



3134-100

100 Watts, 36 Volts, 100 μ s, 10%
Radar 3100-3400 MHz

GENERAL DESCRIPTION

The 3134-100 is an internally matched, COMMON BASE bipolar transistor capable of providing 100 Watts of pulsed RF output power at 100 μ s pulse width, 10% duty factor across the 3100 to 3400 MHz band. This hermetically solder-sealed transistor is specifically designed for S-band radar applications. It utilizes gold metallization and emitter ballasting to provide high reliability and supreme ruggedness.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C¹ 570 W

Maximum Voltage and Current

Collector to Base Voltage (BV_{ces}) 65 V

Emitter to Base Voltage (BV_{ebo}) 3.0 V

Collector Current (I_c) 17 A

Maximum Temperatures

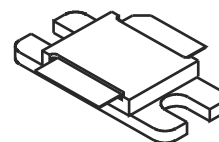
Storage Temperature -65 to +200 °C

Operating Junction Temperature +200 °C

CASE OUTLINE

55KS-1

Common Base



ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P _{out}	Power Output	F=3100-3400 MHz	100		135	W
Gain	Power Gain	V _{cc} = 36V	8.0		9.3	
η_c	Collector Efficiency	Pulse Width = 100 us	40			%
Droop	Droop	Duty Cycle = 10%			0.5	dB
IRL	Input Return Loss	Pin = 16W			-7	dB
VSWR-S	Stability		1.5:1			
VSWR-T	Survivability		2.0:1			

FUNCTIONAL CHARACTERISTICS @ 25°C

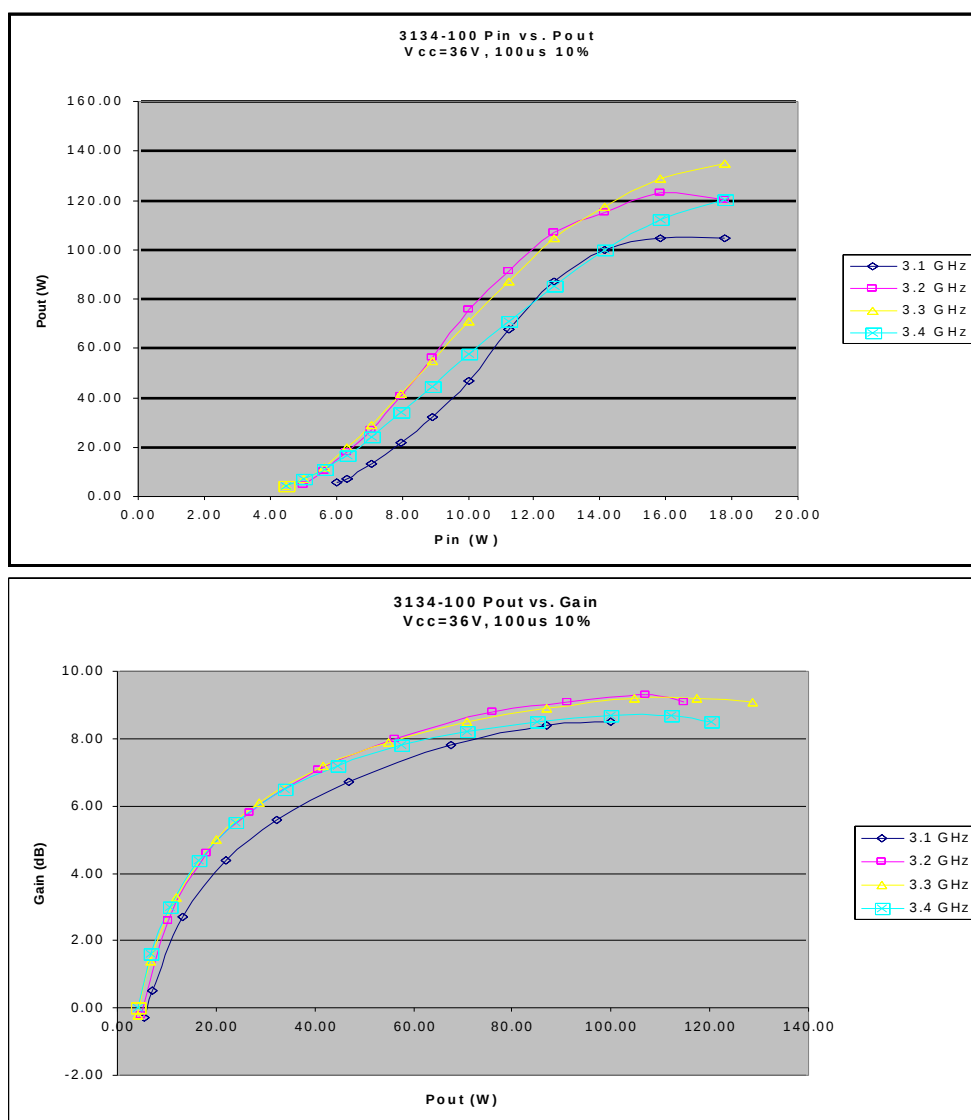
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
BV _{ebo}	Emitter to Base Breakdown	I _e = 30 mA	3.0			V
BV _{ces}	Collector to Emitter Breakdown	I _c = 120 mA	65			V
I _{ces}	Collector to Emitter Leakage	V _{ce} = 36 V			7	mA
θ_{jc}	Thermal Resistance				0.35	°C/W
T _{stg}	Storage Temperature		-65		200	°C



