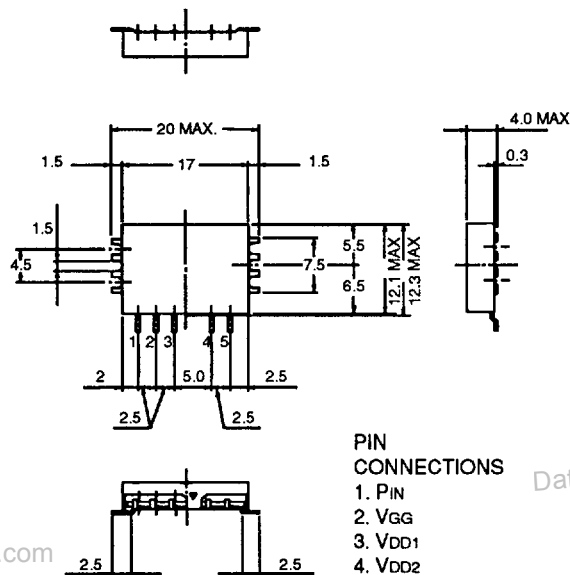


**GaAs MULTI-CHIP
INTEGRATED CIRCUIT****MC-5950****FEATURES**

- **LOW DISSIPATIVE CURRENT:**
Total Current $I_{DD} = 330$ mA (Typ.) at $P_{OUT} = 30.0$ dBm
- **HIGH EFFICIENCY:**
Total Efficiency, $\eta_T = 63\%$ (Typ.) at P_{OUT} Maximum
- **SMALL SIZE**

DESCRIPTION

The MC-5950 is a two stage GaAs Multi-Chip Integrated Circuit (MCIC), designed to be used as the Power Amplifier in a cellular portable or handheld application. Its optimum frequency range of 925-942 MHz makes it ideal for cellular analog phones for use in Japan. This device has similar performance in the 902 - 928 MHz band (ISM) and is therefore suitable for Part 15 applications. With separate access provided to both drain supplies, the output power can be effectively controlled. With over 1 Watt output power, excellent efficiency and small size, this MCIC has advantages for a variety of portable wireless applications.

OUTLINE DIMENSIONS (Units in mm)

PIN CONNECTIONS

1. PIN
2. VGG
3. VDD1
4. VDD2
5. POUT

Note:

1. Lead dimensions 0.25 x 0.5
2. Tolerance of lead pitch ± 0.3

ELECTRICAL CHARACTERISTICS (Tc = 25°C)

PART NUMBER PACKAGE OUTLINE			MC-5950		
SYMBOLS	PARAMETERS AND CONDITIONS ¹	UNITS	MIN	TYP	MAX
f	Frequency	MHz	925		942
P _{OUT1}	Output Power 1, P _{IN} = 6 dBm, V _{DD1} = V _{DD2} = 5.8 V, V _{GG} = -5.0 V	dBm	30.8	31.2	
P _{OUT2}	Output Power 2, P _{IN} = 6 dBm, V _{DD1} = 0 V, V _{DD2} = 5.8 V, V _{GG} = -5.0 V	dBm		3.0	6.0
I _{DD} ²	Total Current, P _{IN} = 6 dBm, P _{OUT} = 30.4 dBm, V _{DD1} ≤ 5.8 V, V _{DD2} = 5.8 V, V _{GG} = -5.0 V	mA		330	370
2f _o	Harmonics, P _{IN} = 6 dBm, P _{OUT} = 30.4 dBm, V _{DD1} ≤ 5.8 V, V _{DD2} = 5.8 V, V _{GG} = -5.0 V	dBc		-45	-40
3f _o	Harmonics, P _{IN} = 6 dBm, P _{OUT} = 30.4 dBm, V _{DD1} ≤ 5.8 V, V _{DD2} = 5.8 V, V _{GG} = -5.0 V	dBc		-45	-40
4f _o	Harmonics, P _{IN} = 6 dBm, P _{OUT} = 30.4 dBm, V _{DD1} ≤ 5.8 V, V _{DD2} = 5.8 V, V _{GG} = -5.0 V	dBc		-45	-40
I _{GG} ²	Gate Current, P _{IN} = 6 dBm, P _{OUT} = 30.4 dBm, V _{DD1} ≤ 5.8 V, V _{DD2} = 5.8 V, V _{GG} = -5.0	mA		1.0	3.0
V _{SWR}	Input VSWR, P _{OUT} = +30.4 dBm, V _{DD} = 5.8 V			2:1	
	Stability Against Load Fluctuation, P _{IN} = 6 dBm, P _{OUT} ≥ 30.8 dBm, V _{GG} = -5.0 V, Z _S = 50 Ω, ALL PHASE, Load Time = 30 s, V _{DD1} = V _{DD2} = 8.0 V, LOAD VSWR = 20:1		No characteristic change. Frequency, Output Power, Total Current, Harmonics, Gate Current, Input VSWR		

Notes:

1. V_{GG} = ± 0.2 V, Z_S = Z_L = 50 Ω.

2. I_{DD} = I_{DD1} + I_{DD2}

MC-5950

ABSOLUTE MAXIMUM RATINGS¹ (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
VDD1, 2	Supply Voltage 1, 2	V	10
VGG	Supply Voltage 3	V	-6
PIN	Input Power	dBm	12
TC(OP)	Operating Case Temperature	°C	-30 to +90
Tstg	Storage Temperature	°C	-30 to +120

