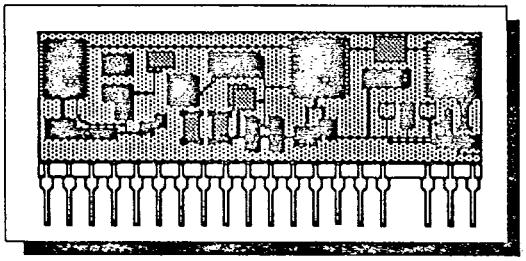
T-75-11-90

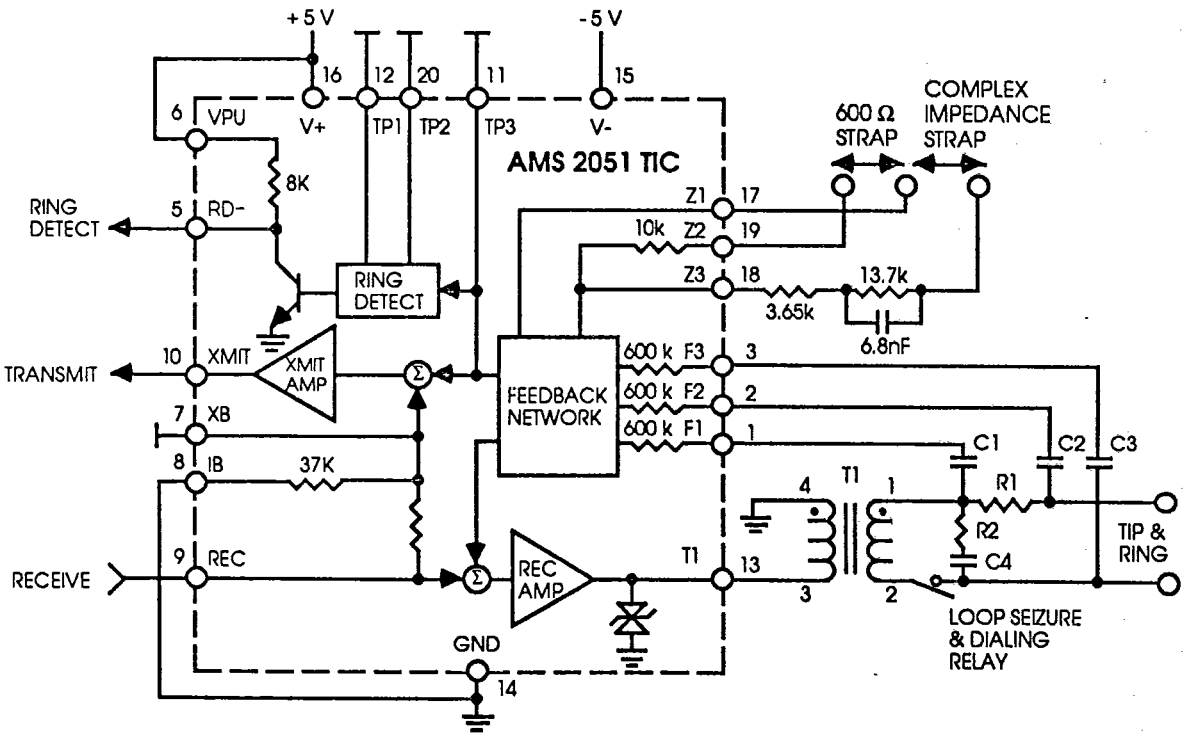
aptek microsystems

AMS 2051
TRUNK INTERFACE CIRCUIT



The AMS 2051 Trunk Interface Circuit is a telephone interface device that meets the isolation and surge voltage requirements of the FCC and most international regulatory agencies. It terminates a line with the desired impedance, offers unity-gain two to four wire conversion, and detects the presence of ringing voltage.

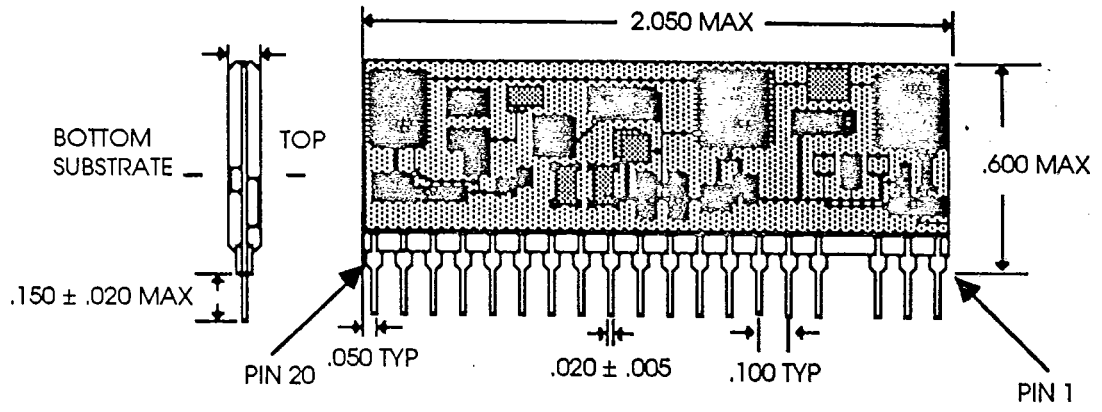
Using high-voltage thick film technology, the AMS 2051 puts a small and inexpensive coupling transformer in a feedback loop, resulting in a trunk interface with performance equaling or exceeding that obtainable using large, expensive central-office-quality transformers. Real or complex impedance can be achieved, impedance can be selected without need for taps on transformer windings, and transmission performance does not vary with loop current.



