

**Features**

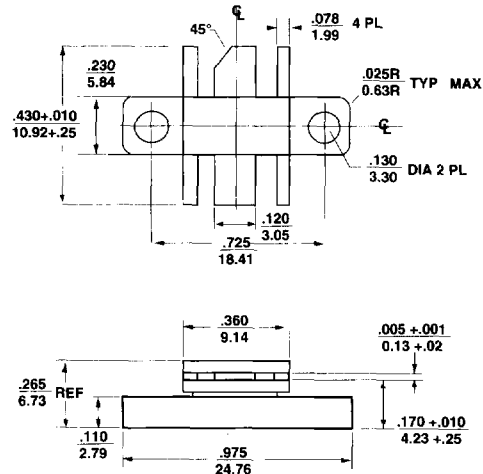
- **Power Out: 10 Watts**
- **Common Base Class C Power Transistor**
- **Frequency: 800-960 MHz**
- **Voltage: 25 V**
- **Efficiency: 50% Min.**
- **Load Mismatch Tolerance: 10:1**

**Description**

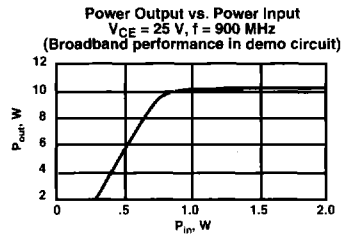
The ASP-0910 is a large signal, Class C common base, NPN silicon bipolar power transistor, housed in a BeO flange package for excellent thermal transfer. This device is designed for use as a 10 W driver or output amplifier for base station applications in cellular telephone systems operating in the 800 to 960 MHz frequency range.

Excellent device uniformity, performance and reliability are produced by the use of ion-implantation, self-alignment techniques, and gold metalization in the fabrication of these devices. Emitter ballasting ensures a rugged device capable of withstanding severe load mismatches.

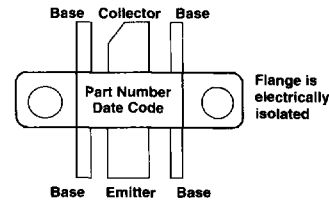
**Power Flange**



Dimensions are  $\frac{\text{in}}{\text{mm}}$   
Tolerances: in .xxx = ±.005 mm .xx = ±.13



**Marking and Lead Configuration**



**Electrical Specifications, T<sub>A</sub> = 25°C**

Symbol	Parameters and Test Conditions	Units	Min.	Typ.	Max.
P <sub>out</sub>	Output Power <sup>1</sup> V <sub>CE</sub> = 25 V, P <sub>in</sub> = 1 W, f = 900 MHz	Watts	9	10	
G <sub>p</sub>	Power Gain <sup>1</sup> V <sub>CE</sub> = 25 V, P <sub>in</sub> = 1 W, f = 900 MHz	dB	9.5	10	
η <sub>c</sub>	Collector Efficiency <sup>1</sup> V <sub>CE</sub> = 25 V, P <sub>in</sub> = 1 W, f = 900 MHz	%	50	55	
	Load Mismatch Tolerance V <sub>CE</sub> = 25 V, rated P <sub>out</sub> , f = 900 MHz	-		10:1	
BV <sub>CEO</sub>	Collector-Emitter Voltage V <sub>EB</sub> = open, I <sub>C</sub> = 50 mA	V	24	28	
BV <sub>CES</sub>	Collector-Emitter Voltage V <sub>EB</sub> = 0 V, I <sub>C</sub> = 100 mA	V	50	55	
BV <sub>EBO</sub>	Emitter-Base Voltage V <sub>CB</sub> = open, I <sub>E</sub> = 15 mA	V	3.5	4.5	
h <sub>FE</sub>	Forward Current Transfer Ratio V <sub>CE</sub> = 5 V, I <sub>C</sub> = 1 A	-	20	60	120
I <sub>CES</sub>	Collector Leakage Current V <sub>CE</sub> = 26 V	mA		1	5
C <sub>OB</sub>	Collector-Base Capacitance f = 1 MHz, V <sub>CB</sub> = 25 V, I <sub>E</sub> = 0 mA	pF		10	

Notes: 1. Tuned narrow band test.

