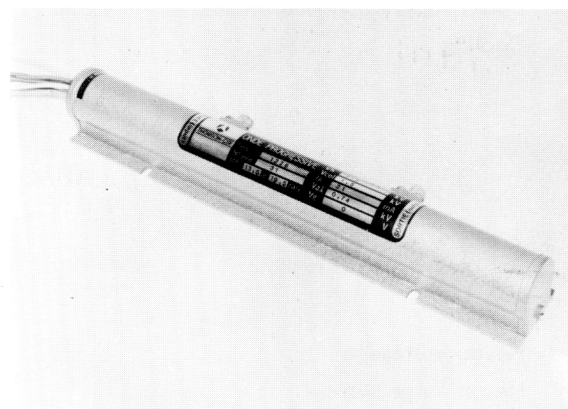


TH 3522 TRAVELING WAVE TUBE

The TH 3522 is a medium-power, traveling wave tube designed for microwave radio-link applications. Operating in C band, in the range 5.9 to 7.2 GHz, it delivers more than 7 watts of CW power at the output with minimum gain equal to 30 dB.

A periodic permanent magnet beam-focusing assembly is an integral part of the TH 3522. This compact and lightweight TWT is cooled by conduction alone.

The TH 3522 TWT is used in the TH 20034, a lightweight, compact, adjustment-free microwave amplifier. Of sturdy construction, it is intended for use in airborne and other mobile equipment, and in microwave radio links.



GENERAL CHARACTERISTICS

Electrical

Frequency range	5.9 to 7.2	GHz
Output power, min.	7	W
Gain at rated power, min.	30	dB
Gain ripple, max.	± 0.5	dB
Gain slope, max.	± 0.02	dB/MHz
Efficiency, min.	16	%
Noise figure, max.	28	dB
Output hot VSWR, max.	2.5 : 1	
AM/PM conversion, max.	4	°/dB
Heater current	0.3 - 0.6	A
Anode voltage	0.6 - 1.2	kV
Helix voltage	2.7 - 3.2	kV
Collector voltage	1.3 - 1.55	kV
Collector current, max.	28	mA



Mechanical

Operating position	Any
Dimensions	See outline drawing
Weight (approx.)	650 g
RF connections	OSM 206/1
Power-supply connections	Flying leads
Cooling	By conduction

ABSOLUTE RATINGS

(non-simultaneous)

	Min.	Max.	Units
Heater voltage	6.0	6.6	V
Heater surge current	-	1.2	A
Warm-up time	3	-	mn
Anode voltage	-	V_a (nom) +200	V
Anode current	-	2	mA
Drive power	-	50	mW
Helix voltage (1)	V_h -250	V_h +250	V
Helix current	-	2	mA
Collector voltage (2)	V_c -200	V_c +200	V
Collector current	-	28	mA
Collector dissipation	-	45	W
Ambient temperature	-10	+120	°C
Load VSWR	-	2.5 : 1	

