

DESCRIPTION

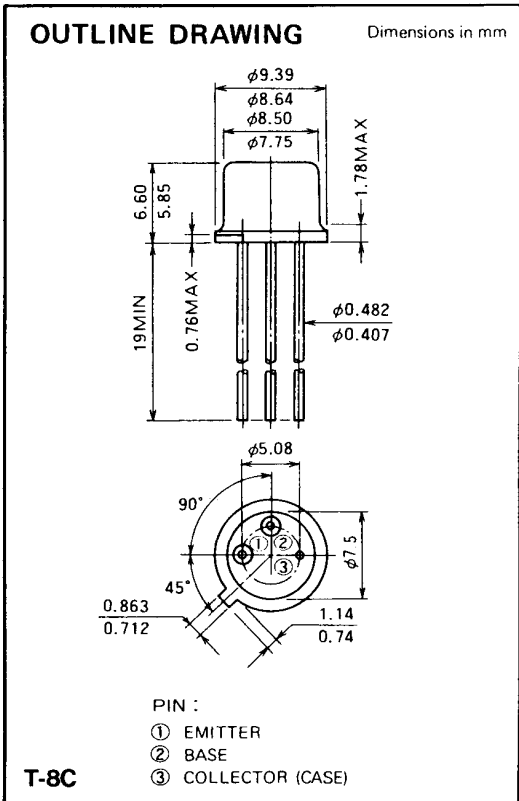
2SC741 is a silicon NPN epitaxial planar type transistor designed for industrial use RF power amplifiers on VHF band mobile radio applications.

FEATURES

- High power gain: $G_{pe} \geq 13\text{dB}$
@ $V_{CC} = 13.5\text{V}$, $P_O = 0.2\text{W}$, $f = 150\text{MHz}$
- TO-39 metal sealed package for high reliability.
- Collector electrode is electrically connected to the case.

APPLICATION

Driver stage in VHF band.



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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		40	V
V_{EBO}	Emitter to base voltage		4	V
V_{CER}	Collector to emitter voltage	$R_{BE} = 10 \Omega$	40	V
I_C	Collector current		0.3	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	0.68	W
		$T_C = 25^\circ\text{C}$	2.5	W
T_j	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-65 to 175	$^\circ\text{C}$
R_{th-a}	Thermal resistance	Junction to ambient	220	$^\circ\text{C}/\text{W}$
R_{th-c}		Junction to case	60	$^\circ\text{C}/\text{W}$

Note. Above parameters are guaranteed independently.

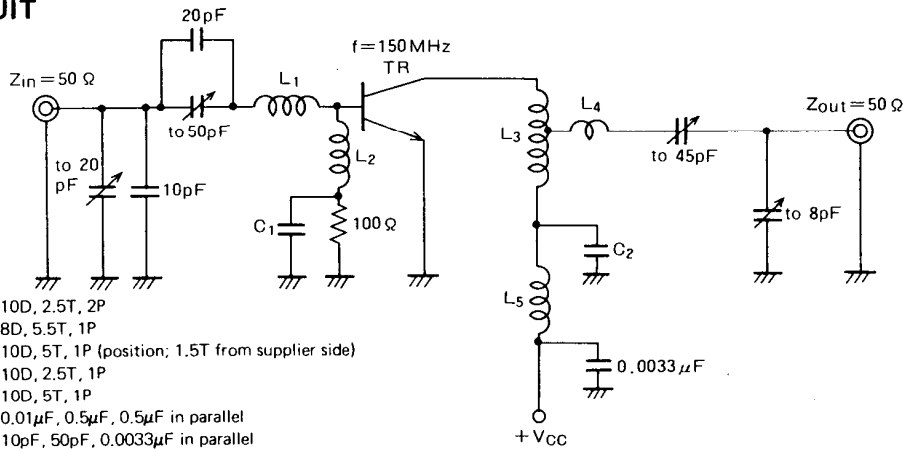
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 1\text{mA}$, $I_E = 0$	40			V
$V_{(BR)CER}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = 10 \Omega$	40			V
I_{CBO}	Collector cutoff current	$V_{CB} = 15\text{V}$, $I_E = 0$			1	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			1	μA
h_{FE}	DC forward current gain*	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 13.5\text{V}$, $P_{IN} = 10\text{mW}$, $f = 150\text{MHz}$	0.2	0.3		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.

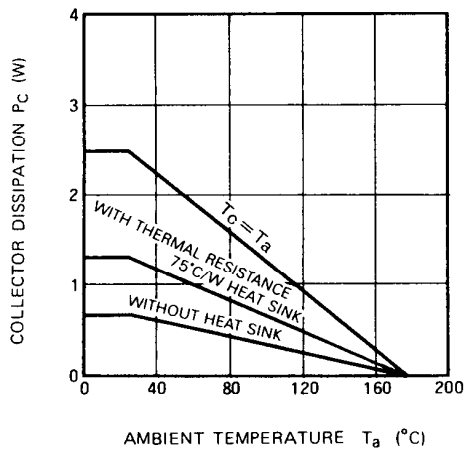
TEST CIRCUIT



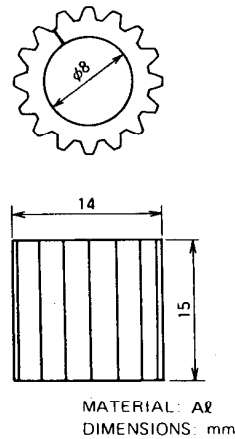
- L1: 10D, 2.5T, 2P
 - L2: 8D, 5.5T, 1P
 - L3: 10D, 5T, 1P (position: 1.5T from supplier side)
 - L4: 10D, 2.5T, 1P
 - L5: 10D, 5T, 1P
 - C1: 0.01μF, 0.5μF, 0.5μF in parallel
 - C2: 10pF, 50pF, 0.0033μF in parallel
- Notes: All coils are made from 1.5mm silver plated copper wire
Coil dimensions in milli-meter
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil

