MITSUBISHI RF POWER TRANSISTOR

2SC1729

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC1729 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers on VHF band mobile radio amplications.

FEATURES

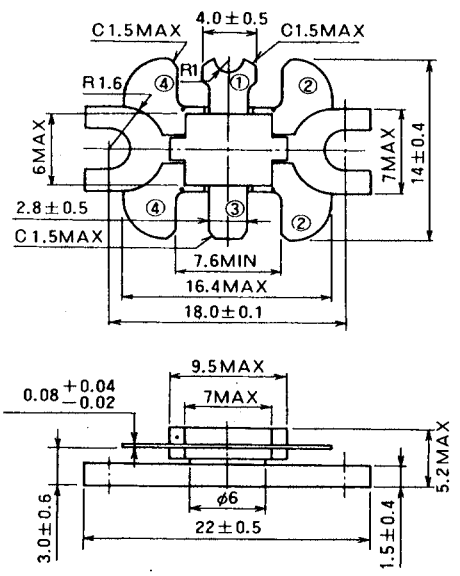
- High power gain: $G_{pe} \geqq 10dB$
  @V_{CC} = 13.5V, P_O = 14W, f = 175MHz
- Emitter ballasted construction and gold metallization for high reliability and good performances.
- Low thermal resistance ceramic package with flange.
- Ability of withstanding more than 20:1 and load VSWR when operated at V_{CC} = 15.2V, P_o = 18W, f = 175MHz.
- Equivalent input/output series impedance:
  $Z_{in}=2.3+j1.1\Omega$ @P_O=14W, V_{CC}=13.5V, f=175MHz
  $Z_{out}=3.1-j2.2\Omega$

APPLICATION

10 to 14 watts output power amplifiers applications in VHF band.

OUTLINE DRAWING

Dimensions in mm



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

T-31E

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	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		3.5	A
P_C	Collector dissipation	T_a=25°C	2.5	W
		T_C=25°C	35	W
T_j	Junction temperature		175	°C
Tstg	Storage temperature		−65 to 175	°C
Rth-a	Thermal resistance	Junction to ambient	60	°C/W
Rth-c		Junction to case	4.3	°C/W

Note. Above parameters are guaranteed independently.

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	I_E=10mA, I_C=0	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	I_C=10mA, I_E=0	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	I_C=50mA, $R_{BE}=\infty$	17			V
I_{CBO}	Collector cutoff current	V_{CB}=25V, I_E=0			1	mA
I_{EBO}	Emitter cutoff current	V_{EB}=3V, I_C=0			0.5	mA
h_{FE}	DC forward current gain *	V_{CE}=10V, I_C=0.1A	10	50	180	—
P_O	Output power	V_{CC}=13.5V, P_{in}=1.4W, f=175MHz	14	16		W
η_C	Collector efficiency		60	70		%

Note. * Pulse test, P_W=150μs, duty=5%.
Above parameters, ratings, limits and conditions are subject to change.

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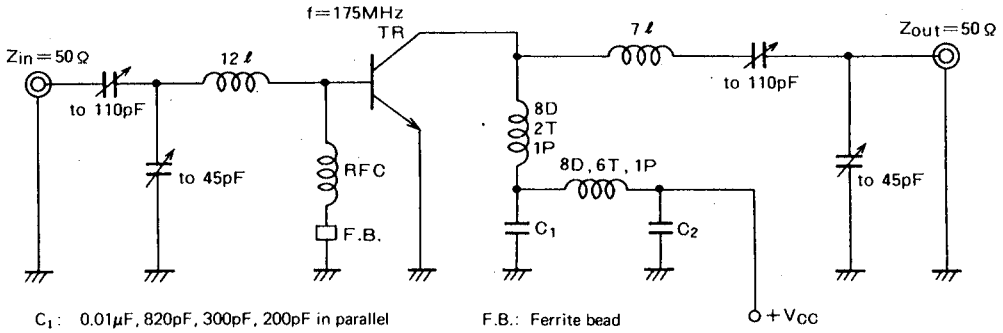
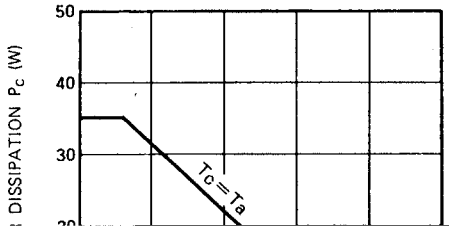
TEST CIRCUIT



C_1: 0.01μF, 820pF, 300pF, 200pF in parallel F.B.: Ferrite bead
C_2: 22μF, 0.1μF, 0.02μF, 300pF in parallel
Notes: All coils are made from 1.5mmφ silver plated copper wire
Coil dimensions in milli-meter
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil
ℓ: Length

TYPICAL PERFORMANCE DATA

COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE