

DISCRIPTION

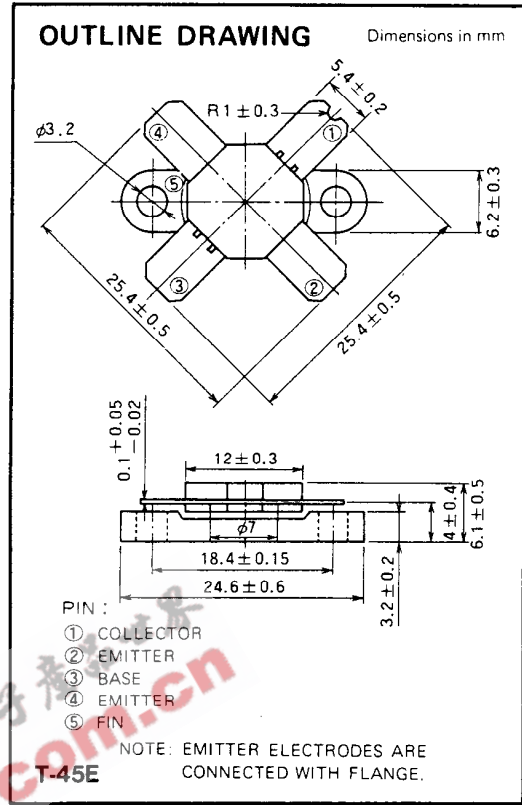
2SC3241 is a silicon NPN epitaxial planar type transistor specifically designed for high power amplifiers in HF band.

FEATURES

- High gain: $G_{pe} \geq 12.3\text{dB}$
@ $f = 30\text{MHz}$, $V_{CC} = 12.5\text{V}$, $P_{in} = 4\text{W}$
- High ruggedness: Ability to withstand 20:1 load VSWR
when operated at $f = 30\text{MHz}$, $V_{CC} = 15.2\text{V}$, $P_O = 75\text{W}$, $T_C = 25^\circ\text{C}$.
- Emitter ballasted construction
- Low thermal resistance ceramic package with flange
- Input-output impedance: $Z_{in} = 0.5 - j1.0(\Omega)$, $Z_{out} = 1.15 - j1.4(\Omega)$ @ $f = 30\text{MHz}$,
 $V_{CC} = 12.5\text{V}$, $P_O = 75\text{W}$

APPLICATION

Output stage of transmitter in HF band SSB mobile radio sets.



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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		50	V
V_{EBO}	Emitter to base voltage		5	V
V_{CEO}	Collector to emitter voltage	$R_{BE} = \infty$	20	V
I_C	Collector current		18	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	7.5	W
		$T_C = 25^\circ\text{C}$	180	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	20	$^\circ\text{C/W}$
R_{th-c}		Junction to case	0.83	$^\circ\text{C/W}$

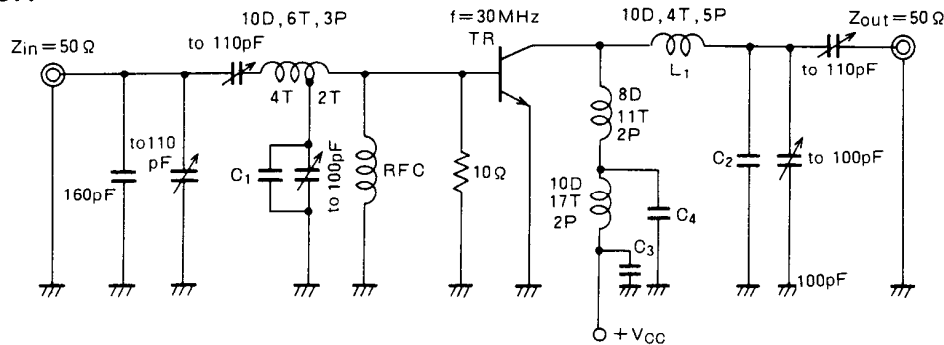
Note. Above parameters are guaranteed independently.

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	$I_E = 20\text{mA}$, $I_C = 0$	5			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$, $I_E = 0$	50			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 100\text{mA}$, $R_{BE} = \infty$	20			V
I_{CBO}	Collector cutoff current	$V_{CE} = 25\text{V}$, $I_E = 0$			5	mA
I_{EBO}	Emitter cutoff current	$V_{EB} = 2\text{V}$, $I_C = 0$			4	mA
h_{FE}	DC forward current gain*	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	10	50	180	—
P_O	Output power	$f = 30\text{MHz}$, $V_{CC} = 12.5\text{V}$, $P_{in} = 4\text{W}$	75	85		W
η_C	Collector efficiency		55	65		%

