STM1645-30

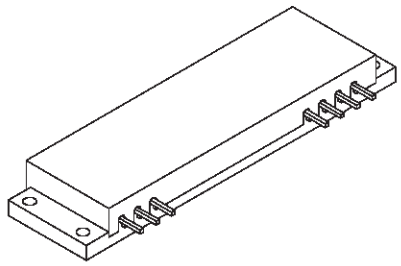
RF POWER MODULE
SATELLITE COMMUNICATION APPLICATIONS

- CLASS C SATELLITE COMMUNICATIONS AMPLIFIER
- 1625- 1665 MHz
- 12/28 VOLTS
- INPUT/OUTPUT 50 OHMS
- Pout = 30 W MIN.
- GAIN = 34.8 dB MIN.

DESCRIPTION

The STM1645-30 hybrid RF Power Module is designed for high power satellite communication applications in the 1.6 GHz frequency range.

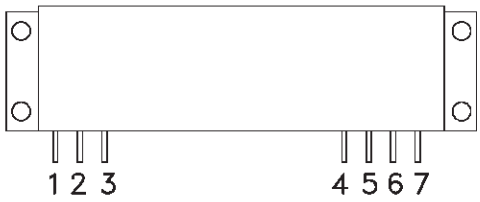
High f_T, gold metallized silicon microwave power devices, optimized for use in STM1645-30, are employed to provide high gain and efficiency while ensuring excellent reliability.



ORDER CODE : STM1645-30

BRANDING: STM1645-30

PIN CONNECTIONS



1. RF Input 2. Ground 3. V_{C1} 12V 4. V_{C2} 28V
5. V_{C3} 28V 6. Ground 7. RF Output

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25 °C)

Symbol	Parameter	Value	Unit
V	DC Supply Voltage	30	Vdc
P_{IN}	RF Input Power ($P_{OUT} \leq$ 30 W)	20	mW
T_{STG}	Storage Temperature Range	- 40 to + 100	°C
T_C	Operating Case Temperature	-35 to + 70	°C

ELECTRICAL SPECIFICATION (T_{case} = 25 °C, V_{C1*} = 12 V; V_{C2}, V_{C3} = 28 V)

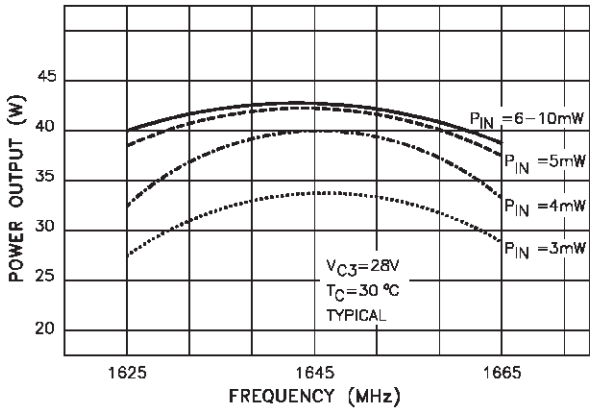
Symbol	Parameter	Test Conditions	Min.	Typ.	Max	Unit
BW	Frequency Range		1625		1665	MHz
P_{OUT}	Power Output	$P_{IN} \leq 10$ W	30	35	40	W
G_P	Power Gain	P_{OUT} = 30 W	34.8	35.5		dB
η	Efficiency	P_{OUT} = 30 W	35			%
Z_{IN}	Input Impedance	P_{OUT} = 30 W Z_G, Z_L = 50 Ω		1.5:1	2:1	VSWR
H	Harmonics	P_{OUT} = 30 W reference		-45	-40	dB
	ΔP_{OUT} vs T_{CASE}	T_C = -35°C to +70 °C @ P_{IN} = 10mW			2	dB
	ΔP_{OUT} vs Frequency	f = 1625 - 1665 MHz			1	dB
	Load Mismatch	VSWR = 10:1 V = 28 Vdc P_{OUT} = 30 W	No Degradation in Output Power			
	P_{OUT} Control Range	P_{OUT} = 30 W	8	10		dB
	Stability	P_{OUT} = 5 to 30 W** Load VSWR = 3:1 any phase	All Spurious Outputs More Than 60 dB Below Carrier			

Note :
* V_{C1} = 12 V regulated ±1%
** P_{OUT} adjusted by varying V_{C3}

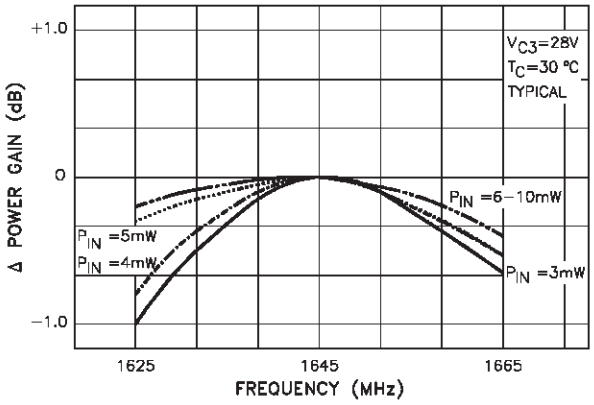
REF. 1015506I

TYPICAL PERFORMANCE

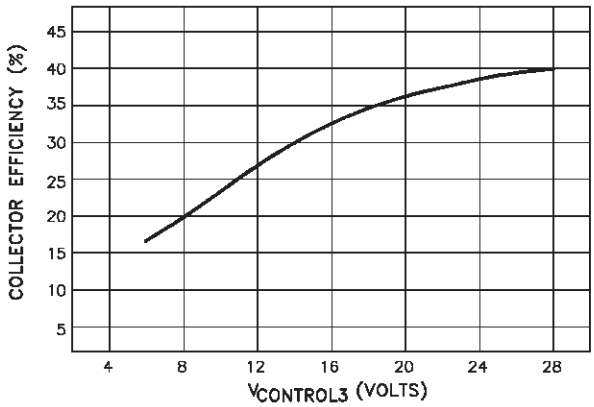
Power Output vs Frequency and Power Input



