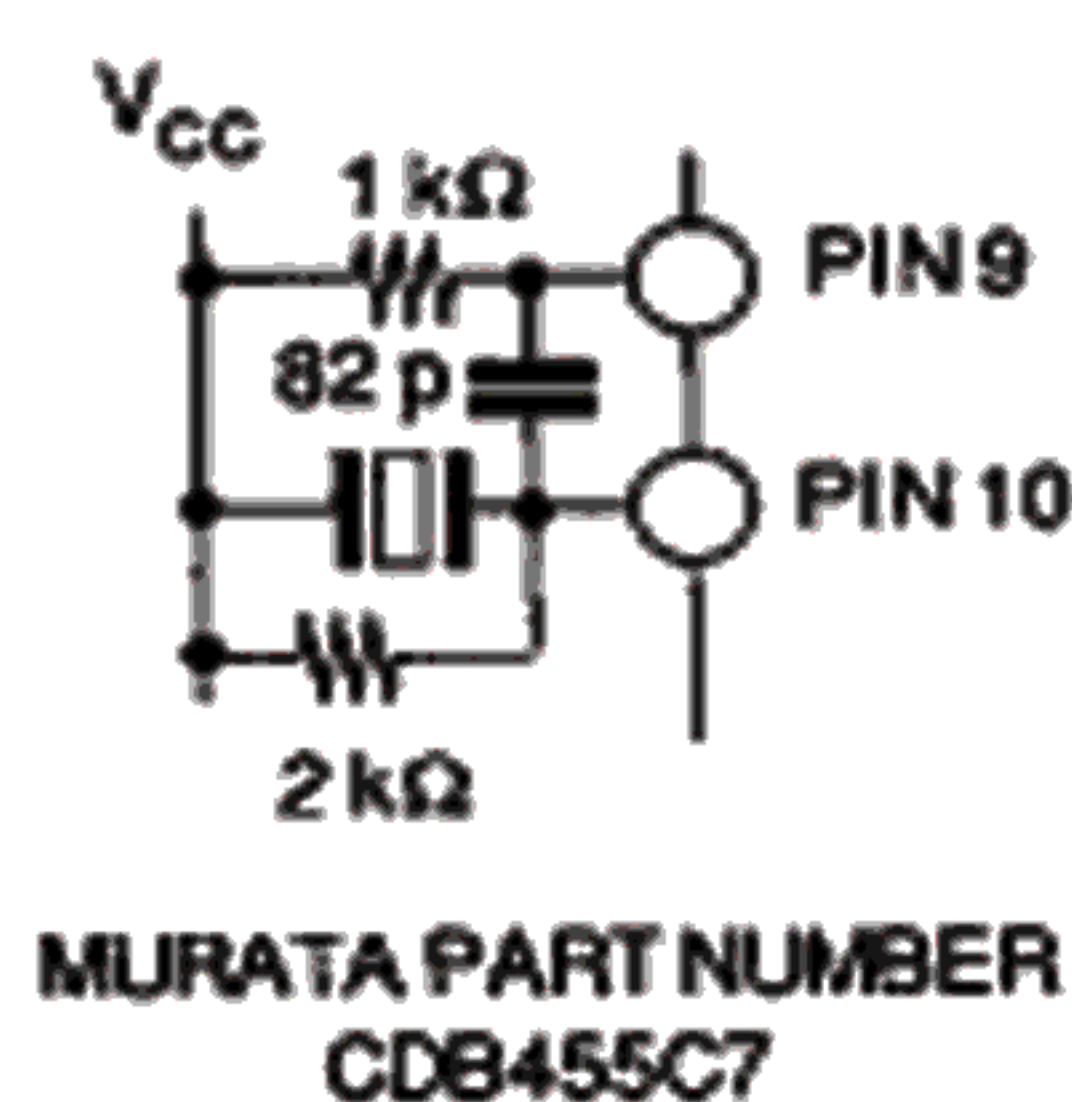
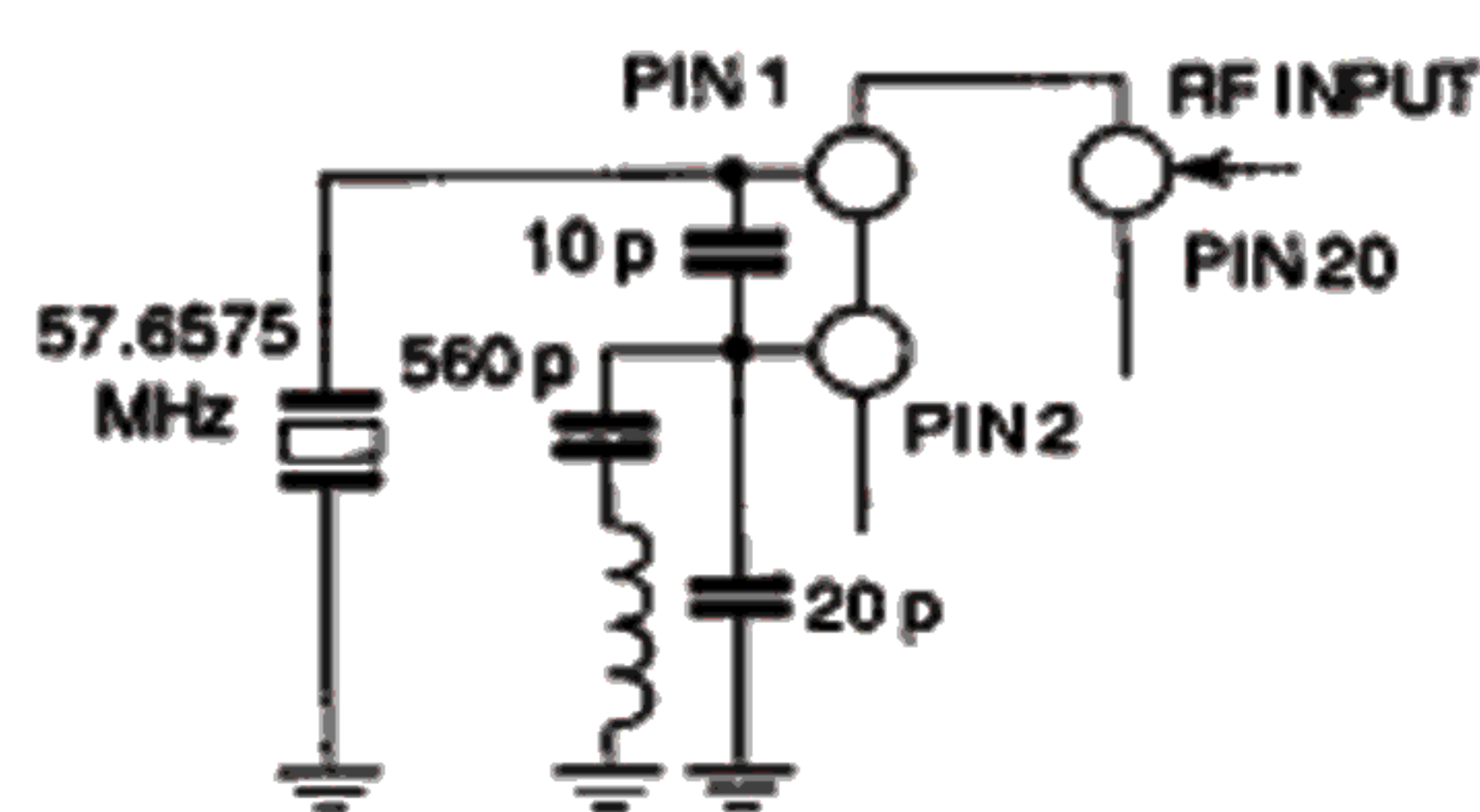
