Microsemi
POWER PRODUCTS GROUP

2731-20

20Watts, 36 Volts, 100us, 10%
Radar 2700-3100 MHz

GENERAL DESCRIPTION

The 2731-20is an internally matched, COMMON BASE bipolar transistor capable of providing 20Watts of pulsed RF output power at 100 pulse width, 10% duty factor across the 2700 to 3100 MHz band. The transistor prematch and test fixture has been optimized through the use of 10 Ohm TRL Analysis. This ceramic sealed transistor is specifically designed for S-band radar applications. It utilizes gold metallization and emitter ballasting to provide high reliability and supreme ruggedness.

CASE OUTLINE
55KCR-1
Common Base

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C[1]	70	W

Maximum Voltage and Current

Collector to Base Voltage (BV_{ces})	65	V
Emitter to Base Voltage (BV_{ebo})	3.0	V
Peak Collector Current (I_c)	1.85	A

Maximum Temperatures

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

ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Output	F=2700-3100 MHz	20			W
P_g	Power Gain	Pulse Width = 100s	8.2			dB
η_c	Collector Efficiency	Duty Factor = 10 %	45			%
R_l	Return Loss	Power Input = 3W	-7			dB
VSWR-S	Load Mismatch Stability	Vcc = +36V			1.5:1	
VSWR-T	Load Mismatch Tolerance	F = 2700, 2900, 3100 MHz			3:1	

FUNCTIONAL CHARACTERISTICS @ 25°C

Ices	Collector to Emitter Leakage	Vce=40V			1.5	mA
BV_{ces}	Collector to Emitter Breakdown	Ic = 10 mA	65			V
θjc[1]	Thermal Resistance				2.5	°C/W

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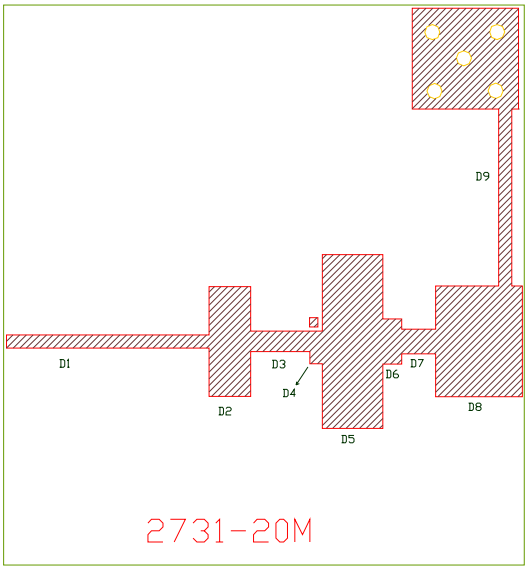
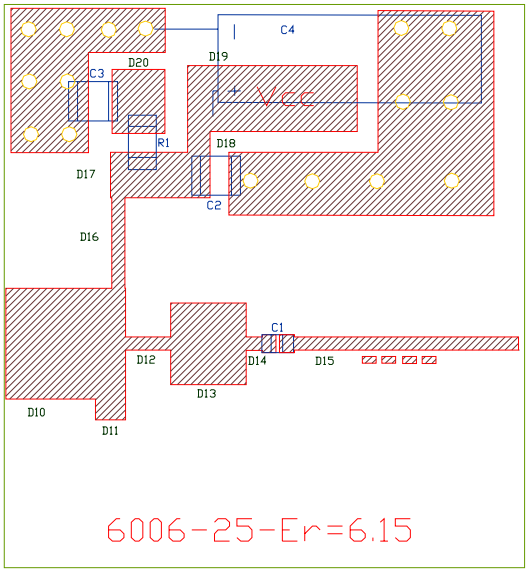
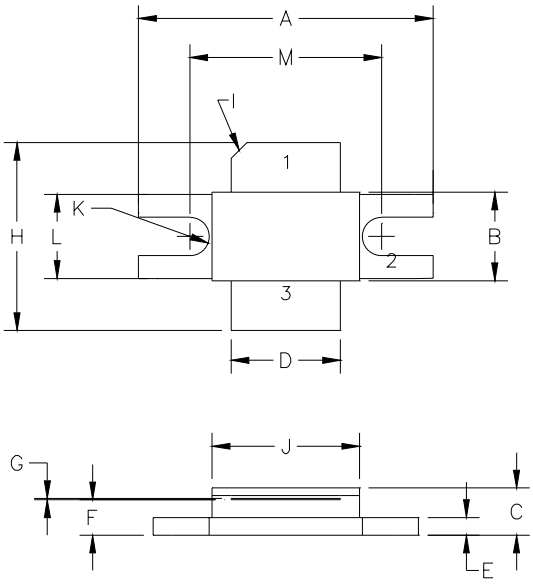




Item	Description	Value
C1	Chip cap A-size	9.1pF
C2	Chip cap B-size	100pF
C3	Chip cap B-size	10,000pF
C4	Electrolytic cap	470uF
R1	Fix resistor	33 ohms
Material	Roger Duroid	6006 @ 20 Mils, 1Oz Cu, Er=6.15

Physical Circuit Dimension (mil)						
Item	L	W		Item	L	W
D1	540	35		D11	80	348
D2	110	290		D12	120	35
D3	190	54		D13	200	216
D4	32	32		D14	78	35
D5	160	460		D15	640	35
D6	50	120		D16	240	35
D7	90	65		D17	264	120
D8	230	293		D18	60	60
D9	469	35		D19	450	175
D10	293	237		D20	140	170

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DIM	MILLIMETER	TOL	INCHES	TOL
A	20.32	.12	.800	.005
B	5.84	.12	.230	.005
C	3.18	.07	.125	.003
D	5.46	.07	.215	.003
E	1.52	.07	.060	.003
F	3.18	.17	.125	.007
G	.13	.05	.005	.002
H	17.78	.07	.700	.003
I	45°	5°	45°	5°
J	8.38	.25	.330	.010
K	.130 Dia	.12	.130 Dia	.005
L	5.84	.12	.230	.005
M	14.22	MAX	.560	MAX

STYLE:
1 = COLLECTOR
2 = BASE
3 = EMITTER

CAGE	DWG NO.	REV
0PJR2	55CR	A
	SCALE 2/1	SHEET