

DISCRIPTION

2SC3240 is a silicon NPN epitaxial planar type transistor specifically designed for high power amplifiers in HF band.

FEATURES

- High gain: $G_{pe} \geq 11.5\text{dB}$, $P_o \geq 100\text{W}$
@f = 30MHz, $V_{CC} = 12.5\text{V}$, $P_{in} = 7\text{W}$
- High ruggedness: Ability to withstand 20:1 load VSWR when operated at f = 30MHz, $P_o = 100\text{W}$, $V_{CC} = 15.2\text{V}$.
- Emitter ballasted construction
- Low thermal resistance ceramic package with flange.

Input-output impedance

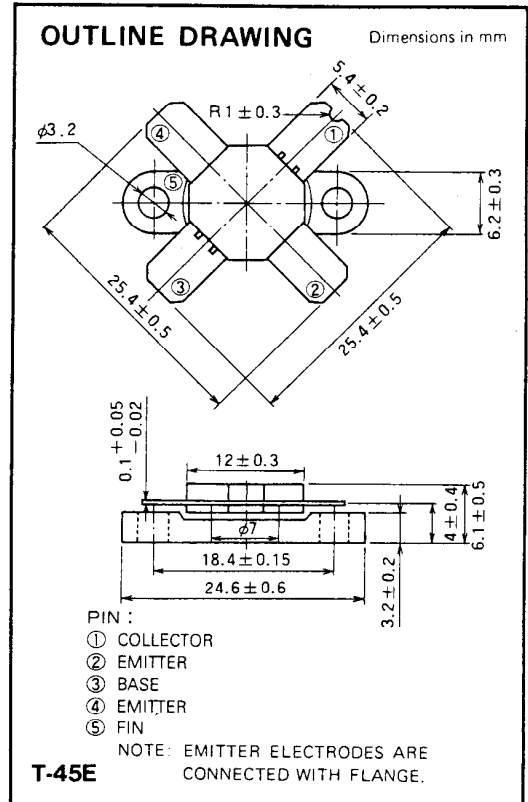
$Z_{in} = 0.4 - j0.8 (\Omega)$

$Z_{out} = 1.0 - j1.1 (\Omega)$

@f = 30MHz, $V_{CC} = 12.5\text{V}$, $P_o = 100\text{W}$

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		25	A
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	8	W
		$T_C = 25^\circ\text{C}$	270	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	18.7	$^\circ\text{C/W}$
R_{th-c}		Junction to case	0.556	$^\circ\text{C/W}$

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	$I_C = 20\text{mA}$, $I_E = 0$	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	$V_{CB} = 15\text{V}$, $I_E = 0$			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	f = 30MHz, $V_{CC} = 12.5\text{V}$, $P_{in} = 7\text{W}$	100	110		W
η_C	Collector efficiency		55	60		%

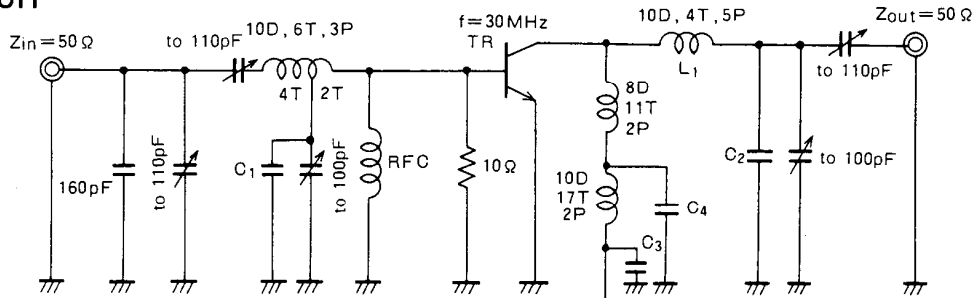
Note. * Pulse test, $P_W = 150\mu\text{s}$, duty = 5%.