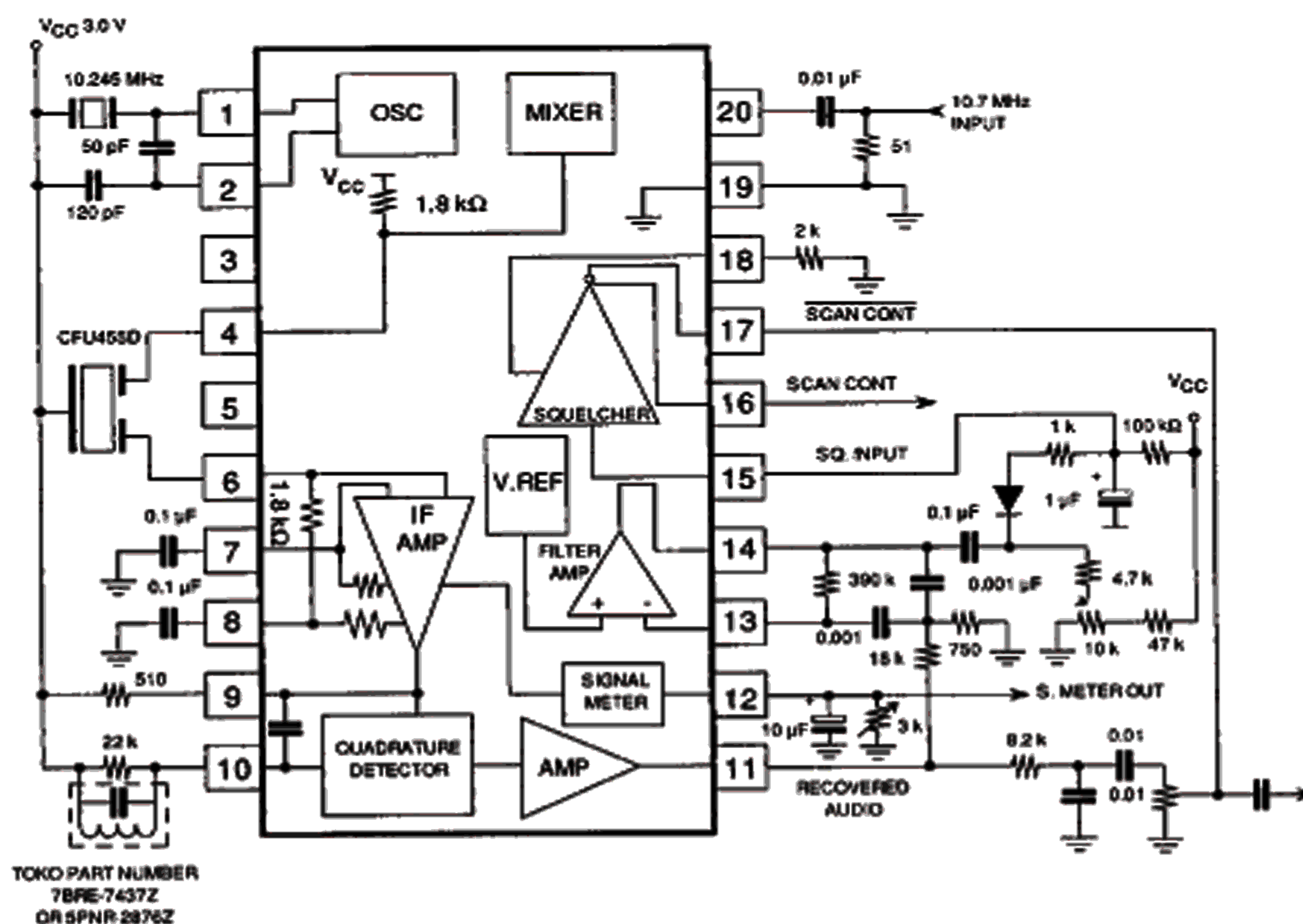
RANK/SPEC	SIGNAL OUTPUT		
	MIN (V)	TYP(V)	MAX(V)
A	1.3		1.72
B	1.70		2.32
C	2.30		2.70