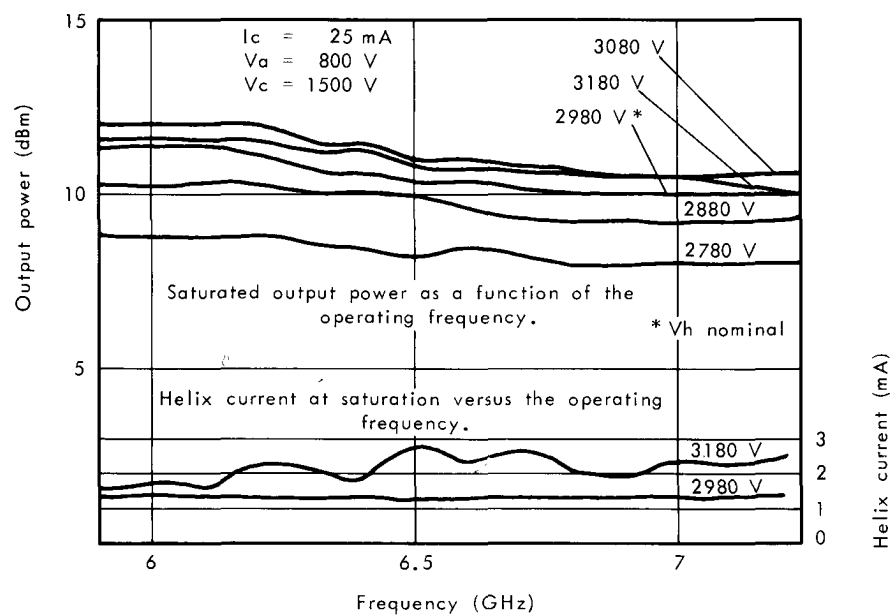
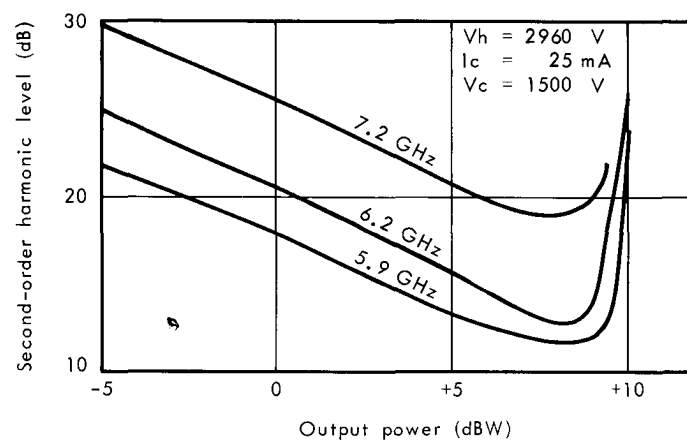
(1) V_h = nominal helix voltage, as per each tube's data sheet.(2) V_c = nominal collector voltage, as per each tube's data sheet.

TYPICAL OPERATION

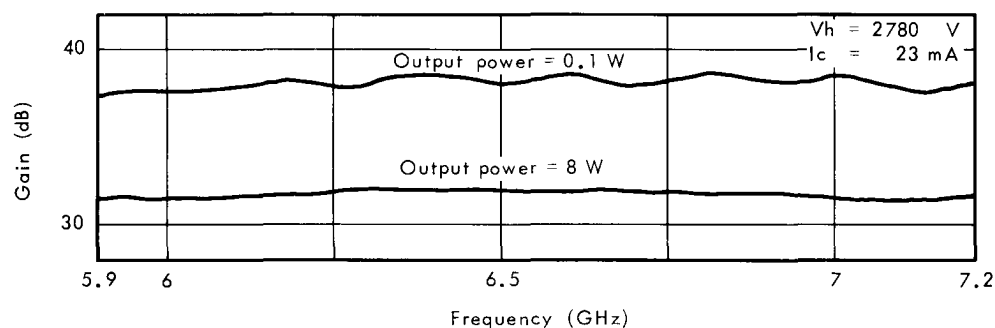
Frequency	6.7	GHz
Output power	9.2	W
Input power	5.2	mW
Gain	32.5	dB
Heater voltage	6.3	V
Heater current	0.42	A
Cathode current	25	mA
Anode voltage	810	V
Anode current	0	mA
Helix voltage	2.86	kV
Helix current	0.70	mA
Collector voltage	1.5	kV