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

MITSUBISHI RF POWER TRANSISTOR
2SC3240

NPN EPITAXIAL PLANAR TYPE

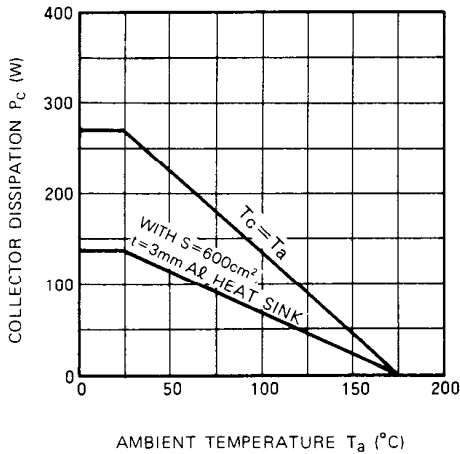
TEST CIRCUIT



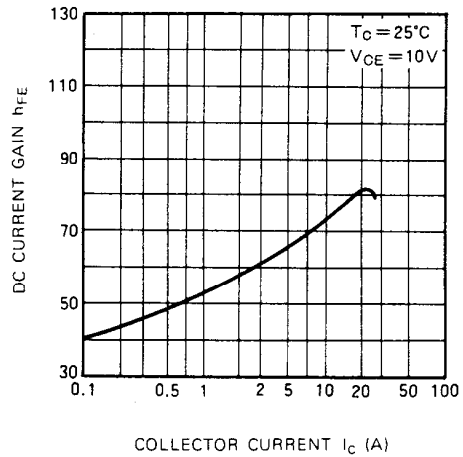
- C_1 : 160pF, 160pF, 82pF in parallel
 C_2 : 82pF, 82pF, 82pF in parallel
 C_3 : 100pF, 4700pF, 4700pF, 0.22μF, 0.22μF, 33μF, 330μF in parallel
 C_4 : 100pF, 220pF, 4700pF, 0.1μF, 330μF in parallel
 NOTES: All coils but L_1 are made from 1.5φmm silver plated copper wire, L_1 is made from 2.3φmm copper wire.
 D: Inner diameter of coil
 T: Turn number of coil
 P: Pitch of coil
 Dimension in milli-meter
 RFC: 27 Turns 1φ enameled wire

TYPICAL PERFORMANCE DATE

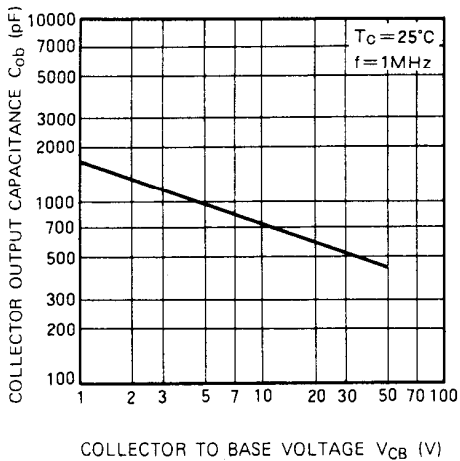
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



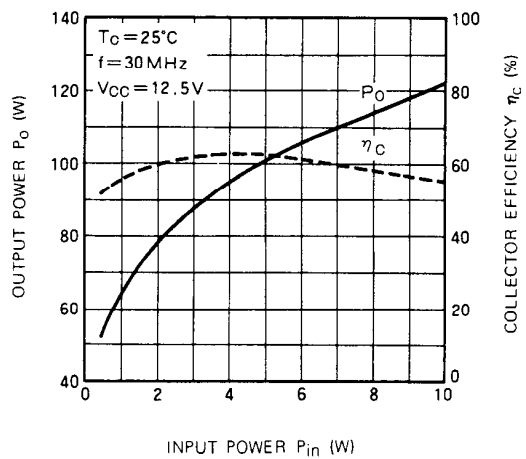
DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE

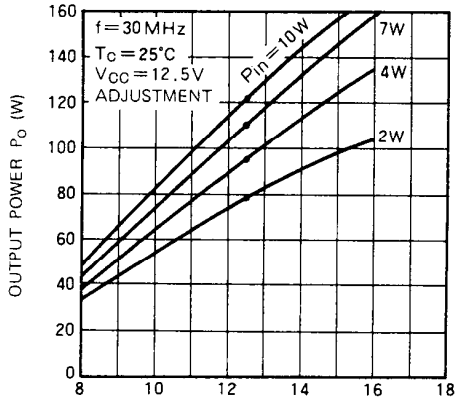


OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



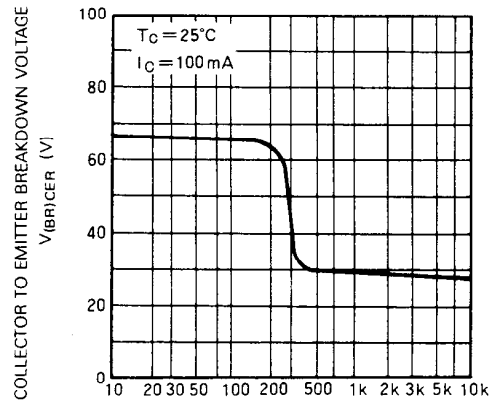
NPN EPITAXIAL PLANAR TYPE

OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



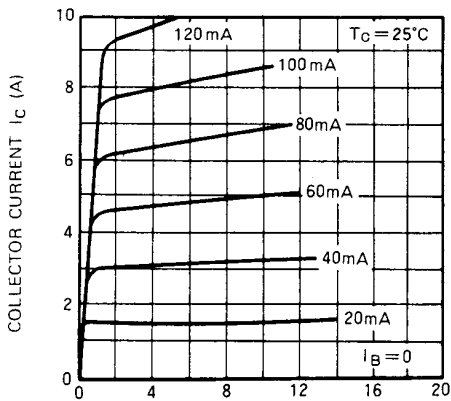
COLLECTOR SUPPLY VOLTAGE V_{cc} (V)

COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



BASE TO EMITTER RESISTANCE R_{BE} (Ω)

COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



COLLECTOR TO EMITTER VOLTAGE (V)