

## RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

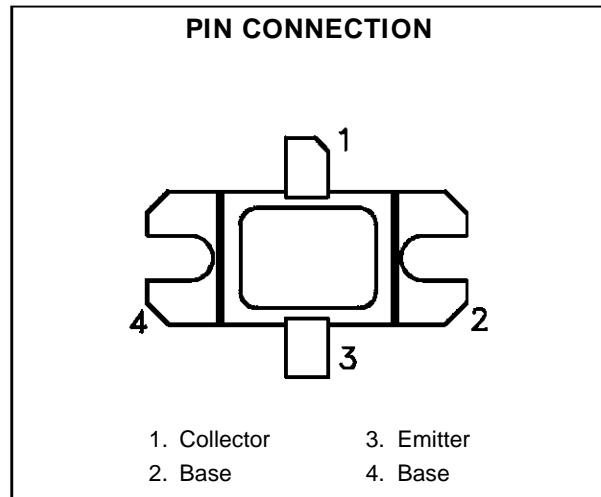
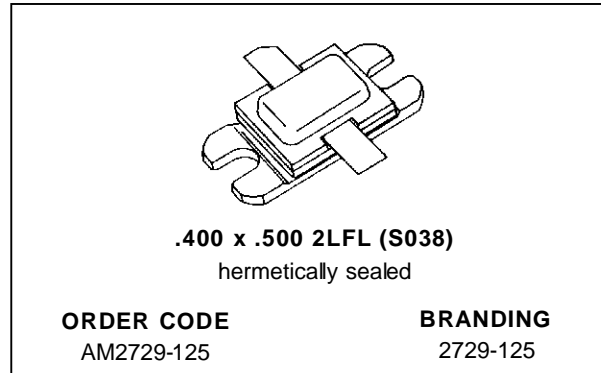
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P<sub>OUT</sub> = 125 W MIN. WITH 7.0 dB GAIN

### DESCRIPTION

The AM2729-125 device is a high power silicon bipolar NPN transistor specifically designed for medium pulse S-Band radar output and driver applications.

This device is characterized at 50 μsec pulse width and 10% duty cycle, but is capable of operation over a range of pulse widths, duty cycles and temperatures. Low RF thermal resistance, refractory/gold metallization and computerized automatic wire bonding techniques ensure high reliability and product consistency (including phase characteristics).

The AM2729-125 is supplied in the BIGPAC™ Hermetic Metal/Ceramic package with internal Input/Output impedance matching circuitry, and is intended for military and other high reliability applications.



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation* (T <sub>c</sub> ≤ 75°C)	500	W
I <sub>c</sub>	Device Current*	16	A
V <sub>CC</sub>	Collector-Supply Voltage*	45	V
T <sub>J</sub>	Junction Temperature (Pulsed RF Operation)	250	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +200	°C

### THERMAL DATA

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance*	0.35	°C/W
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\*Applies only to rated RF amplifier operation

**ELECTRICAL SPECIFICATIONS** ( $T_{case} = 25^{\circ}C$ )

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 50\text{ mA}$	$I_E = 0\text{ mA}$	55	65	—	V
$BV_{EBO}$	$I_E = 10\text{ mA}$	$I_C = 0\text{ mA}$	3.5	4.5	—	V
$BV_{CES}$	$I_C = 50\text{ mA}$	$V_{BE} = 0\text{ V}$	55	65	—	V
$I_{CES}$	$V_{BE} = 0\text{ V}$	$V_{CE} = 40\text{ V}$	—	—	40	mA
$h_{FE}$	$V_{CE} = 5\text{ V}$	$I_C = 5\text{ A}$	30	80	300	—

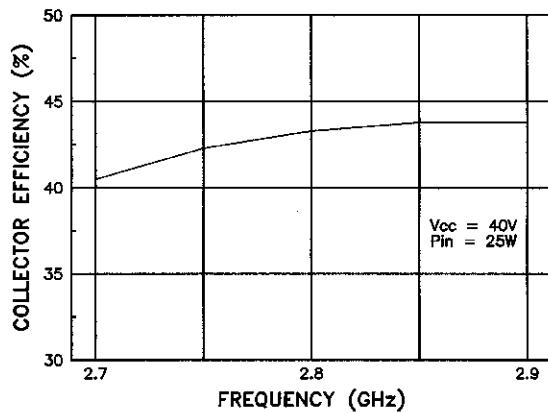
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{OUT}$	$f = 2700 - 2900\text{ MHz}$	$P_{IN} = 25\text{ W}$	$V_{CC} = 40\text{ V}$	125	—	—	W
$\eta_C$	$f = 2700 - 2900\text{ MHz}$	$P_{IN} = 25\text{ W}$	$V_{CC} = 40\text{ V}$	35	—	—	%
GP	$f = 2700 - 2900\text{ MHz}$	$P_{IN} = 25\text{ W}$	$V_{CC} = 40\text{ V}$	7.0	—	—	dB

