MITSUBISHI RF POWER TRANSISTOR

2SC5125

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC5125 is a silicon NPN epitaxial planar type transistor specifically designed for high power amplifiers in VHF band.

FEATURES

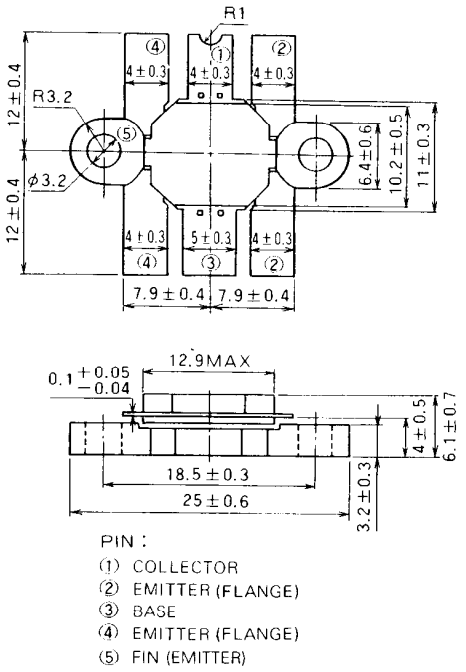
- High power output and high gain : $P_O \geqq 80W$, $G_{pe} \geqq 7.2dB$, @ $V_{CC} = 12.5V$, $f = 175MHz$, $P_{in} = 15W$
- Emitter ballasted construction.
- Load mismatch : Ability to withstand more than 8 : 1 load VSWR when operated at $V_{CC} = 15.2V$, $P_O = 80W$, $f = 175MHz$.
- High reliability due to gold metalization die.
- Flange type ceramic package.

APPLICATIONS

For output stage of 70W power amplifiers in VHF band.

OUTLINE DRAWING

Dimension in mm



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

T-40E

ABSOLUTE MAXIMUM RATINGS ($T_C = 25℃$ unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector-base voltage		35	V
V_{EBO}	Emitter-base voltage		4	V
V_{CEO}	Collector-emitter voltage	$R_{BE} = \infty$	17	V
I_C	Collector current		25	A
P_C	Collector dissipation		170	W
T_j	Junction temperature		175	℃
T_{stg}	Storage temperature		−55 to 175	℃

Note. Above parameters are guaranteed independently.

ELECTRICAL CHARACTERISTICS ($T_C = 25℃$ unless otherwise noted)

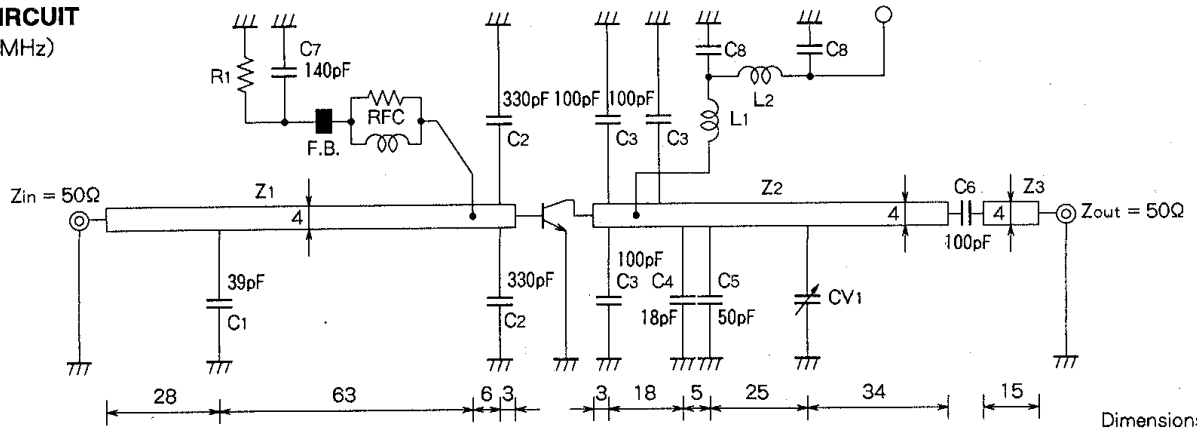
Symbol	Parameter	Test conditions	Limits		Unit
			Min	Max	
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C = 20mA$, $I_E = 0$	35		V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = 20mA$, $I_C = 0$	4		V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C = 100mA$, $R_{BE} = \infty$	17		V
I_{CBO}	Collector cutoff current	$V_{CB} = 15V$, $I_E = 0$		5	mA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3V$, $I_C = 0$		5	mA
h_{FE}	DC forward current gain	$V_{CE} = 5V$, $I_C = 5A$	10	180	–
P_O	Output power	$V_{CC} = 12.5V$, $f = 175MHz$, $P_{in} = 15W$	80		W
η_C	Collector efficiency		60		%