600 Ω / Complex impedance Trunk Interface

(see notes on back page)

PACKAGE OUTLINE DRAWING



Name	Pin	Function
F1 F2 F3	1 2 3	High impedance feedback input (through blocking capacitors) from loop.
RD-	5	Ring detect output, low true. Internal pullup to VPU.
VPU	6	RD- pull-up resistor; normally strapped to V+.
XB	7	Hybrid (2W:4W) balance connection. Not connected if line impedance equals TIC termination impedance; otherwise connect balance network here (to GND).
IB	8	Hybrid (2W:4W) balance connection. Connect to GND if line impedance equals TIC termination impedance; otherwise do not connect.
REC	9	Input for speech/tone to telephone loop.
XMIT	10	Output for speech/tone from telephone loop.
TP3 TP1 TP2	11 12 20	Internal test points, normally not used. A capacitor from TP1 to ground will alter ringing frequency response; see Fig. 1 on back page.
T1	13	Connection to loop coupling transformer.
GND	14	Common reference point. All voltages and signal levels are measured relative to GND.
V+	16	Positive supply voltage; + 5 or +12 volts.
V-	15	Negative supply voltage; - 5 or -12 volts.
Z1 Z2 Z3	17 19 18	Impedance setting connections. Strap Z1 and Z2 together to set TIP-RING impedance to 600 Ω, or connect an external impedance between Z1 and Z3 with Z2 open (impedance at TIP-RING = .06 times that of external impedance).