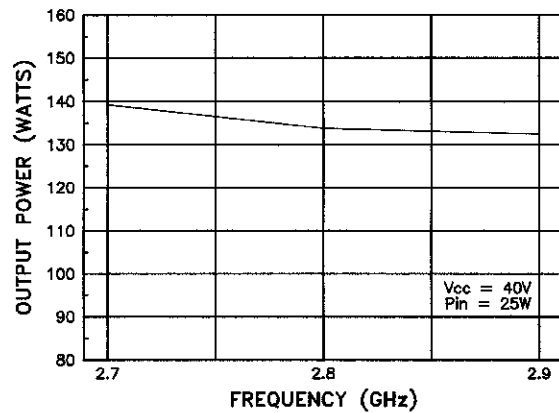
Note: Pulse Width = 50 $\mu$ Sec  
 Duty Cycle = 10%

**TYPICAL PERFORMANCE**

**TYPICAL BROADBAND EFFICIENCY**

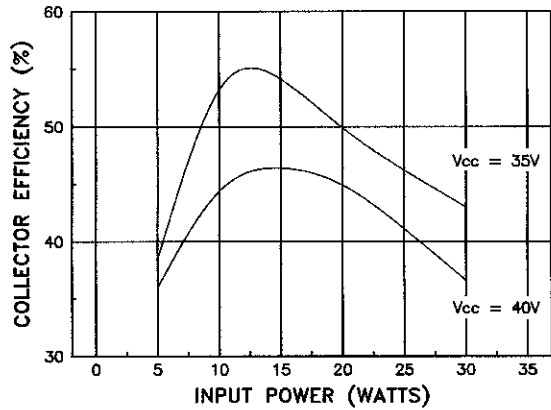


**TYPICAL BROADBAND PERFORMANCE**

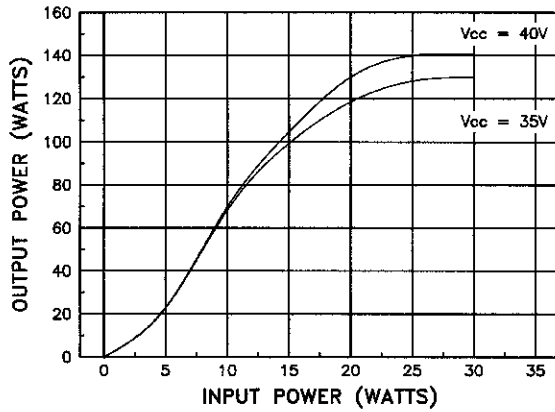


TYPICAL PERFORMANCE (cont'd)