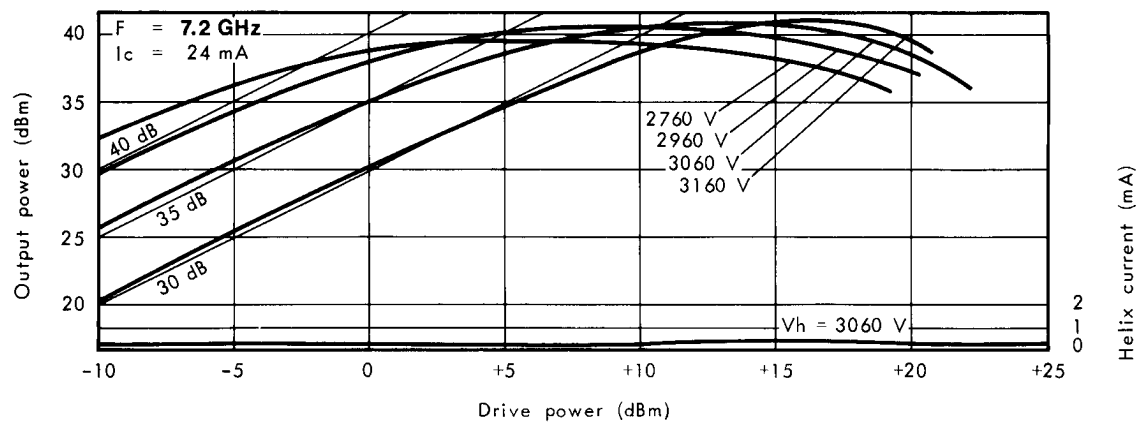
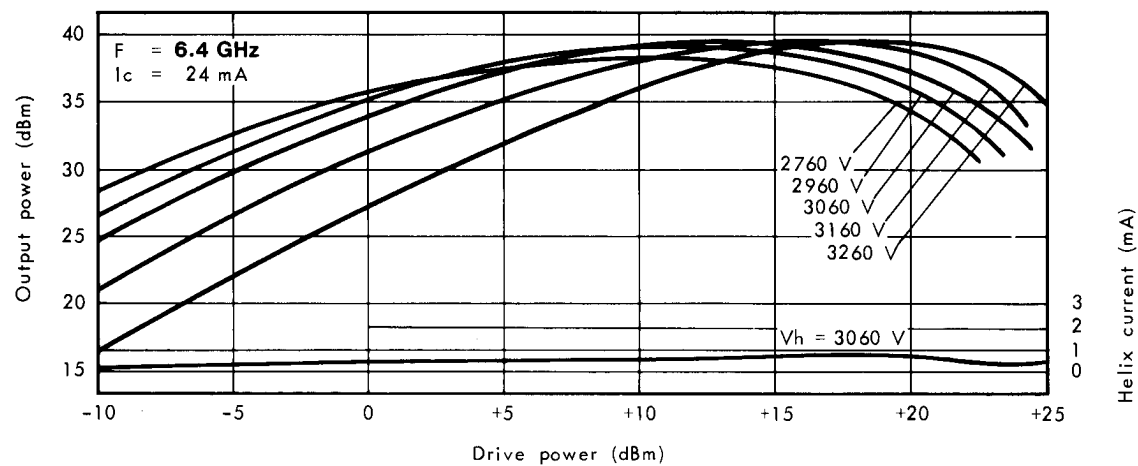
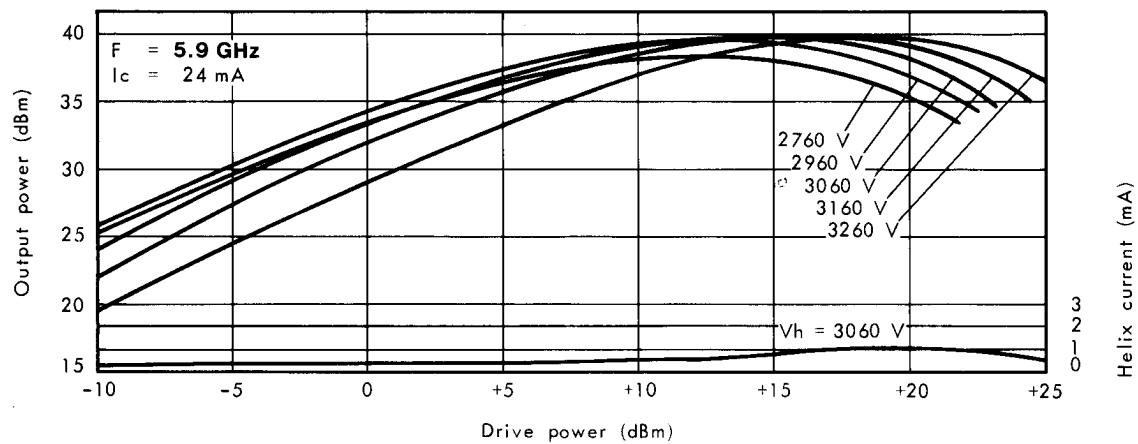


