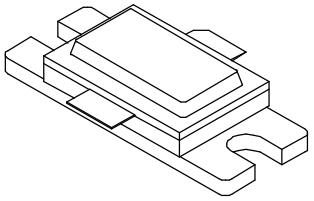
TCS800

800 Watts, 50 Volts, Pulsed Avionics 1030 MHz

GENERAL DESCRIPTION

The TCS800 is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030 MHz, with the pulse width and duty required for TCAS applications. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. The transistor includes input and output prematch for broadband capability. Low thermal resistance package reduces junction temperature, extends life.

CASE OUTLINE
55SM Style 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @25°C[1]	1944 W

Maximum Voltage and Current

Collector to Base Voltage (BV_{ces})	65 V
Emitter to Base Voltage (BV_{ebo})	3.5 V
Collector Current (I_c)	50 A

Maximum Temperatures

Storage Temperature	-65 to +200 °C
Operating Junction Temperature	+230 °C

ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Out	F = 1030 MHz	800			W
P_{in}	Power Input	V_{CC} = 50 Volts			126	W
P_g	Power Gain	PW = 32 µsec	8.0	9.0		dB
η_c	Collector Efficiency	DF = 1%		45		%
R_L	Input Return Loss			-12		dB
Pd	Pulse Droop			0.5		dB
VSWR	Load Mismatch Tolerance	F = 1030 MHz			4:1	

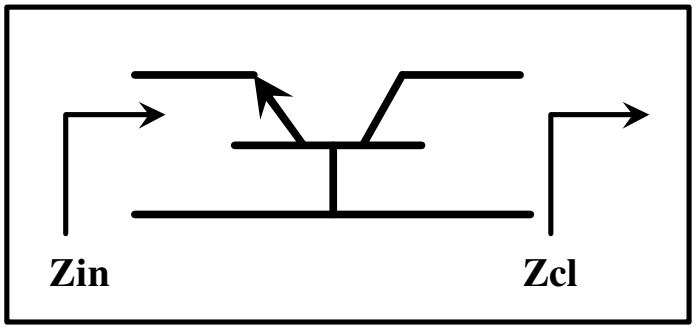
FUNCTIONAL CHARACTERISTICS @ 25°C

BV_{ebo}*	Emitter to Base Breakdown	Ie = 70 mA	3.5			V
BV_{ces}	Collector to Emitter Breakdown	Ic = 100 mA	65			V
h_{FE}*	DC – Current Gain	Vce = 5V, Ic = 5A	20			
θjc[1]	Thermal Resistance				0.09	°C/W

NOTE 1: At rated output power and pulse conditions.
*: Not measurable due to internal EB returns

Rev B – Sept. 2005

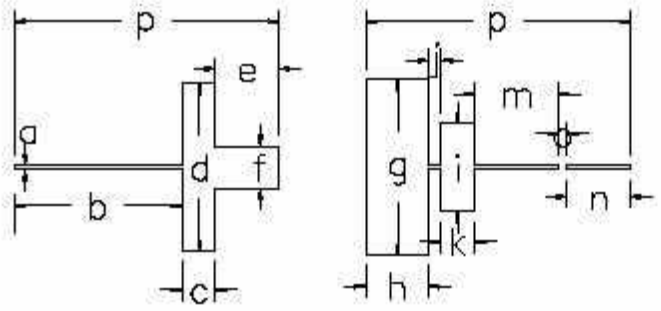
Freq (MHz)	**Zin**	**Zcl**
1030	1.63+j1.59	0.47-j1.14