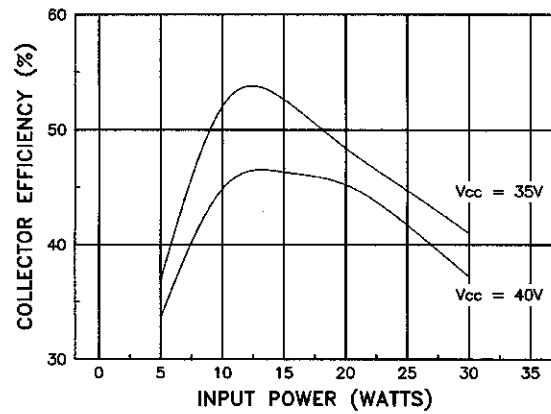
TYPICAL EFFICIENCY @ 2.7 GHz



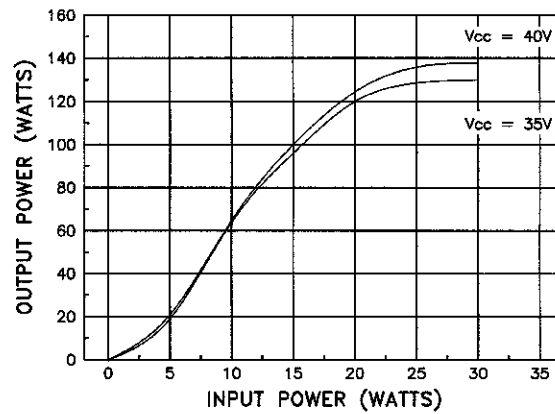
TYPICAL PERFORMANCE @ 2.7 GHz



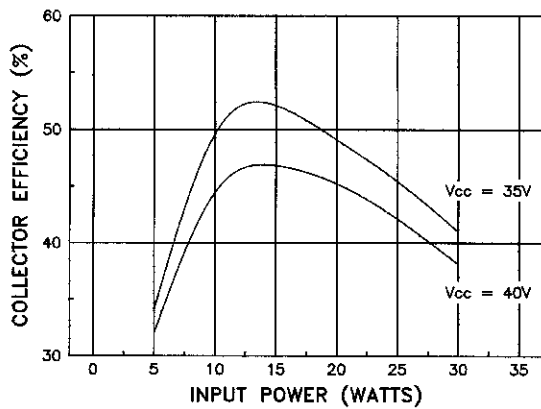
TYPICAL EFFICIENCY @ 2.8 GHz



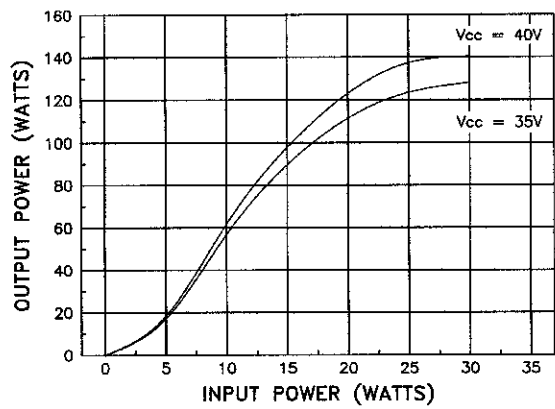