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TEMPERATURE RANGE

Operating Temperature: TA = 0°C to 70°C
Storage Temperature: TA = -35°C to 85°C

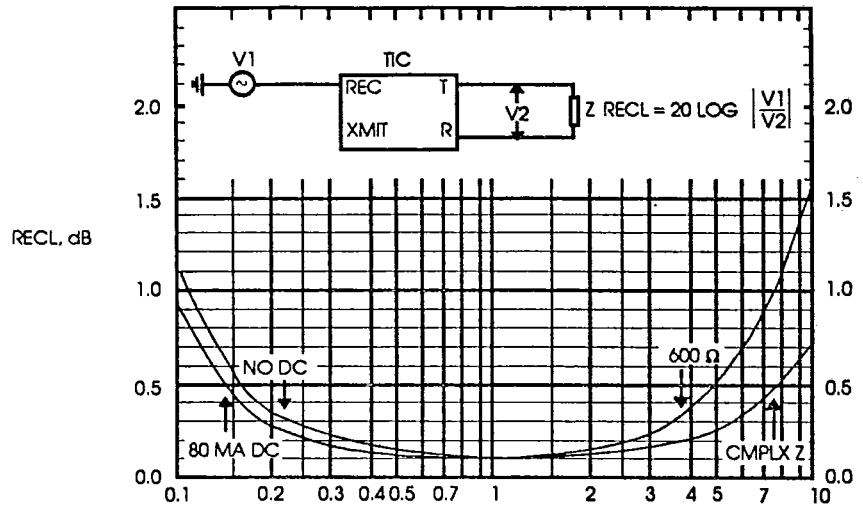
ELECTRICAL SPECIFICATIONS

V+ = 5.0 V V- = -5.0 V Z = 600 Ω resistive Temperature = 25°C

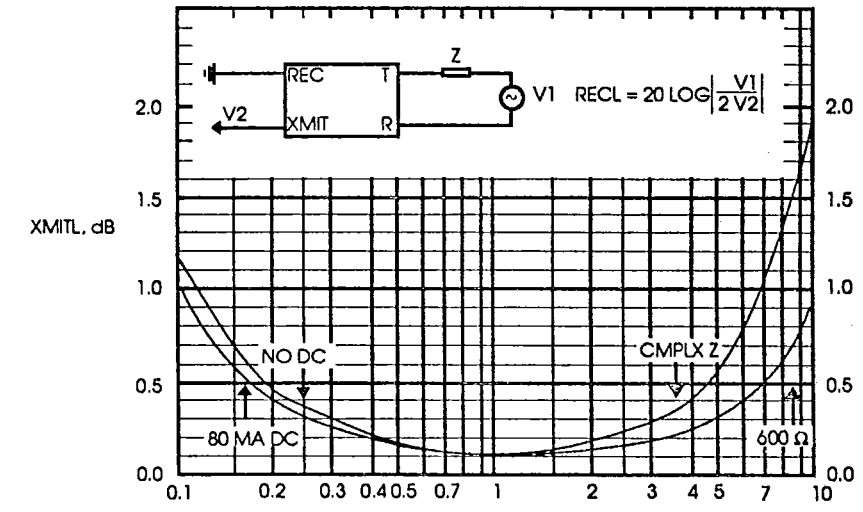
All parameters valid over frequency range of 300 - 3400 Hz except as specified.

Parameter	Condition	Min	Typ	Max	Unit
Two wire return loss		25			dB
Transhybrid loss		25			dB
Transhybrid loss, line open		0.3	0.5		dB
Insertion loss, either direction: 1000 Hz 300 Hz, 3400 Hz <300 Hz, >3400 Hz		 -0.1 0 0	 0.1	 0.3 0.5	 dB dB dB
Amplitude clipping limit		4			dBm 600
Longitudinal to metallic balance	per EIA RS464	50			dB
Metallic to longitudinal balance	per FCC Part 68	65			dB
Two wire common mode tolerance		40			Vpk
Idle channel noise, 2 W or 4 W				15	dBrnc
PSRR, 120 Hz, V+ or V- to 2 W or 4 W		40			dB
Ring voltage detect: 16 Hz to 54 Hz 10 Hz, 100 Hz	$C_{TP1} = 0$	 10 100		 20	 Vrms Vrms
RD- sink current (I_{OL})				10	mA
Supply current, V+, V-			7	12	mA

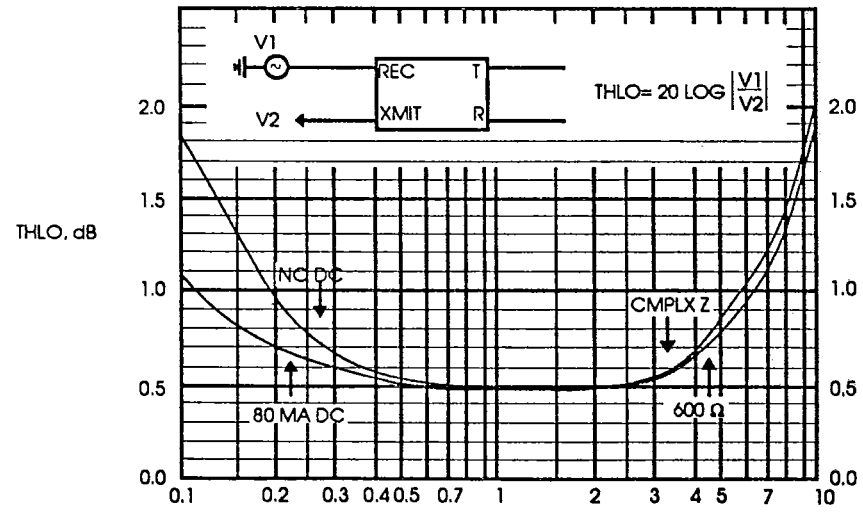
Supply voltages can be ± 4.5 to ± 17V with insignificant effect on transmission performance. Ringing detector threshold is directly proportional to positive supply, as illustrated by ± 5 and ± 12 curves in Figure 1. Negative supply voltage should equal positive ± 10%.



