

DESCRIPTION

2SC3021 is a silicon NPN epitaxial planar type transistor specifically designed for UHF power amplifiers applications.

FEATURES

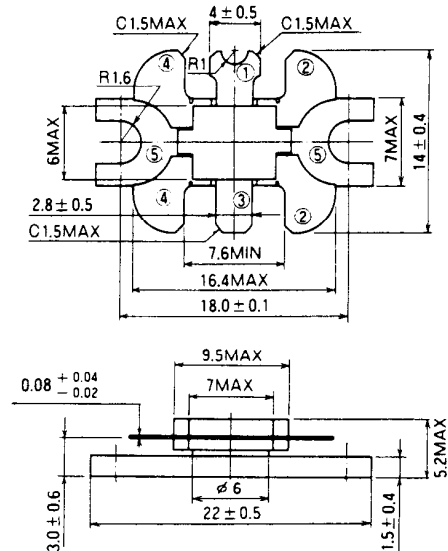
- High power gain: $G_{pe} \geq 7.6\text{dB}$
@ $V_{CC} = 12.5\text{V}$, $f = 520\text{MHz}$, $P_{in} = 1.2\text{W}$.
- Emitter ballasted construction.
- High ruggedness: Ability to withstand more than 20:1 load VSWR when operated at $V_{CC} = 15.2\text{V}$, $f = 520\text{MHz}$, $P_O = 7\text{W}$.
- Flange type ceramic package.
- $Z_{in} = 2.2 + j3.1\Omega$,
 $Z_{out} = 6 + j1.0\Omega$ @ $V_{CC} = 12.5\text{V}$, $f = 520\text{MHz}$, $P_O = 7\text{W}$.

APPLICATION

For output stage of 5W power amplifiers and drive stage of higher power amplifiers in UHF band.

OUTLINE DRAWING

Dimensions in mm



PIN :

- ① COLLECTOR
- ② EMITTER (FLANGE)
- ③ BASE
- ④ EMITTER (FLANGE)
- ⑤ FIN (EMITTER)

T-31E

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

Symbol	Parameter	Conditions	Rating	Unit
V_{CBO}	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		2	A
P_C	Collector dissipation	$T_C = 25^\circ\text{C}$	20	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 ($T_C = 25^\circ\text{C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 5\text{mA}$, $I_C = 0$	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	$I_C = 50\text{mA}$, $R_{BE} = \infty$	17			V
I_{CBO}	Collector cut off current	$V_{CB} = 15\text{V}$, $I_E = 0$			500	μA
I_{EBO}	Emitter cut off current	$V_{EB} = 3\text{V}$, $I_C = 0$			500	μA
h_{FE}	DC forward current gain *	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	10	50	180	—
P_O	Power Output	$V_{CC} = 12.5\text{V}$, $P_{in} = 1.2\text{W}$, $f = 520\text{MHz}$	7	7.5		W
η_C	Collector efficiency		50	60		%

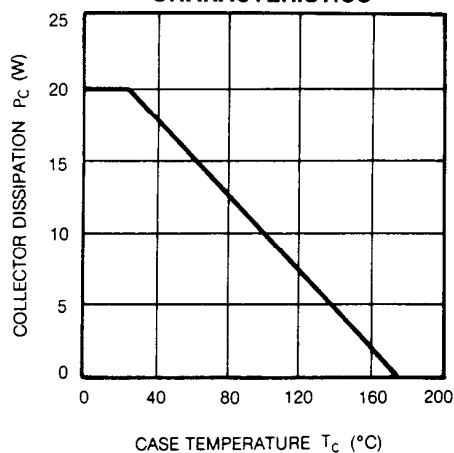
Note. * Pulse test, $P_W = 150\mu\text{s}$, duty = 5%.

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

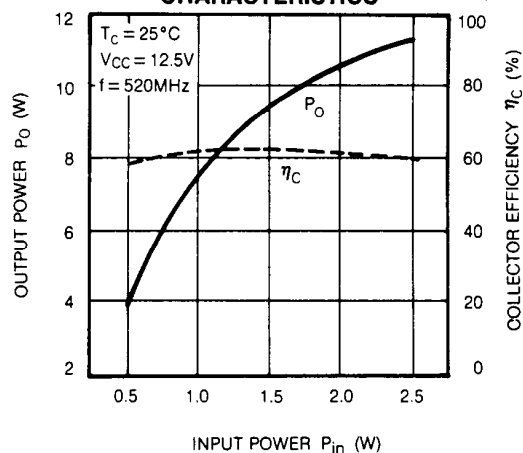
TEST CIRCUIT ($f = 520\text{MHz}$)



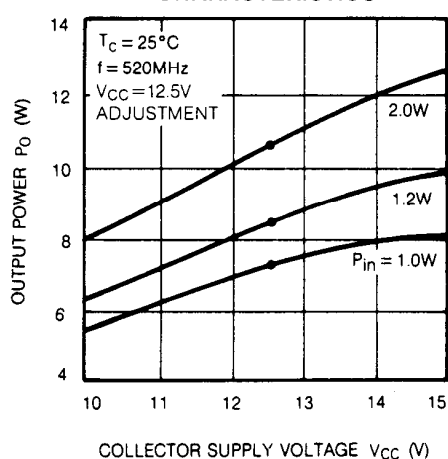
COLLECTOR DISSIPATION VS. CASE TEMPERATURE CHARACTERISTICS



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS



OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE CHARACTERISTICS



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE CHARACTERISTICS