TYPICAL PERFORMANCE @ 2.8 GHz



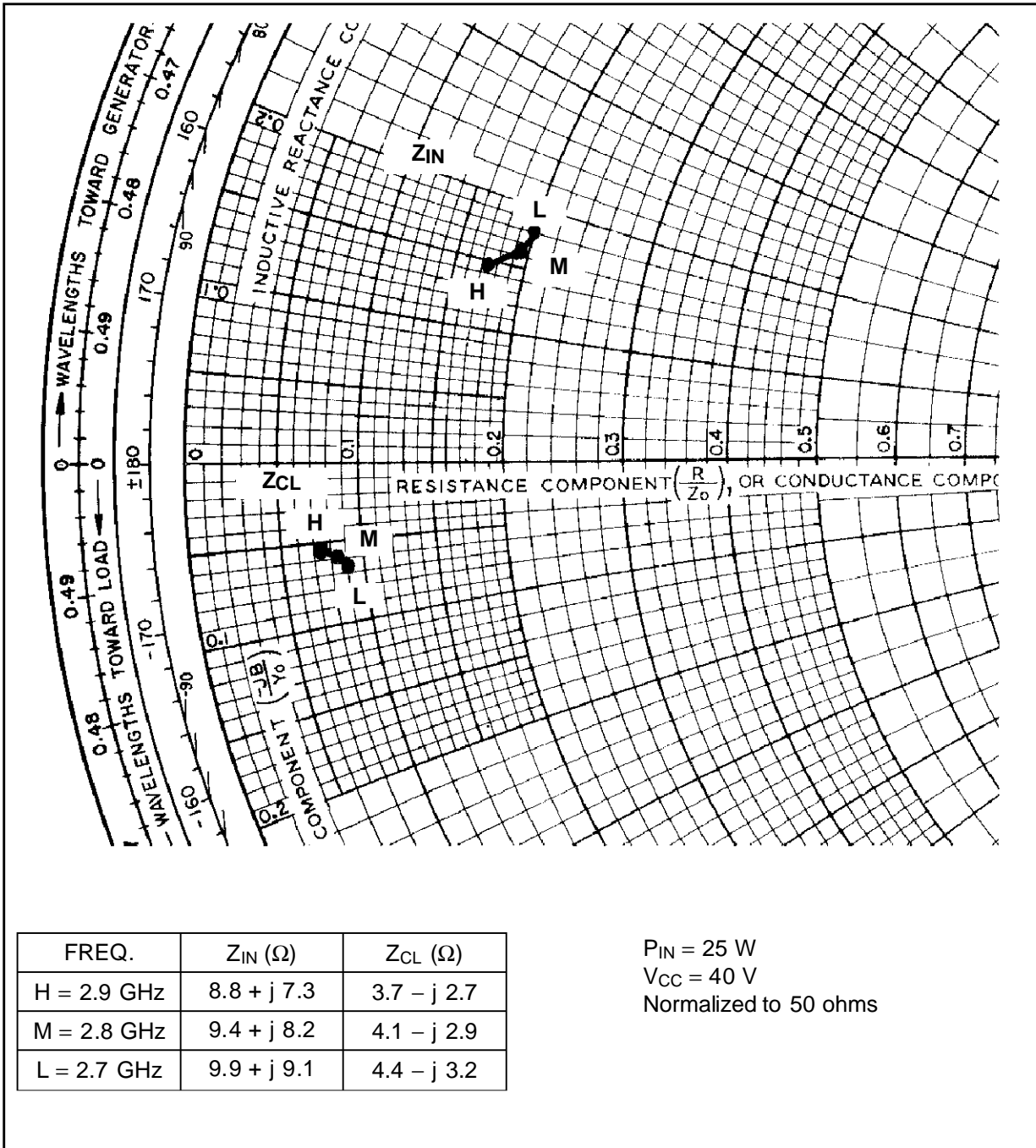
TYPICAL EFFICIENCY @ 2.9 GHz



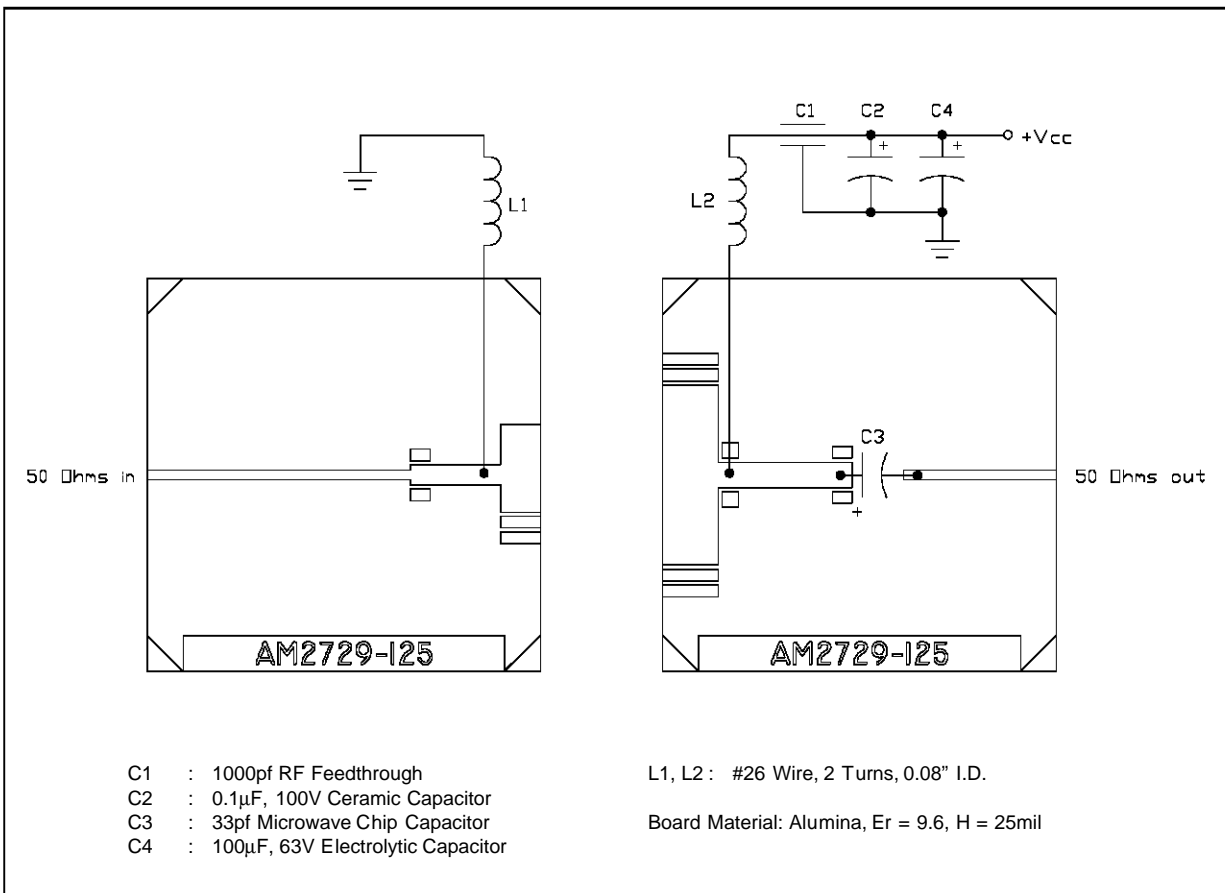
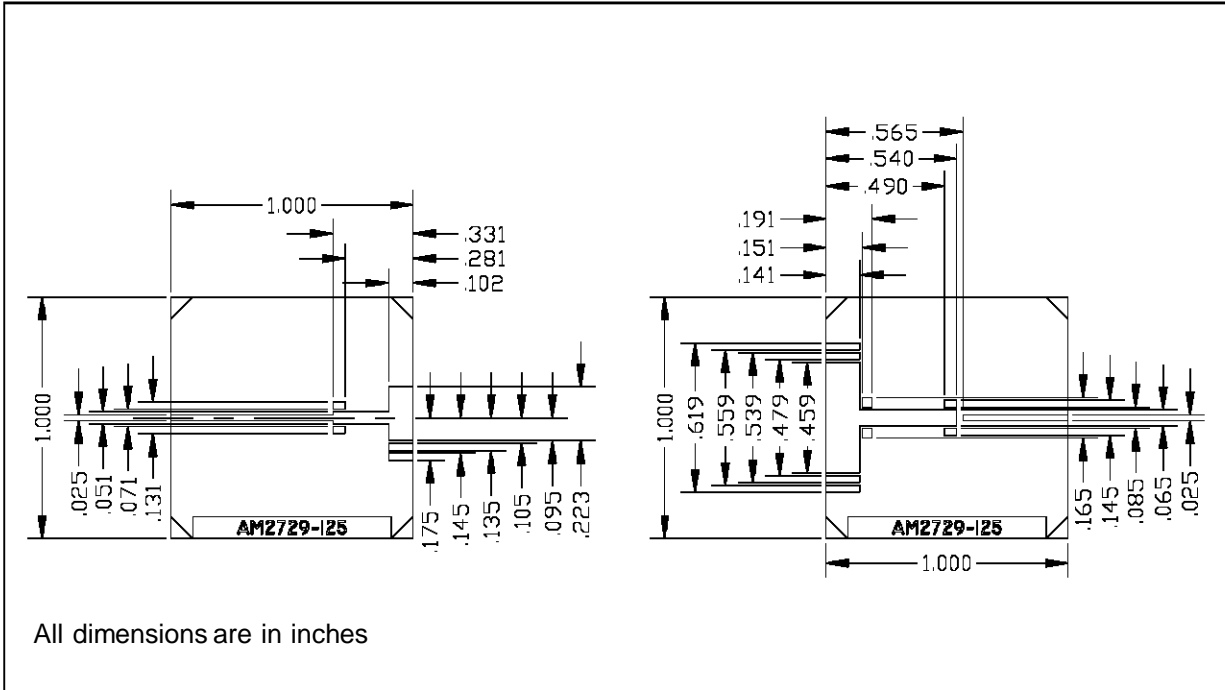
TYPICAL PERFORMANCE @ 2.9 GHz