RECL: REC LOSS, REC TO LINE



XMITL: XMITL LOSS, LINE TO XMIT



THLO: TRANSHYBRID LOSS WITH LINE OPEN

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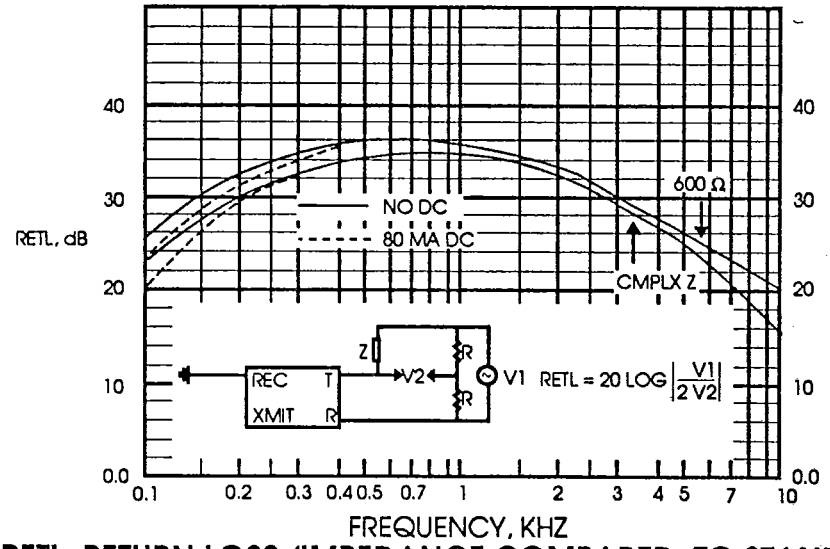
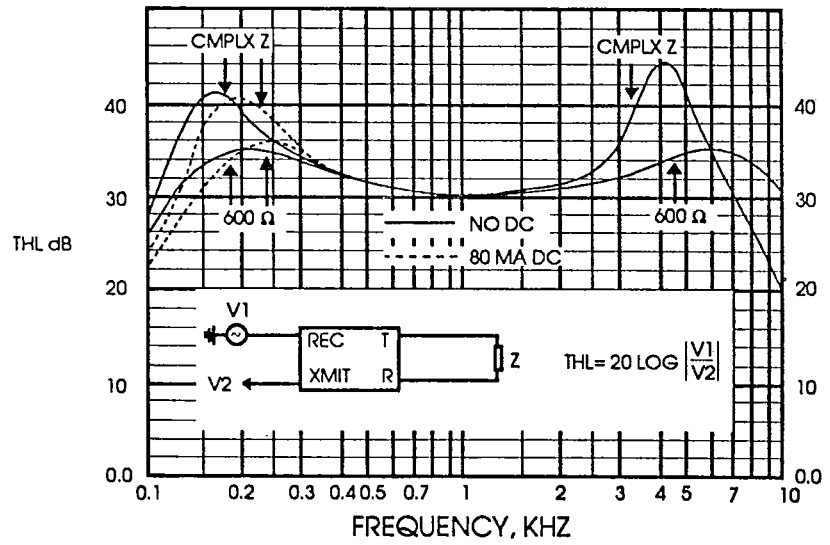


RETL: RETURN LOSS (IMPEDANCE COMPARED TO STANDARD)



THL: TRANSHYBRID LOSS, REC TO XMIT, LINE TERMINATED

NOTES REGARDING PAGE 1 DIAGRAM:

C1, C2, C3 0.1 µF ± 5 % 250 V metallized polyester
(Siemens B32520 - B3104-J or equivalent)

R1 100Ω ± 1% 1 w (Clarostat SC1A or equivalent)

R2 330Ω to 1000Ω; 470Ω typical

C4 0.33µF typical, or as required for simulated ringer load.
(If ringer load not required, omit R2 and C4; and connect a 1k resistor across transformer terminals 1 and 2.)

T1 Midcom 671-8001 — observe pin numbers.

When strapped for complex impedance, circuit emulates 220 Ω +(820Ω ll 115 nF) across Tip and Ring with component values shown.

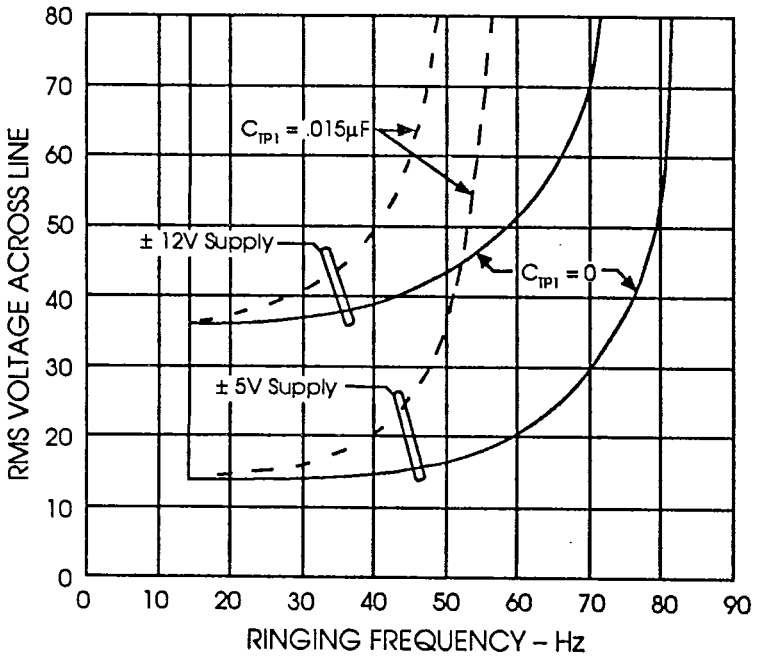


Figure 1

Typical ringing detect threshold voltage vs frequency with and without capacitor C from TP1 to ground.

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4/5/91 REV