MITSUBISHI RF POWER TRANSISTOR

2SC3240

NPN EPITAXIAL PLANAR TYPE

DISCRIPTION

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

FEATURES

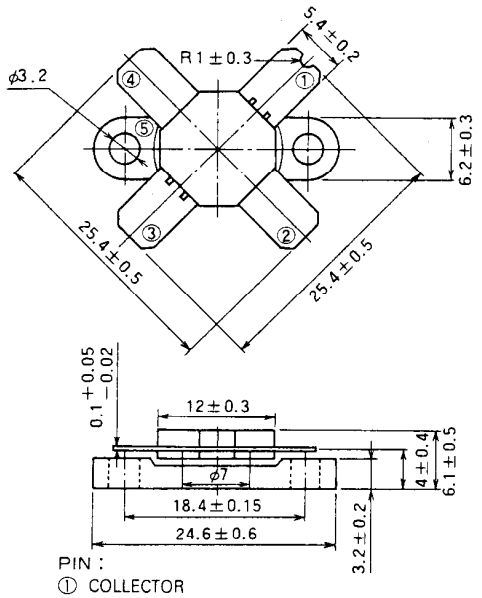
- High gain: $G_{pe} \geqq 11.5$dB, $P_O \geqq 100$W
  @f = 30MHz, V_{CC} = 12.5V, P_{in} = 7W
- High ruggedness: Ability to withstand 20:1 load VSWR when operated at f = 30MHz, P_O = 100W, V_{CC} = 15.2V.
- Emitter ballasted construction
- Low thermal resistance ceramic package with flange.
  Input-output impedance
  Z_{in} = 0.4 – j0.8 (Ω)
  Z_{out} = 1.0 – j1.1 (Ω)
  @f = 30MHz, V_{CC} = 12.5V, P_O = 100W

APPLICATION

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

OUTLINE DRAWING

Dimensions in mm



PIN :
① COLLECTOR
② EMITTER
③ BASE
④ EMITTER
⑤ FIN
NOTE: EMITTER ELECTRODES ARE CONNECTED WITH FLANGE.

T-45E

ABSOLUTE MAXIMUM RATINGS (T_C = 25°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°C	8	W
		T_C = 25°C	270	W
T_j	Junction temperature		175	°C
T_{stg}	Storage temperature		−55 to 175	°C
R_{th-a}	Thermal resistance	Junction to ambient	18.7	°C/W
R_{th-c}		Junction to case	0.556	°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 = 20mA, I_C = 0	5			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	I_C = 20mA, I_E = 0	50			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	I_C = 100mA, $R_{BE} = \infty$	20			V
I_{CBO}	Collector cutoff current	V_{CB} = 15V, I_E = 0			5	mA
I_{EBO}	Emitter cutoff current	V_{EB} = 3V, I_C = 0			5	mA
h_{FE}	DC forward current gain *	V_{CE} = 10V, I_C = 1A	10	50	180	—
P_O	Output power	f = 30MHz, V_{CC} = 12.5V, P_{in} = 7W	100	110		W
η_C	Collector efficiency		55	60		%

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

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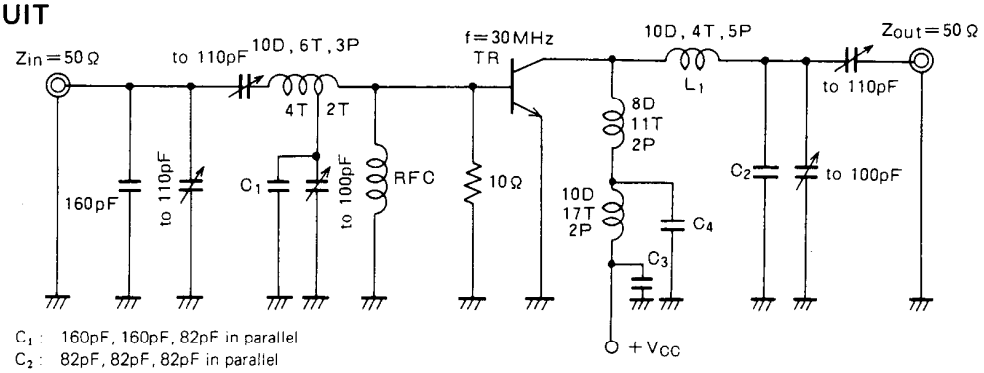
TEST CIRCUIT