Second-order harmonics versus output power



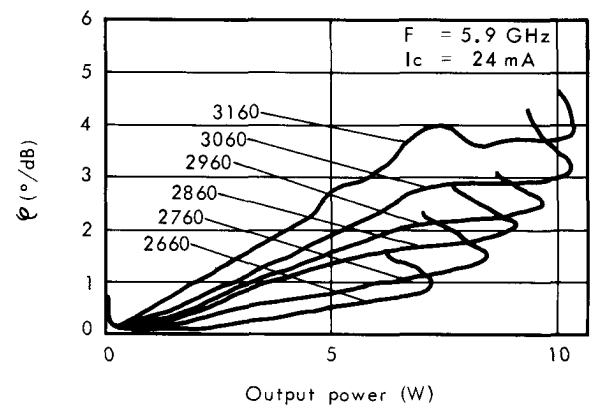
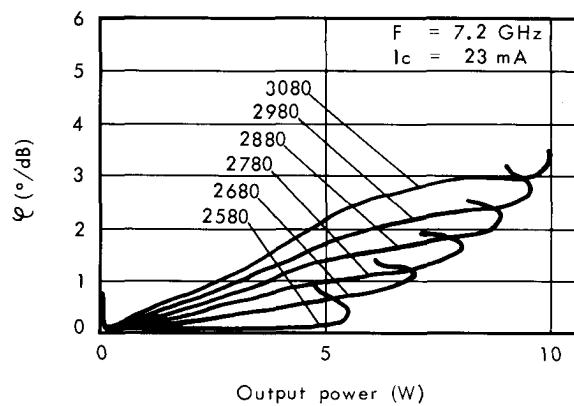
Gain flatness at two different output-power levels.



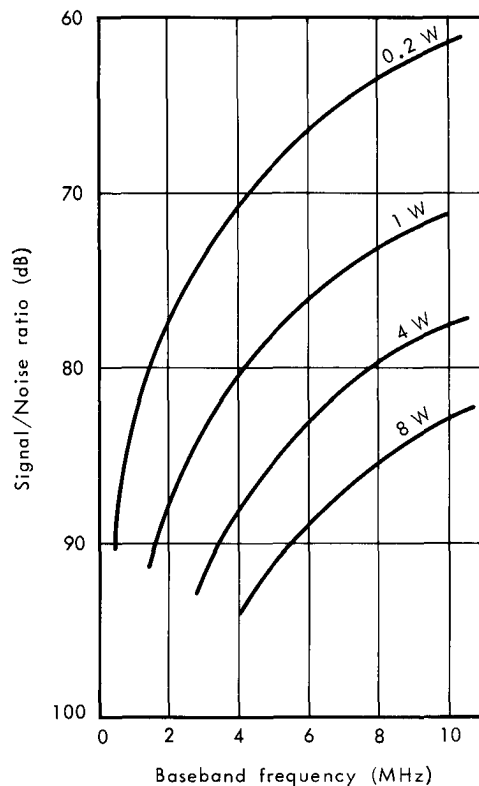
**THOMSON-CSF**
GROUPEMENT TUBES ELECTRONIQUESOUTPUT POWER AND HELIX CURRENT
AS A FUNCTION OF DRIVE POWER,
WITH A CONSTANT HELIX VOLTAGE



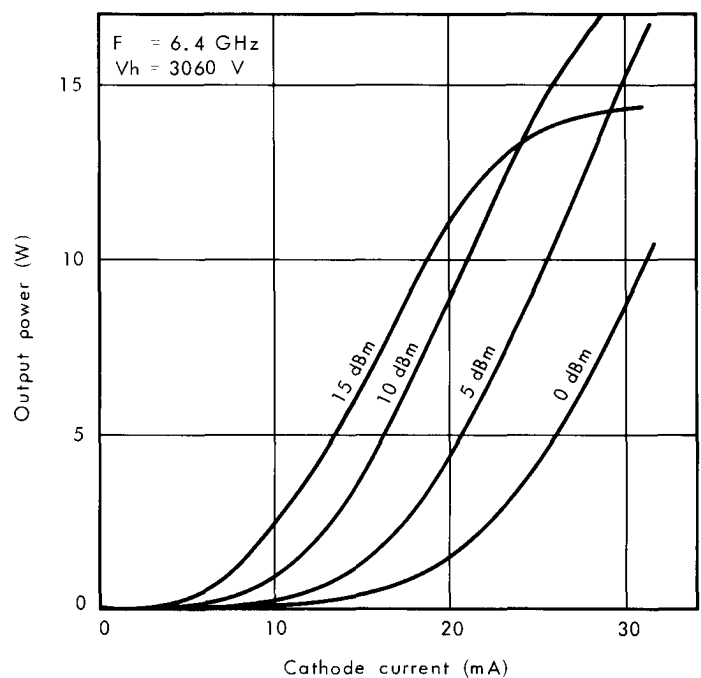
AM/PM CONVERSION (φ)