TEST CIRCUIT



NOTES

TYPICAL APPLICATION



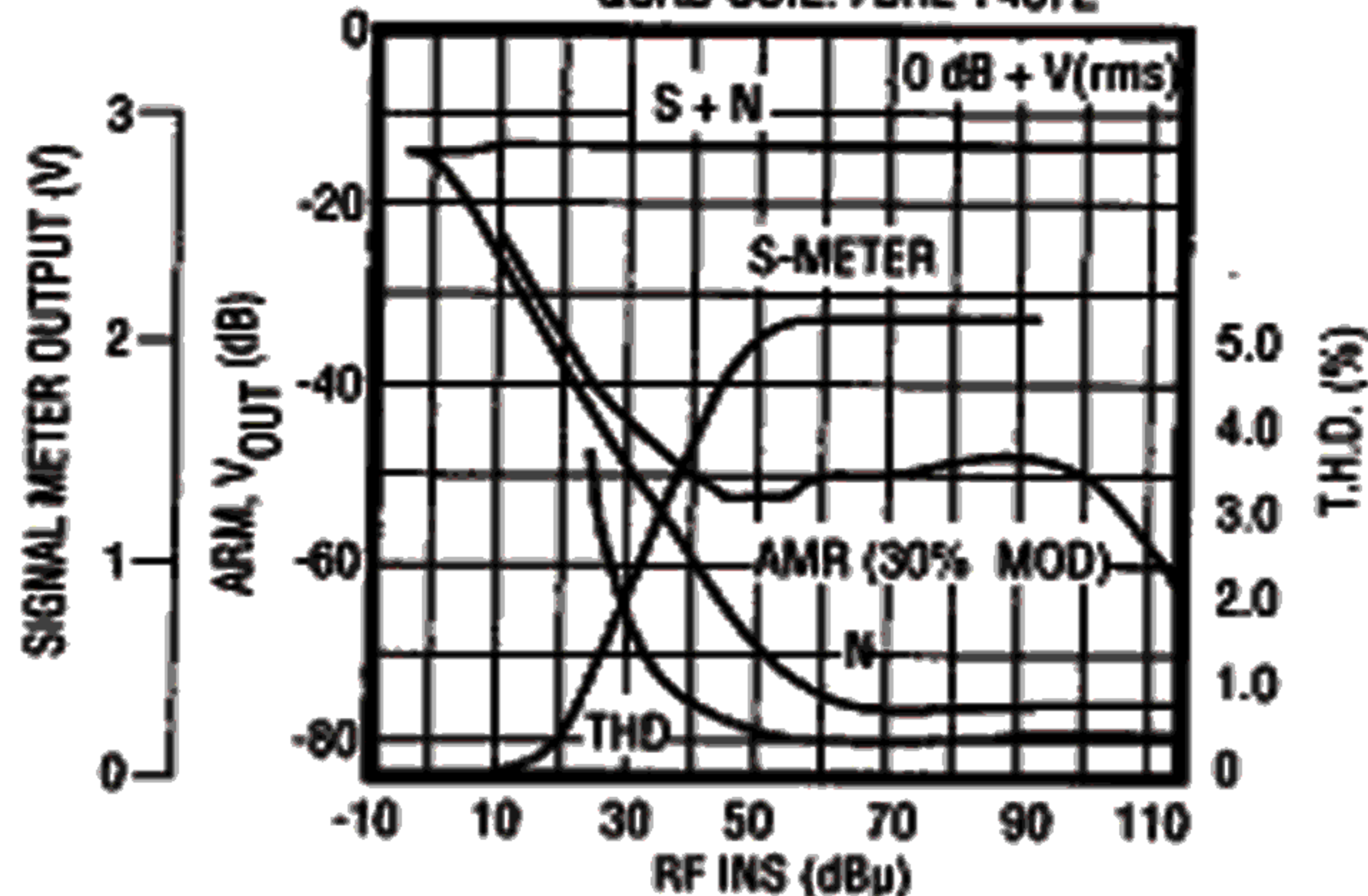
TYPICAL PERFORMANCE CHARACTERISTICS

RECEIVER CHARACTERISTICS

 $V_{CC} = 3\text{ V}$

RF: 10.7 MHz (Mix IN)

