

DESCRIPTION

2SC2694 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

FEATURES

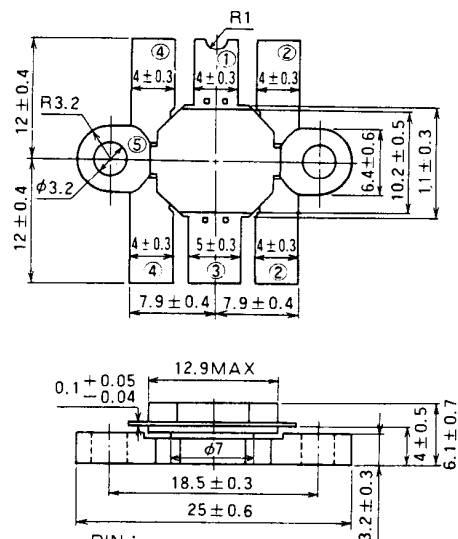
- High power gain: $G_{pe} \geq 6.7\text{dB}$
@ $V_{CC} = 12.5\text{V}$, $P_O = 70\text{W}$, $f = 175\text{MHz}$
- Emitter ballasted construction and gold metallization for high reliability and good performances.
- Low thermal resistance ceramic package with flange.
- Ability of withstanding more than 20:1 load VSWR when operated at $V_{CC} = 15.2\text{V}$, $P_O = 70\text{W}$, $f = 175\text{MHz}$, $T_C = 25^\circ\text{C}$.
- Equivalent input/output series impedance:
 $Z_{in} = 0.7 + j0.9\Omega$ @ $P_O = 70\text{W}$, $V_{CC} = 12.5\text{V}$, $f = 175\text{MHz}$
 $Z_{out} = 1.2 - j0.3\Omega$

APPLICATION

50 to 60 watts output power amplifiers in VHF band mobile radio applications.

OUTLINE DRAWING

Dimensions in mm



PIN :

① COLLECTOR

② EMITTER

③ BASE

④ EMITTER

⑤ FIN

NOTE: ALL ELECTRODES ARE ISOLATED FROM FLANGE.

T-40**ABSOLUTE MAXIMUM RATINGS** ($T_C = 25^\circ\text{C}$ 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		20	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	5.5	W
		$T_C = 25^\circ\text{C}$	140	W
T_J	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 to 175	$^\circ\text{C}$
R_{th-a}	Thermal resistance	Junction to ambient	27.2	$^\circ\text{C/W}$
R_{th-c}		Junction to case	1.07	$^\circ\text{C/W}$

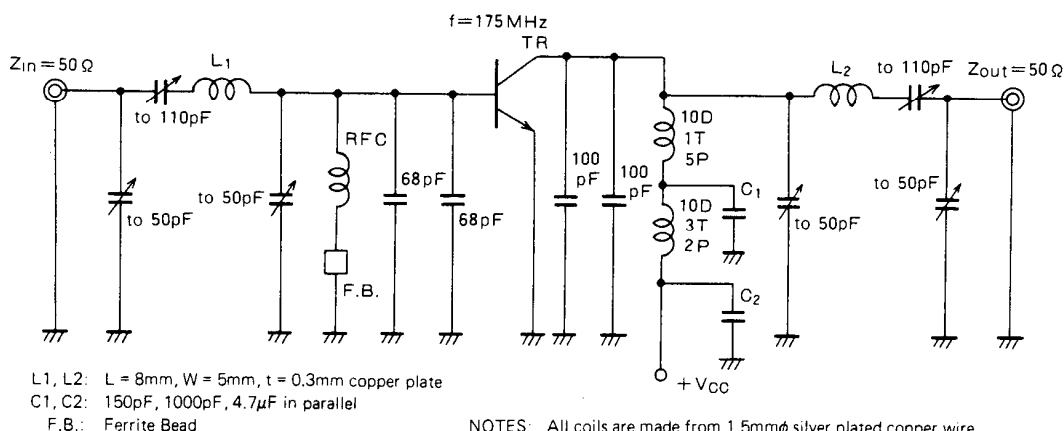
Note. Above parameters are guaranteed independently.