Notes:

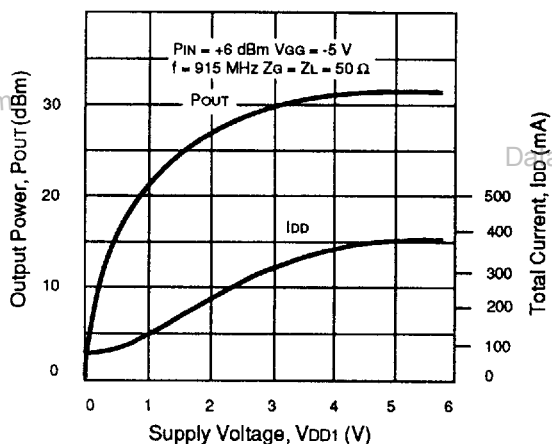
1. Operation in excess of any one of these parameters may result in permanent damage.
2. VGG = -5 V.

RECOMMENDED OPERATING CONDITIONS

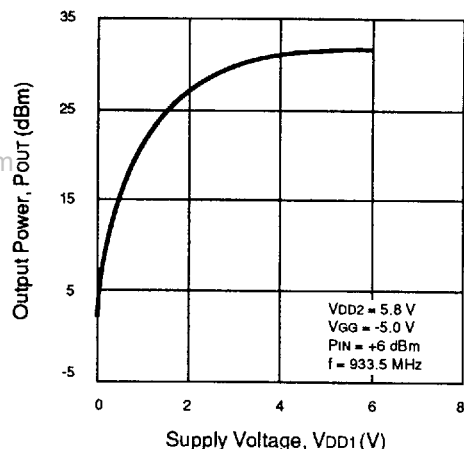
SYMBOL	PARAMETERS	UNITS	MIN	TYP	MAX
VDD1	Supply Voltage 1	V			5.8
VDD2	Supply Voltage 2	V	5.0	5.8	7.0
VGG	Supply Voltage 3	V	-4.8	-5.0	-5.2
PIN	Input Power	dBm		6	7

TYPICAL PERFORMANCE CURVES (TA = 25°C)

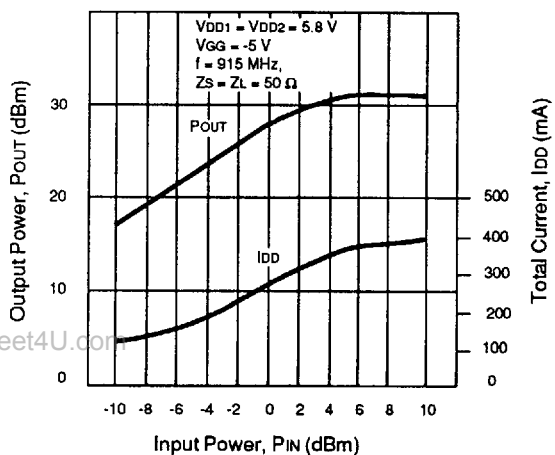
OUTPUT POWER AND TOTAL CURRENT vs SUPPLY VOLTAGE



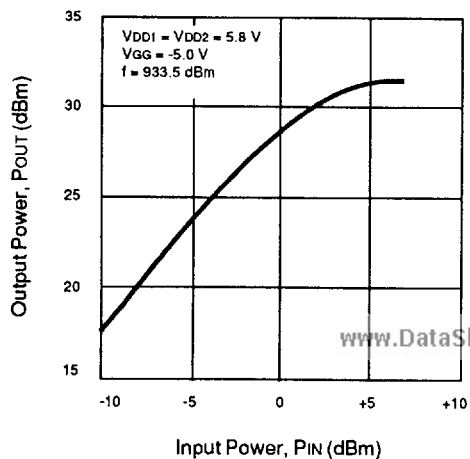
OUTPUT POWER vs. SUPPLY VOLTAGE



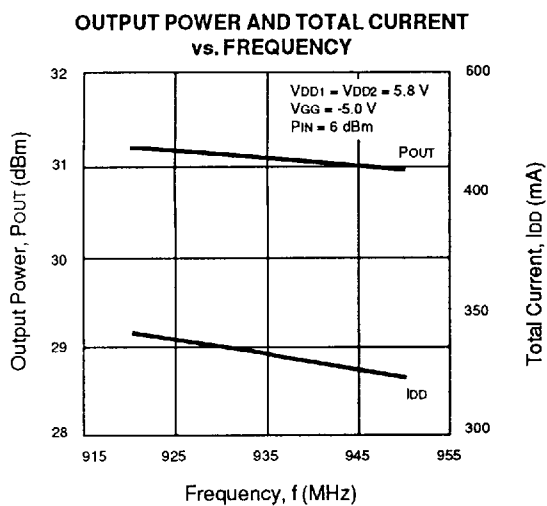
OUTPUT POWER AND TOTAL CURRENT vs. INPUT POWER



OUTPUT POWER vs. INPUT POWER



TYPICAL PERFORMANCE CURVES (TA = 25°C)



EQUIVALENT CIRCUIT

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