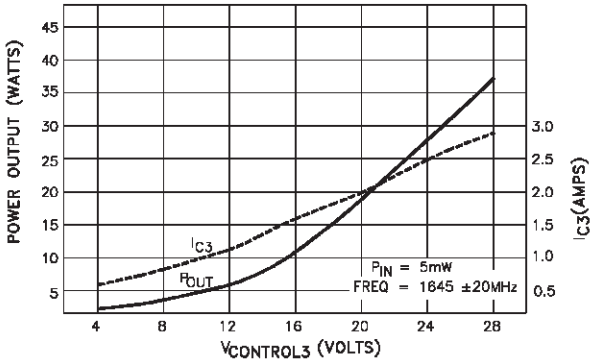
Power Gain vs Frequency and Power Input



$V_{CONTROL}$ vs Collector Efficiency



$V_{CONTROL}$ vs Power Output and I_{C3} (Typical)



APPLICATIONS RECOMMENDATIONS

OPERATION LIMITS

The STM1645-30 power module should never be operated under any condition which exceeds the Absolute Maximum Ratings presented on this data sheet. Nor should the module be operated continuously at any of the specified maximum ratings. If the module is to be subjected to one or more of the maximum rating conditions, care must be taken to monitor other parameters which may be affected.

MODULE MOUNTING

To insure adequate thermal transfer from the module to the heatsink, it is recommended that a satisfactory thermal compound such as Dow Corning 340, Wakefield 120-2 or equivalent be applied between the module flange and the heatsink.

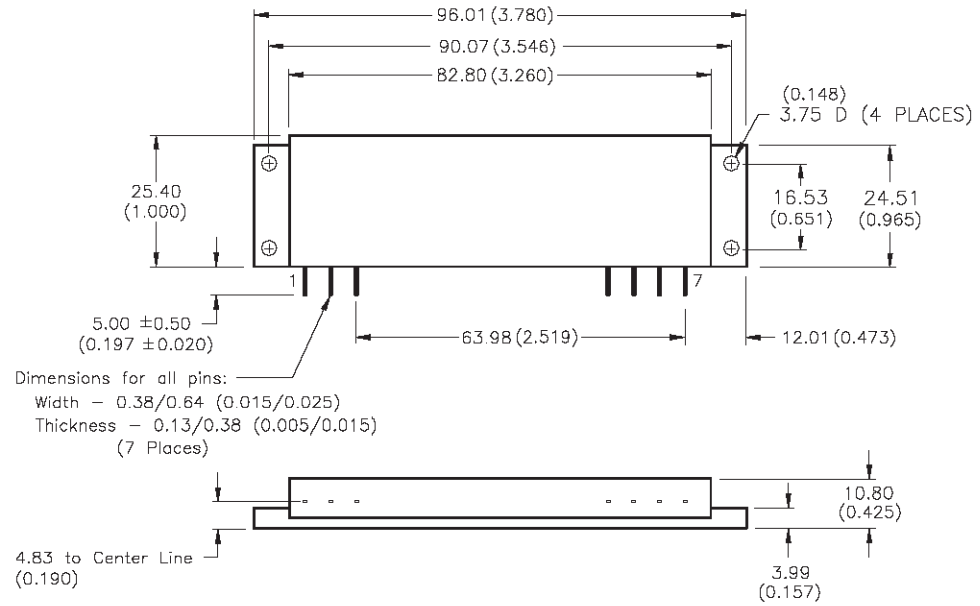
The heatsink mounting surface under the module should be flat to within ± 0.05 mm (± 0.002 Inch).

The module should be mounted to the heatsink using 3.5 mm (or 6-32) or equivalent screws torqued to 5-6 Kg-cm (4-6 in-lb).

The module leads should be attached to equipment PC board using 180^{o}C solder applied to leads with a properly grounded soldering iron tip, not to exceed 195 ^{o}C, applied a minimum of 2 mm (0.080 inch) from the body of the module for a duration not to exceed 15 seconds per lead. It is imperative that no other portion of the module, other than the leads, be subjected to temperature in excess of 100 ^{o}C (maximum storage temperature), for any period of time, as the plastic moulded cover, internal components and sealing adhesives may be advertisely affected by such conditions.

Due to the construction techniques and materials used within the module, reflow soldering of the flange heatsink or leads, is not recommended.

H160 MECHANICAL DATA



NOTES:
Pin spacing 5.0mm (0.197) unless otherwise specified.
All tolerances ±0.25mm (±0.010 in) unless otherwise specified.
Numbers in ( ) are inches.

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