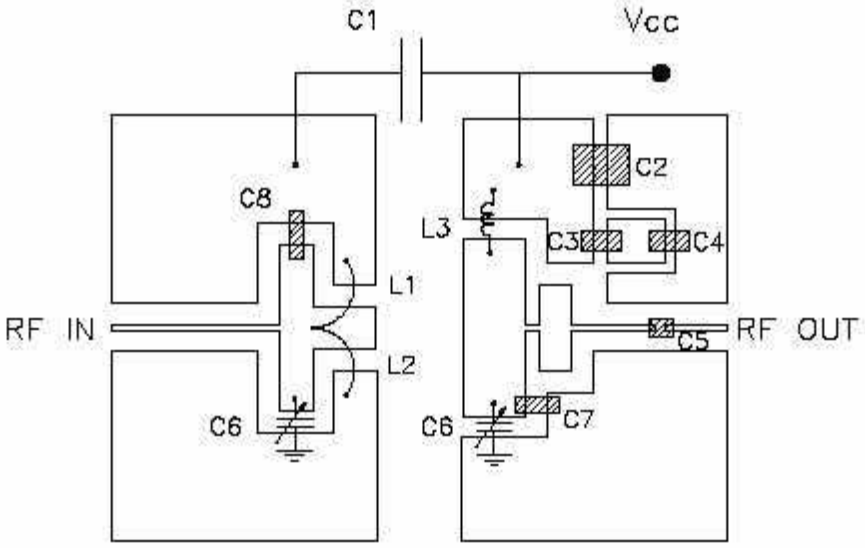


REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

DIM	INCHES
a	0.025
b	0.781
c	0.158
d	0.768
e	0.296
f	0.197
g	0.827
h	0.296
i	0.414
j	0.080
k	0.156
m	0.394
n	0.297
o	0.040
p	1.245

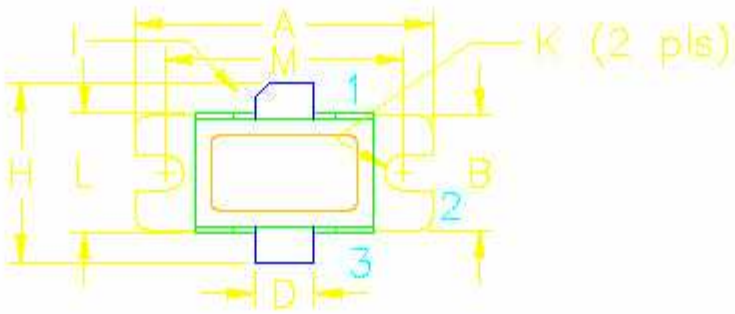


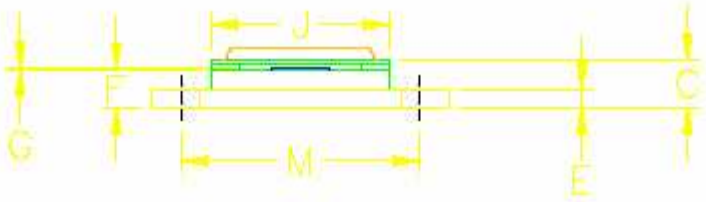


C1= 2000 uF, 63 V ELECTROLYTIC CAPACITOR
C2 = 1.0 uF, 50 V
C3, C4 = 4.7 uF, 50 V
C5 = 51 pF ATC B
C6 = 0 – 3.5 pF Trimming Capacitor
C7 = 3.0 pF ATC B
C8 = 0.3 pF ATC B
L1, L2 = 0.5" Hair Pin, 150 mils loop 16 AWG
L3 = 3T, 110 MILS DIAMETER 18 AWG

ADVANCED POWER TECHNOLOGY RF

CAGE	DWG NO.	REV
0PJR2	TCS800	
	SCALE 1:1	SHEET

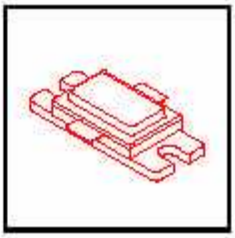




DIM	MILLIMETER	TOL	INCHES	TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	4.87	.19	.192	.007
D	5.08	.13	.200	.005
E	1.53	.13	.060	.005
F	3.18	.13	.125	.005
G	0.08	+.05/-.08	.003	+.002/-.003
H	19.05	0.51	.750	.020
I	45°	5°	45°	5°
J	15.24	.25	.600	.010
K	3.05 DIA	.13	.120 DIA	.005
L	10.15	.13	.400	.005
M	20.32	.25	.800	.010

STYLE 1:
PIN 1 = COLLECTOR
2 = BASE
3 = EMITTER

STYLE 2:
PIN 1 = COLLECTOR
2 = EMITTER
3 = BASE



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DWG NO. 55SM