

**NPN EPITAXIAL PLANAR TYPE**

**DESCRIPTION**

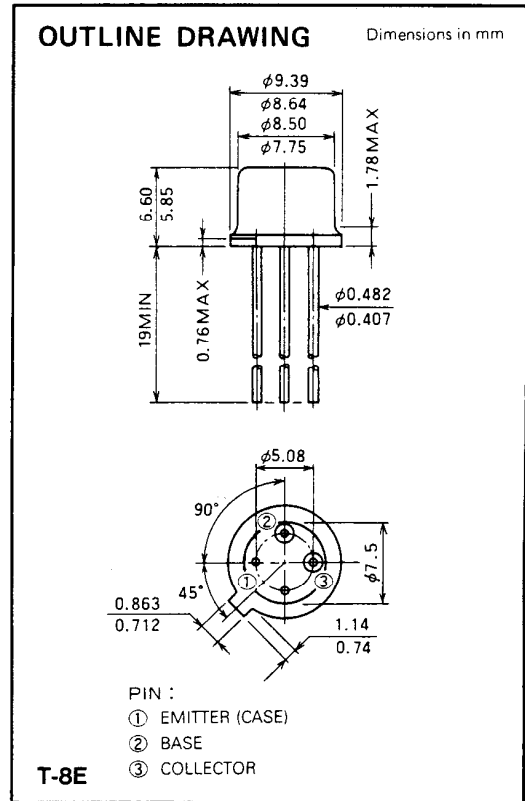
2SC3101 is a silicon NPN epitaxial planar type transistor specifically designed for UHF power amplifiers applications.

**FEATURES**

- High power gain:  $G_{pe} \geq 5.7\text{dB}$   
@ $V_{CC} = 12.5\text{V}$ ,  $f = 520\text{MHz}$ ,  $P_{in} = 0.8\text{W}$
- Emitter ballasted construction
- High ruggedness: Ability to withstand more than 20:1 load VSWR when operated at @ $V_{CC} = 15.2\text{V}$ ,  $f = 520\text{MHz}$ ,  $P_o = 3\text{W}$ .

**APPLICATION**

For drive stage and output stage of power amplifiers in UHF band.



**ABSOLUTE MAXIMUM RATINGS** ( $T_C = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CEO}$	Collector to base voltage		35	V
$V_{EBO}$	Emitter to base voltage		4	V
$V_{CEO}$	Collector to emitter voltage	$R_{BE} = \infty$	17	V
$I_C$	Collector current		1	A
$P_C$	Collector dissipation	$T_C = 25^\circ\text{C}$	10	W
$T_j$	Junction temperature		175	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55 to 175	$^\circ\text{C}$

Note. Above parameters are guaranteed independently.

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise specified)

