

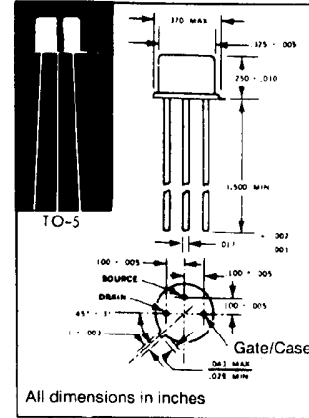


**NEW ENGLAND SEMICONDUCTOR**

**CP640  
CP664  
CP665  
CP666**

**HIGH DYNAMIC RANGE HF AND VHF AMPLIFIER  
FOR USE IN COMMON GATE CONFIGURATION**

- USABLE TO OVER 300 MHz
- 50 Ohm VSWR < 1.5:1 0.5-50 MHz (FIG. 1)
- LOW NOISE FIGURE — 2.2 dB TYPICAL @ 50 MHz
- INPUT Z CONSTANT 0.5-50 MHz
- HIGH IM INTERCEPT POINT — > + 40 dBm
- HIGH TRANSCONDUCTANCE — 100,000  $\mu$ mhos (TYP.)
- 1 dB COMPRESSION POINT > + 20 dBm
- DYNAMIC RANGE > 140 dB (TO 1 dB COMPRESSION)
- HIGH VOLTAGE—TO 50 V.



**ELECTRICAL DATA      ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	CP 640	CP 664	CP 665	CP 666	UNITS
Drain to Source Voltage	BVDSO	20	30	40	50	Volts
Drain to Gate Voltage	BVDGO	20	30	40	50	Volts
Gate to Source Voltage	BVGSO	-15	-20	-20	-20	Volts
Peak Drain Current	ID	1.2	1.2	1.2	1.2	Amps
Power Dissipation 25°C CASE	PD	8.0	8.0	8.0	8.0	Watts
Derating Factor (slope)	DF	22	22	22	22	°C/W
Junction Temp.(Oper. & Store)	TJ	-55°C to +200°C				

**TYPICAL TWO TONE 3rd ORDER IM  
PRODUCTS — CIRCUIT FIGURE 1**

Tones at 3MHz/5MHz

Signal Level EMF	3rd Order Product
1 Volt	-44 dB
0.3 Volt	-75 dB
0.25 Volt (0dBm)	-80 dB

**ELECTRICAL CHARACTERISTICS: TCASE = 25°C (UNLESS OTHERWISE STATED)**

PARAMETERS	CONDITIONS	SYMBOL	Min.	Typ.	Max.	UNITS
			25°C			
Gate Leakage Current	$V_{GS} = 15V, V_{DS} = 0$	$I_{GSS}$	5	100		nA
			150°C			10
Operating Transconductance	$V_{DS} = 15V, I_{DS} = 40mA$	$g'_g$	40	60	80	mmho
Zero Bias Transconductance	$V_{DS} = 15V, V_{GS} = 0(1)$	$g'_g$	75	100	200	mmho
Gate-Source Cut-Off Voltage	$V_{DS} = 5V, I_{DS} = 1.0mA$	$V_{GS(off)}$	2	5	10	Volts
Zero Bias Drain Current	$V_{DS} = 15V, V_{GS} = 0(1)$	$I_{DSS}$	100	200	800	mA
Gate to Source Cap.	$V_{GS} = -20V$	$C_{GS}$		15	20	pf
Gate to Drain Cap.	$V_{GD} = -20V$	$C_{GD}$		15	20	pf
Power Gain	$I_{DS} = 40mA, f = 50MHz, Fig. 1$	$G_{pg}$	8	8.5	9.5	dB
Noise Figure	$I_{DS} = 40mA, f = 30MHz, Fig. 1$	N.F.		2.2	3.0	dB
Voltage Standing Wave Ratio	$f = 0.5-50MHz, 50 \Omega$ Source, Fig. 1	VSWR			1.5:1	
Common Gate Input Conductance	$f = 0.5-50MHz, V_{DS} = 15, I_D = 40mA$	$g_{gs}$		60		mmho
Common Gate Output Conductance	$f = 50MHz, V_{DS} = 15, I_D = 40mA$	$g_{gs}$		0.4		mmho

<sup>1</sup>Pulse Measurement 1% Duty Cycle 10 mS Max.

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