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

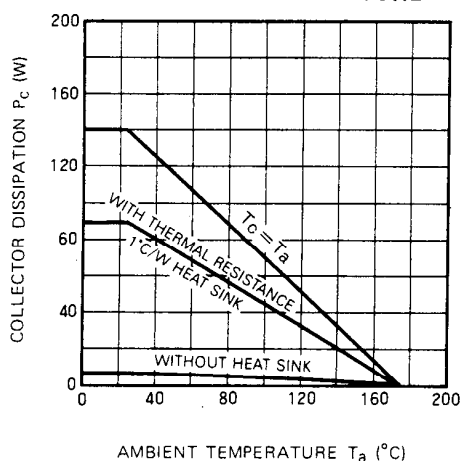
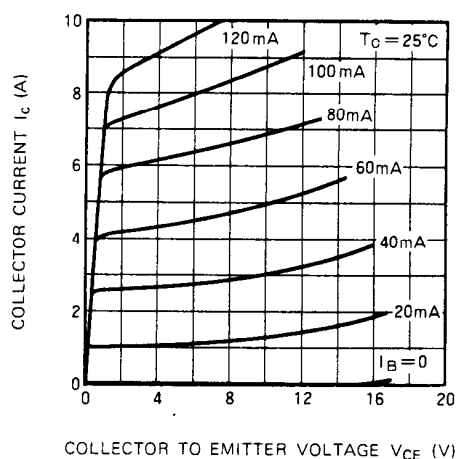
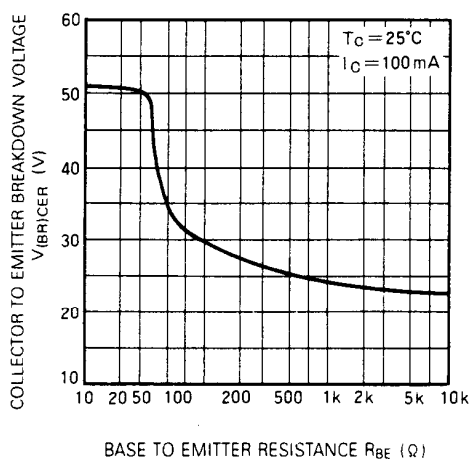
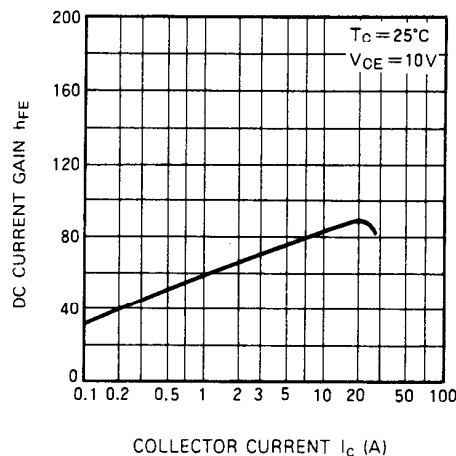
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 20\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 20\text{mA}$, $I_E = 0$	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 0.1\text{A}$, $R_{BE} = \infty$	17			V
I_{CBO}	Collector cutoff current	$V_{CB} = 15\text{V}$, $I_E = 0$			5	mA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			5	mA
h_{FE}	DC forward current gain *	$V_{CE} = 10\text{V}$, $I_C = 1\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 12.5\text{V}$, $P_{in} = 15\text{W}$, $f = 175\text{MHz}$	70	75		W
η_C	Collector efficiency		60	70		%

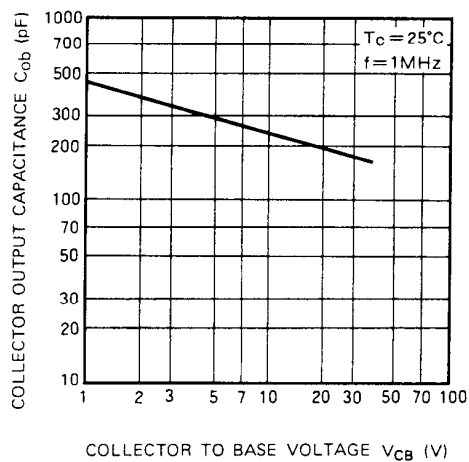
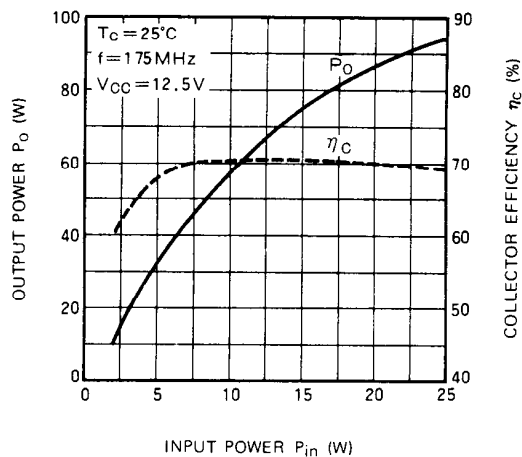
Note. * Pulse test, $P_W = 150\mu\text{s}$, duty=5%

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

NPN EPITAXIAL PLANAR TYPE**TEST CIRCUIT**

NOTES: All coils are made from 1.5mmφ silver plated copper wire
 D: Inner diameter of coil
 T: Turn number of coil
 P: Pitch of coil
 Dimension in milli-meter

TYPICAL PERFORMANCE DATA**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE****COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE****COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE****DC CURRENT GAIN VS. COLLECTOR CURRENT**

**COLLECTOR OUTPUT CAPACITANCE VS.
COLLECTOR TO BASE VOLTAGE****OUTPUT POWER, COLLECTOR
EFFICIENCY VS. INPUT POWER****OUTPUT POWER VS. COLLECTOR
SUPPLY VOLTAGE**