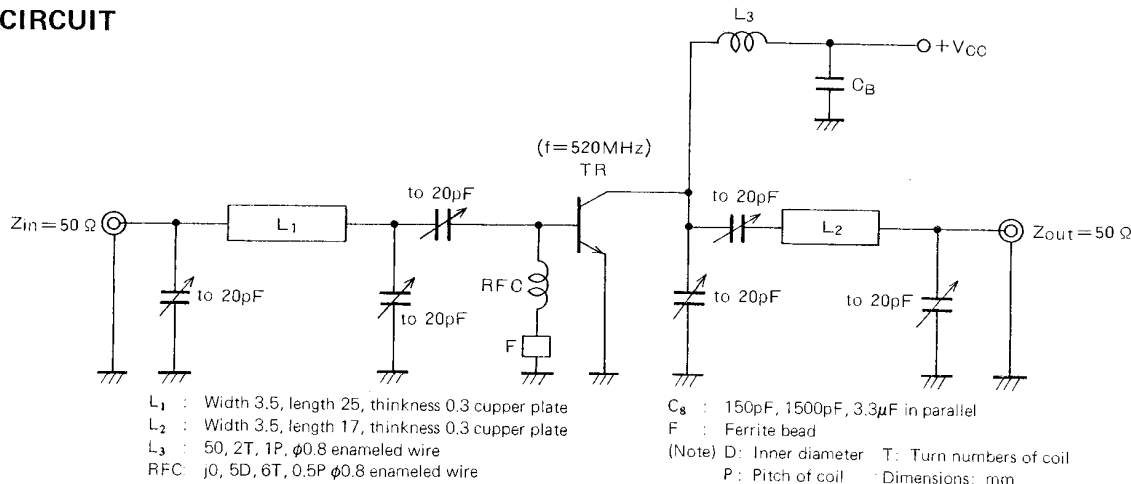
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$ , $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$ , $I_E = 0$	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$ , $R_{BE} = \infty$	17			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 15\text{V}$ , $I_E = 0$			300	$\mu\text{A}$
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 2\text{V}$ , $I_C = 0$			300	$\mu\text{A}$
$h_{FE}$	DC forward current gain *	$V_{CB} = 10\text{V}$ , $I_C = 0.1\text{A}$	10	50	180	—
$P_o$	Output power	$V_{CC} = 12.5\text{V}$ , $P_{in} = 0.8\text{W}$ , $f = 520\text{MHz}$ .	3	3.5		W
$\eta_C$	Collector efficiency		50	60		%

Note. \* Pulse test,  $P_w = 150\mu\text{s}$ , duty = 5%.

Above parameters, ratings, limits and conditions are subject to change.

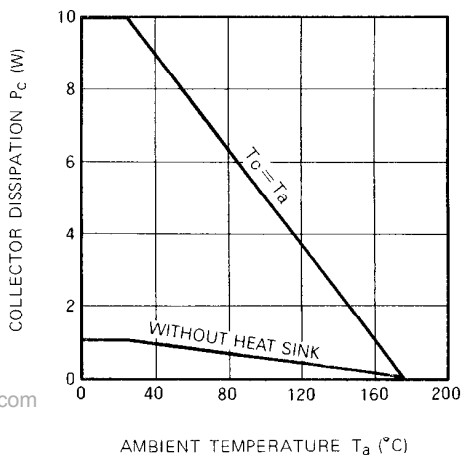
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**TEST CIRCUIT**



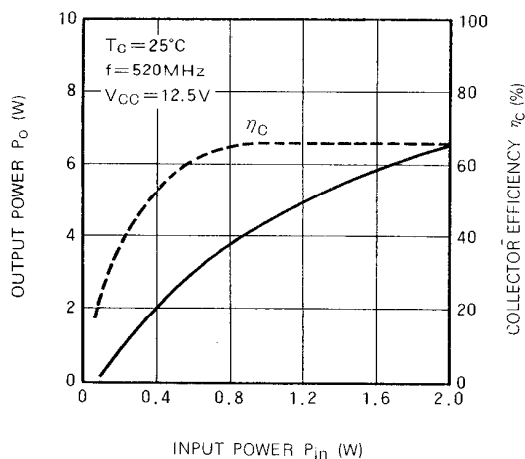
**TYPICAL PERFORMANCE DATA**

**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE CHARACTERISTICS**

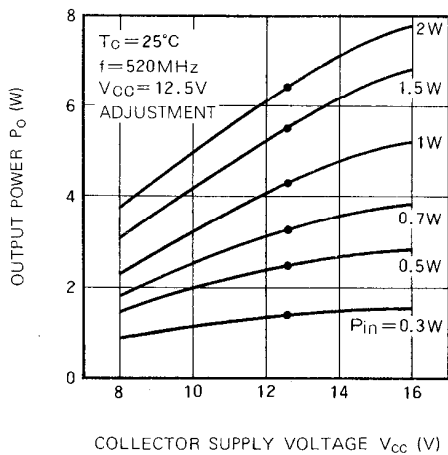


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**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS**



**OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE CHARACTERISTICS**



**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE CHARACTERISTICS**