**ASP-0910**  
**10 Watt, 900 MHz Class C Power Transistor**

**Absolute Maximum Ratings**

Parameter	Symbol	Absolute Maximum <sup>1</sup>
Emitter-Base Voltage	$V_{EBO}$	4.0 V
Collector-Emitter Voltage	$V_{CES}$	50 V
Collector Current	$I_C$	2.0 A
Power Dissipation <sup>2, 3</sup>	$P_T$	25 W
Junction Temperature	$T_j$	200°C
Storage Temperature	$T_{STG}$	-65 to 150°C

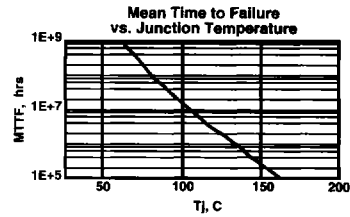
Thermal Resistance<sup>2</sup>:  $\theta_{jc} = 6.3^\circ\text{C/W}$

**Notes:**

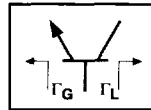
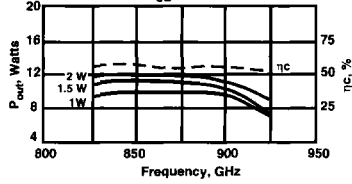
1. Operation of this device above any one of these parameters may cause permanent damage.
2.  $T_{case} = 25^\circ\text{C}$
3. Derate at  $.16 \text{ W}/^\circ\text{C}$  for  $T_{case} > 45^\circ\text{C}$

**Typical Performance,  $T_A = 25^\circ\text{C}$**

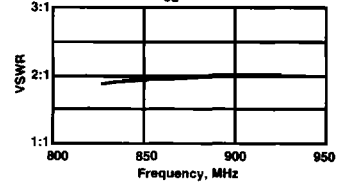
(Unless otherwise noted.)



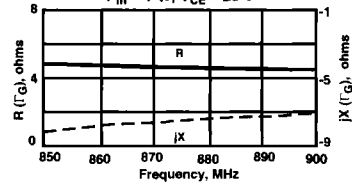
**Typical Broadband Performance**  
**Output Power and Collector Efficiency**  
**vs. Frequency and Input Power**  
 $V_{CE} = 25 \text{ V}$



**Typical Broadband Performance**  
**Input VSWR vs. Frequency**  
 $V_{CE} = 25 \text{ V}$

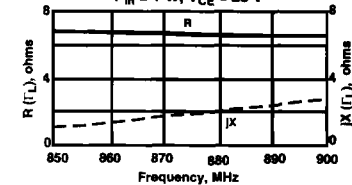


**Typical Generator Impedance**  
**vs. Frequency**  
 $P_{in} = 1 \text{ W}, V_{CE} = 25 \text{ V}$



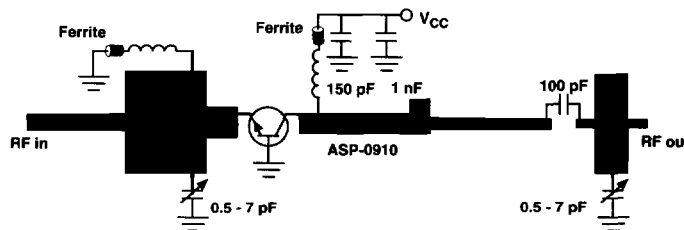
Freq. MHz	$\Gamma_G$		$\Gamma_L$	
	R	jX	R	jX
850	4.9	-8.1	6.9	1.1
860	4.8	-7.9	6.9	1.4
870	4.7	-7.7	6.9	1.7
880	4.6	-7.5	6.8	2.0
890	4.6	-7.3	6.8	2.4
900	4.5	-7.1	6.7	2.7

**Typical Load Impedance**  
**vs. Frequency**  
 $P_{in} = 1 \text{ W}, V_{CE} = 25 \text{ V}$



**Test Circuit Layout and Schematic**

**850-900 MHz**



Inductors are 3T 0.1" dia. 30 mil wire

(not to scale)