



# 2731-20

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

## GENERAL DESCRIPTION

The 2731-20 is 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<sup>1</sup>                      70 W

### Maximum Voltage and Current

Collector to Base Voltage (BV<sub>ces</sub>)                      65 V

Emitter to Base Voltage (BV<sub>ebo</sub>)                      3.0 V

Peak Collector Current (I<sub>c</sub>)                      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 <sub>out</sub>	Power Output	F=2700-3100 MHz	20			W
P <sub>g</sub>	Power Gain	Pulse Width = 100s	8.2			dB
η <sub>c</sub>	Collector Efficiency	Duty Factor = 10 %	45			%
R <sub>l</sub>	Return Loss	Power Input = 3W	-7			dB
VSWR-S	Load Mismatch Stability	V <sub>cc</sub> = +36V			1.5:1	
VSWR-T	Load Mismatch Tolerance	F = 2700, 2900, 3100 MHz			3:1	

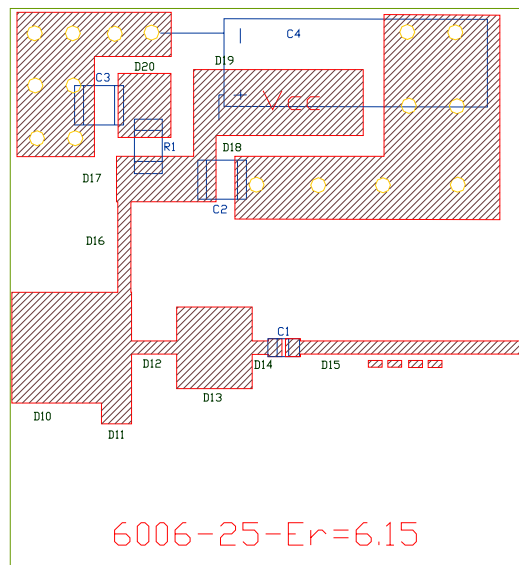
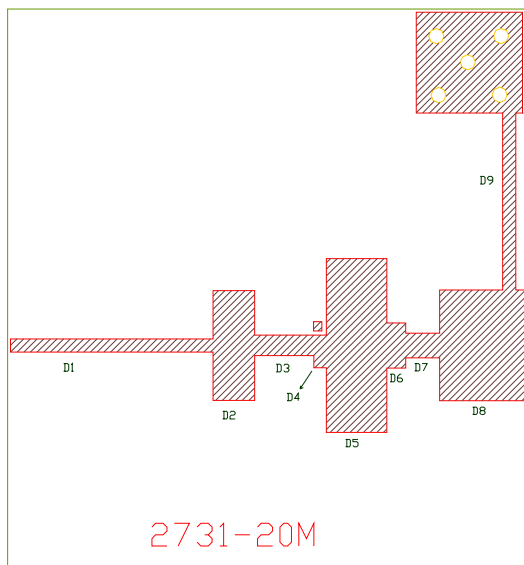
## FUNCTIONAL CHARACTERISTICS @ 25°C

I <sub>ces</sub>	Collector to Emitter Leakage	V <sub>ce</sub> =40V			1.5	mA
BV <sub>ces</sub>	Collector to Emitter Breakdown	I <sub>c</sub> = 10 mA	65			V
θ <sub>jc</sub> <sup>1</sup>	Thermal Resistance				2.5	°C/W

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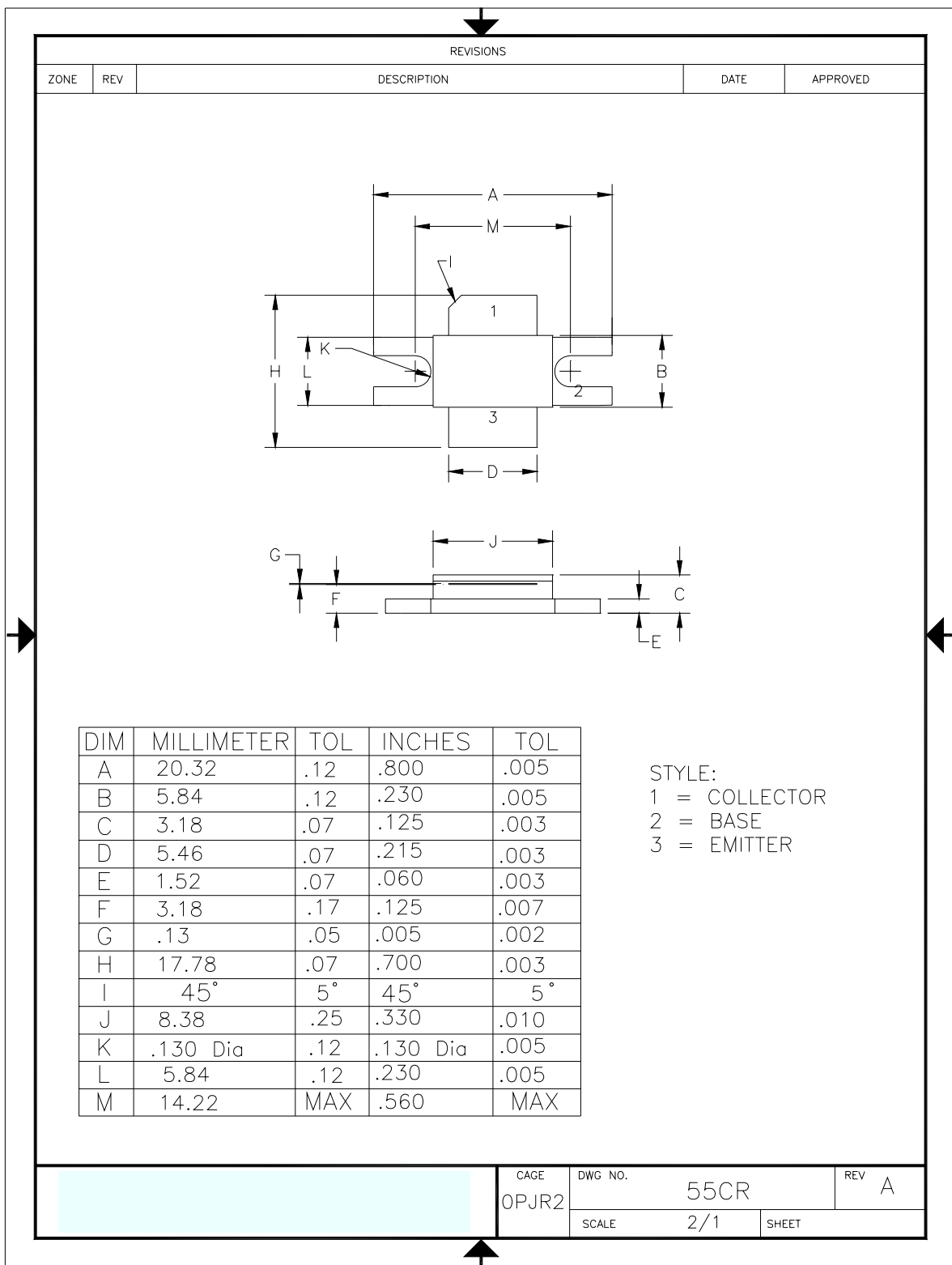


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Item	Description	Value			
C1	Chip cap A-size	9.1pF			
C2	Chip cap B-size	100pF			
C3	Chip cap B-size	10,000pF			
C4	Electrolytic cap	470uF			
R1	Fix resistor	33 ohms			
Material	Roger Duroid	6006 @ 20 Mils, 1Oz Cu, Er=6.15			
Physical Circuit Dimension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

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