IMPEDANCE DATA

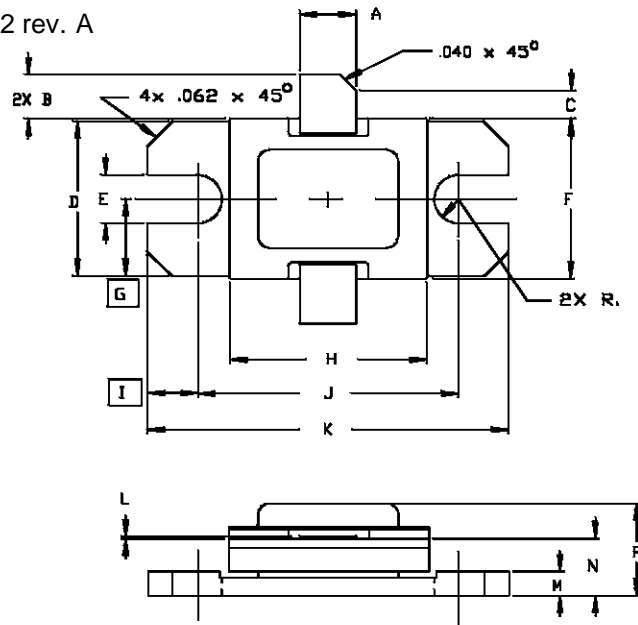


TEST CIRCUIT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0212 rev. A



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.135/3,43	.145/3,68	K	.890/22,61	.910/23,11
B	.100/2,54	.120/3,05	L	.003/0,08	.006/0,15
C	.050/1,27		M	.052/1,32	.072/1,83
D	.376/9,55	.396/10,06	N	.118/3,00	.131/3,33
E	.110/2,79	.130/3,30	P		.230/5,84
F	.395/10,03	.407/10,34			
G	.193/4,90				
H	.490/12,45	.510/12,95			
I	.100/2,54				
J	.690/17,53	.710/18,03			

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