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Typical Dynamic Range Data

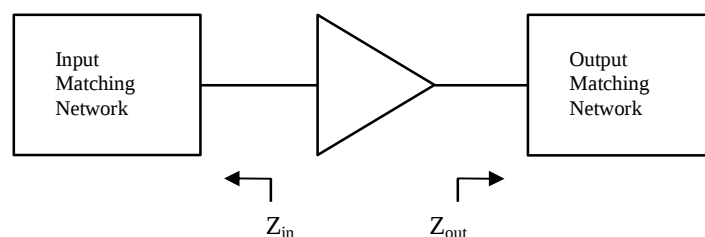
Vcc = 36 Volts, Pulse Width = 100μs, Duty = 10 %





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Input and Output Impedance



Typical Impedance Values

Frequency (MHz)	$Z_{in}(\Omega)$	$Z_{out}(\Omega)$
3100	4.79 - j0.44	5.51 - j5.76
3200	5.05 - j0.38	5.10 - j5.68
3300	5.29 - j0.37	4.75 - j5.55
3400	5.50 - j0.39	4.47 - j5.38

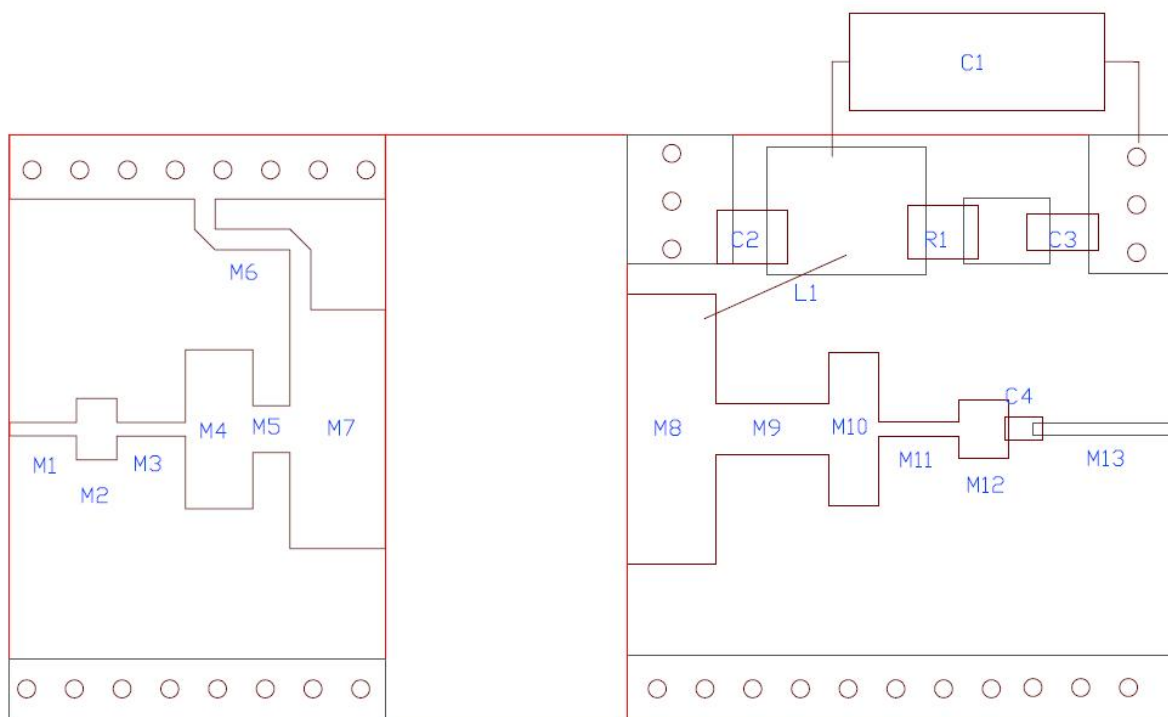
* $V_{cc} = 36V$, $P_{out} = 100W$ min

* Pulse Format: 100 μs 10%



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Broadband Test Circuit



PCB Material: Rogers RT6010, Er 10.2, 25mil

Circuit Dimensions

Component List

Designation	W (mil)	L (mil)	Designation	Value	Size
M1	22	112	C1	2200 uF	Electrolytic
M2	103	68	C2	100 pF	ATC B
M3	22	115	C3	10000 pF	ATC B
M4	266	113	C4	10 pF	ATC A
M5	78	62	R1	8.2 ohms	1206
M6	35	345	L1	20 AWG wire	400 mil
M7	400	160			
M8	450	150			
M9	86	188			
M10	255	84			
M11	22	135			
M12	99	83			
M13	22	245			

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