TYPICAL PERFORMANCE DATA

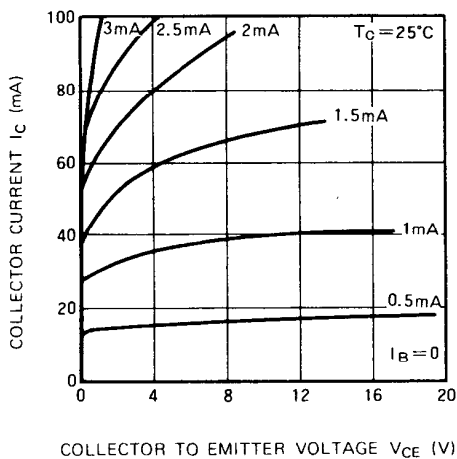
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



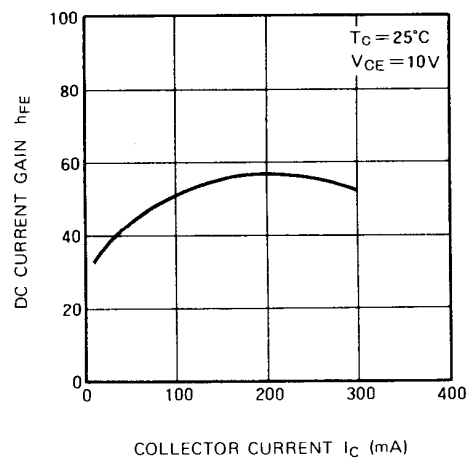
**THERMAL RESISTANCE 75°C
HEAT SINK DRAWING**



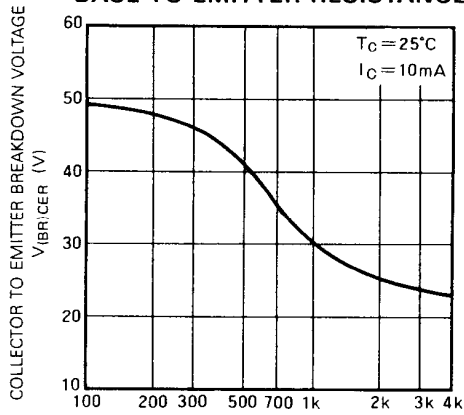
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT

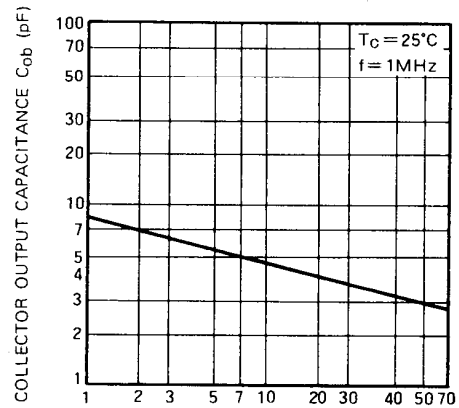


COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



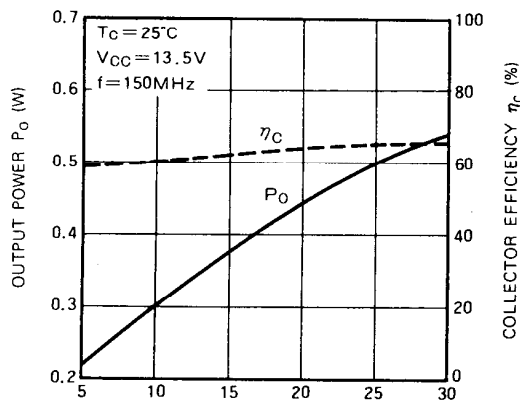
BASE TO EMITTER RESISTANCE R_{BE} (Ω)

COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



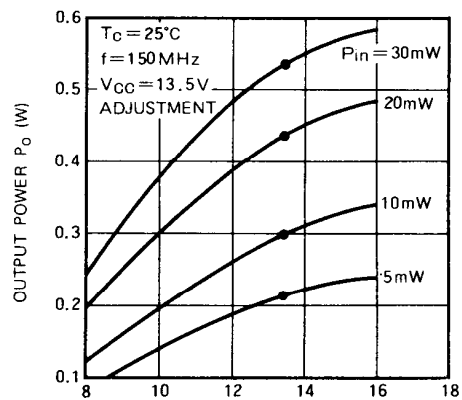
COLLECTOR TO BASE VOLTAGE V_{CB} (V)

OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



INPUT POWER P_{in} (mW)

OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



COLLECTOR SUPPLY VOLTAGE V_{CC} (V)