FM Signal-to-noise ratio
(carrier frequency = 6 GHz) in a 4-kHz
window as a function of the baseband frequency



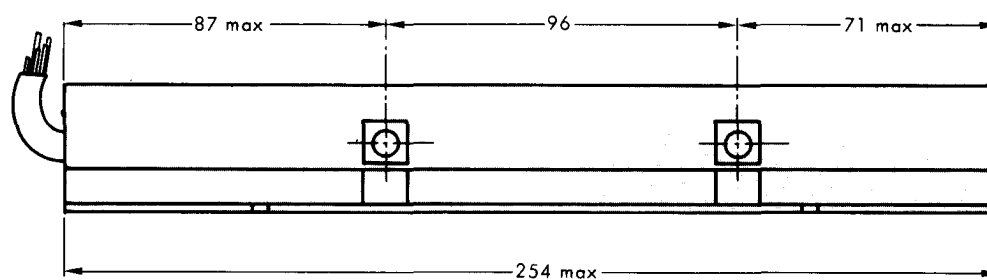
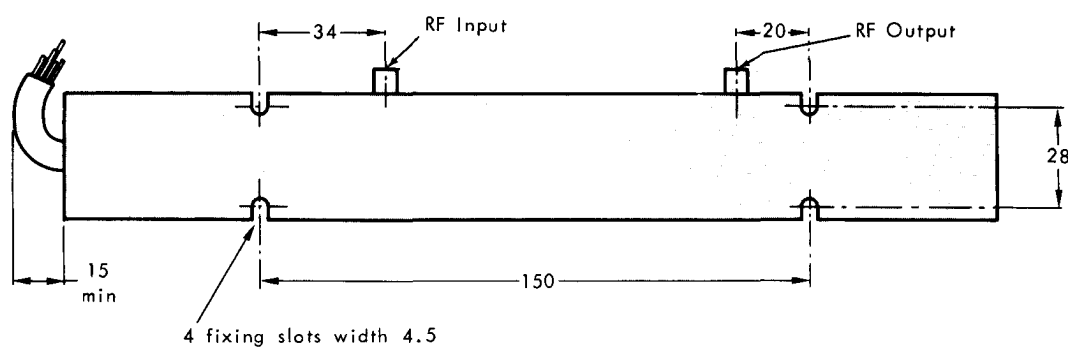
Output power as a function of the cathode current,
with a constant drive-power level.





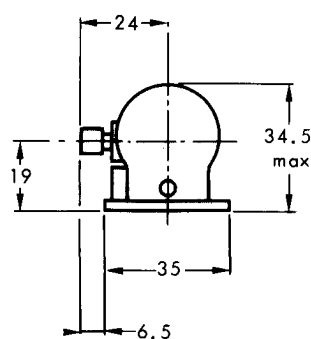
THOMSON-CSF
GROUPEMENT TUBES ELECTRONIQUES

OUTLINE DRAWING



Note - The minimum length of the flying leads is:

- for the TWT supply = 350 mm
- for the thermal protection ("Vigitherme") = 450



LEADS IDENTIFICATION

Brown	Heater cathode
Yellow	Cathode
Green	Wehnelt
Blue	Anode
Red	Collector
Orange	Helix Ground
Grey	"Vigitherme"
White	"Vigitherme" (isolated)

All dimensions nominal (except limiting values), in mm.