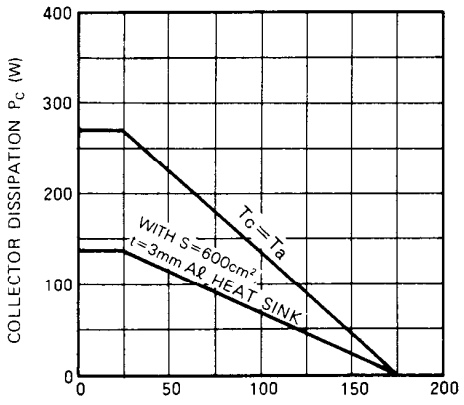


C_1 : 160pF, 160pF, 82pF in parallel
C_2 : 82pF, 82pF, 82pF in parallel
C_3 : 100pF, 4700pF, 4700pF, 0.22μF, 0.22μF, 33μF, 330μF in parallel
C_4 : 100pF, 220pF, 4700pF, 0.1μF, 330μF is parallel
RFC: 27 Turns 1φ enameled wire

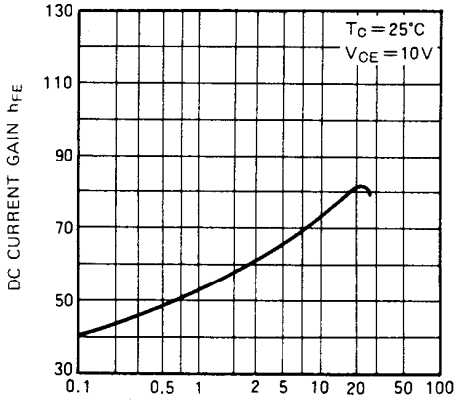
NOTES: All coils but L_1 are made from1.5φmm silver plated copper wire, L_1 is made from 2.3φmm copper wire.
D: Inner diameter of coil
T: Turn number of coil
P: Pitch of coil
Dimension in milli-meter

TYPICAL PERFORMANCE DATE

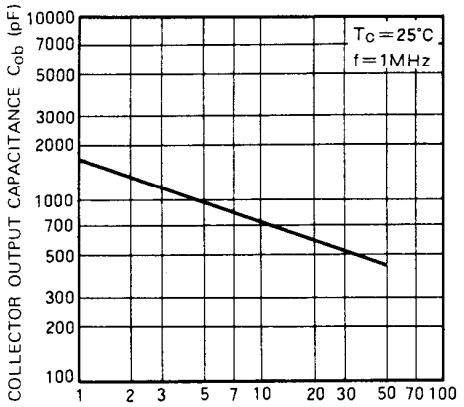
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



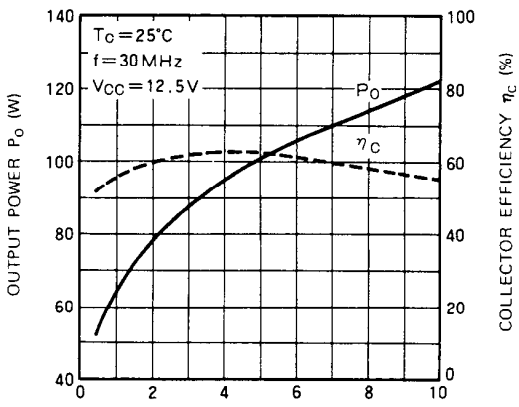
DC CURRENT GAIN VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



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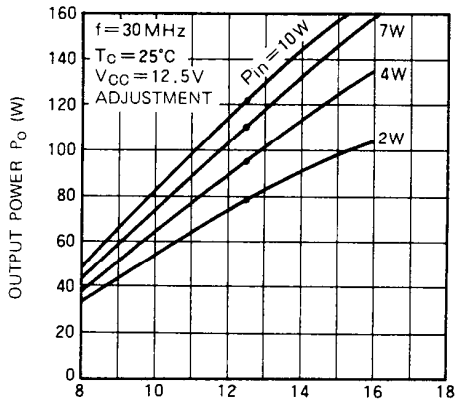
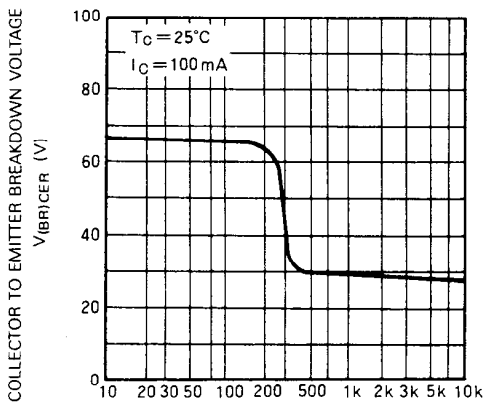
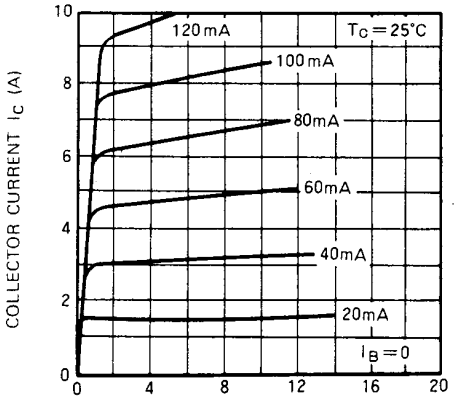
OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



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