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**

C₁: 160pF, 160pF, 82pF in parallel

C₂: 82pF, 82pF, 82pF in parallel

C₃: 100pF, 4700pF, 4700pF, 0.22μF, 0.22μF, 33μF, 330μF in parallel

C₄: 100pF, 220pF, 4700pF, 0.1μF, 330μF in parallel

RFC: 27 Turns 1φ enameled wire

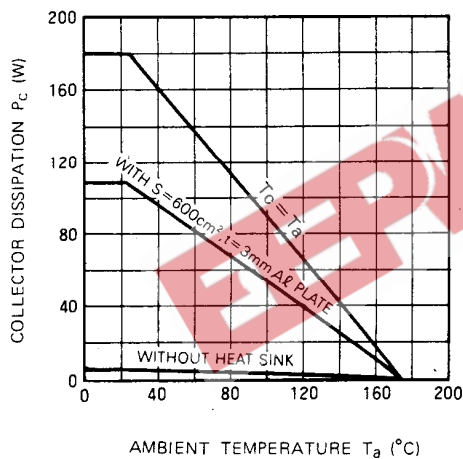
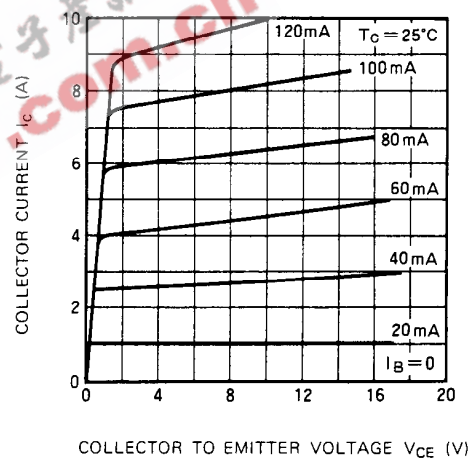
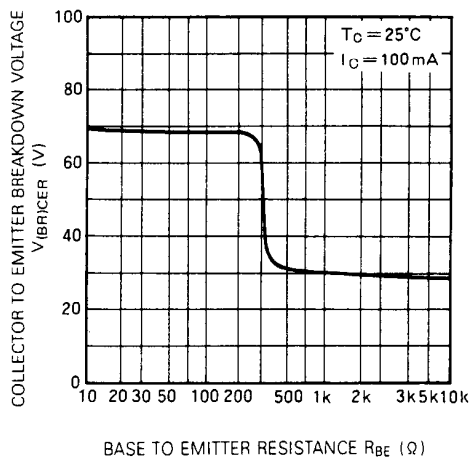
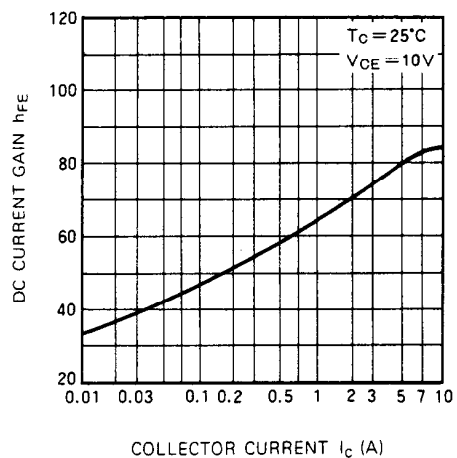
NOTES: All coils but L₁ are made from 1.5φmm silver plated copper wire, L₁ is made from 2.3φmm copper wire.

D: Inner diameter of coil

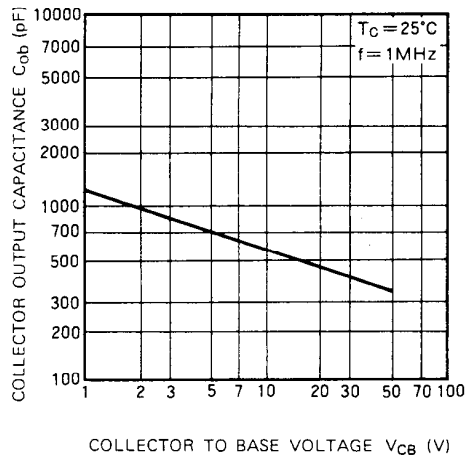
P: Pitch of coil

T: Turn number of coil

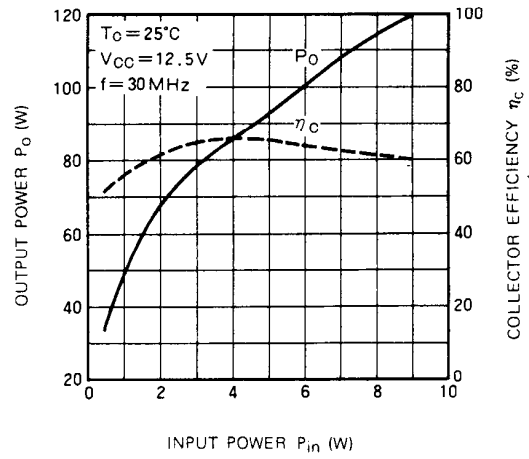
Dimension is milli-meter

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**