QUAD COIL: 78RE-7437Z

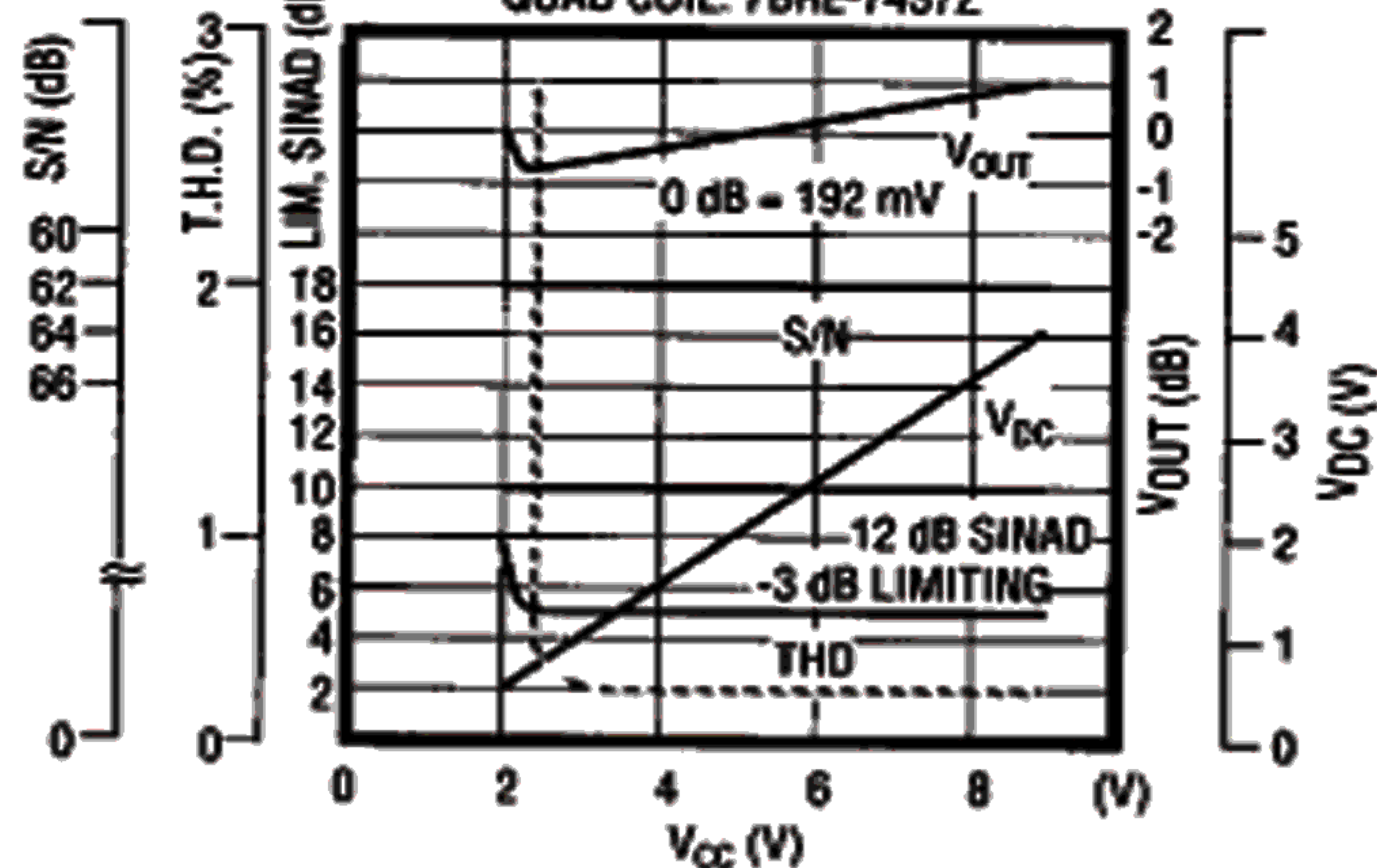
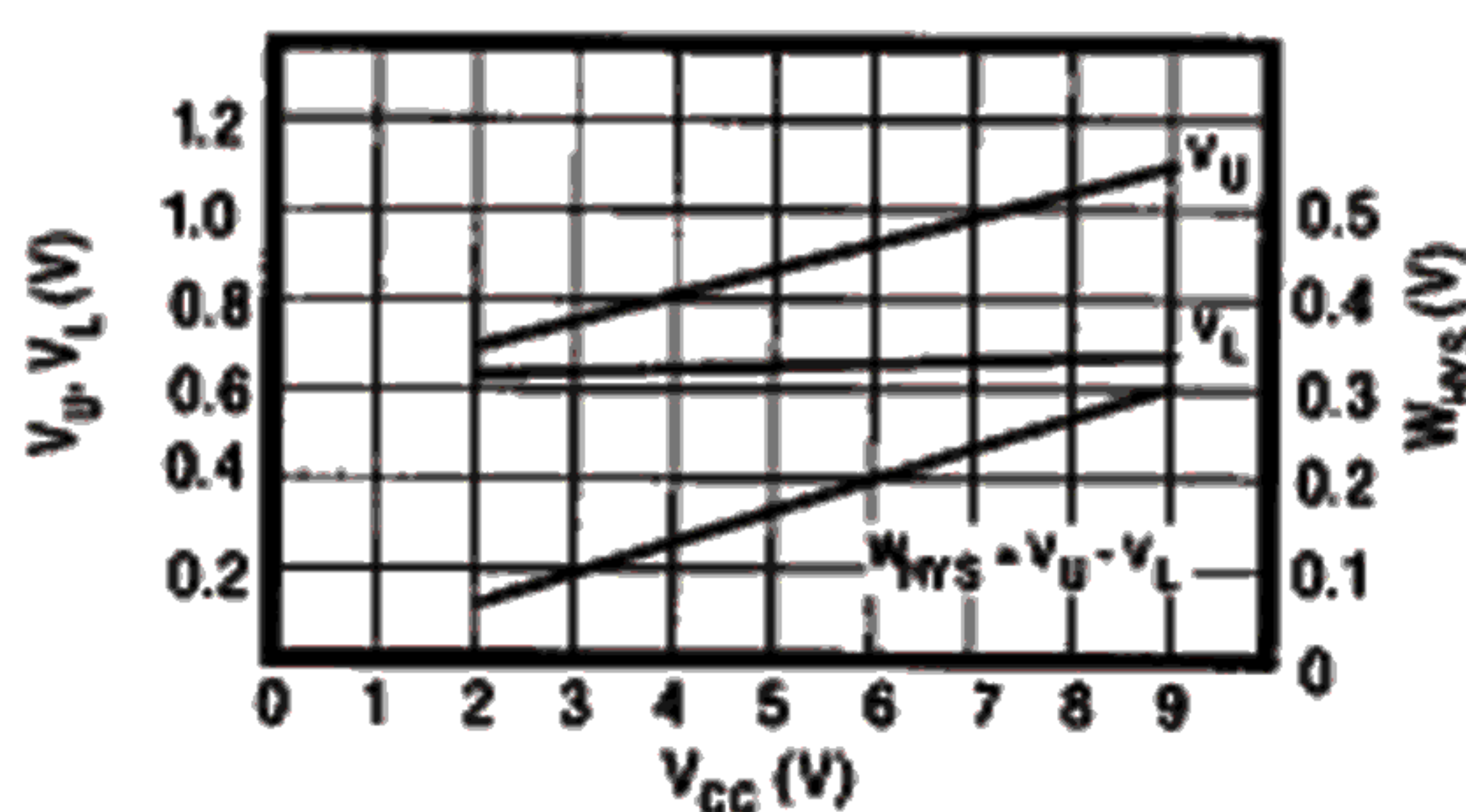


SUPPLY VOLTAGE CHARACTERISTICS WITH QUAD COIL

RE: RF10.7 MHz (80 dBμ)

CFV: 455D

QUAD COIL: 78RE-7437Z

 V_{CC} vs V_U, V_L  R_{HYS} vs V_U, V_L 