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

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TEST CIRCUIT
(f = 175MHz)



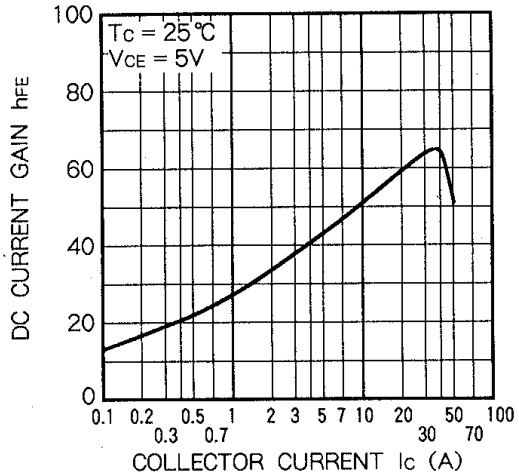
Dimensions in mm

CV1 : Air variable capacitor
C1 : Mica capacitor
C2~C6 : Metal clad mica capacitor
C7 : Ceramic capacitor
C8 : 47pF, 2200pF, 22000pF in paralleled

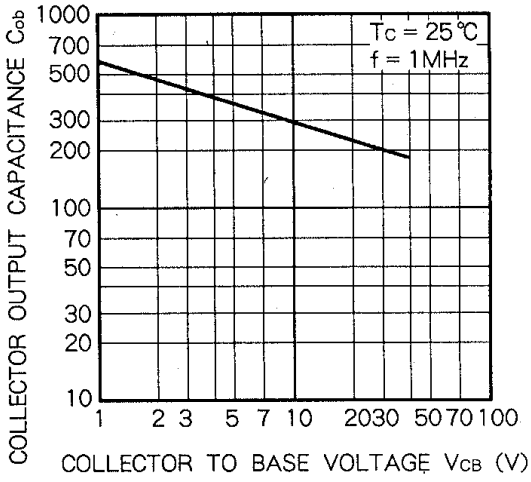
L1 : 5.5D, 3T, 0P, φ1.2, silver plated copper wire
L2 : 5.5D, 4T, 0P, φ1.2, silver plated copper wire
RFC : 2.7kΩ × 3 in Parallel, 5D, 5T, 0P, φ0.8 enameled
R1 : 1Ω
Z1~Z3 : Microstrip
Board material : teflon t=1.6mm, εr = 2.6

TYPICAL PERFORMANCE DATA

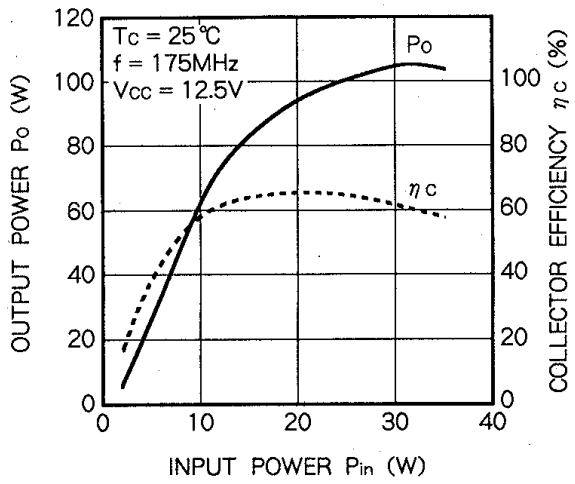
DC CURRENT GAIN VS. COLLECTOR CURRENT CHARACTERISTICS



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE CHARACTERISTICS



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS



OUTPUT POWER VS. SUPPLY VOLTAGE CHARACTERISTICS

