

MITSUBISHI RF POWER TRANSISTOR

2SC1324

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC1324 is a silicon NPN epitaxial planar type transistor designed for industrial use RF broadband amplifiers from VHF to UHF band.

FEATURES

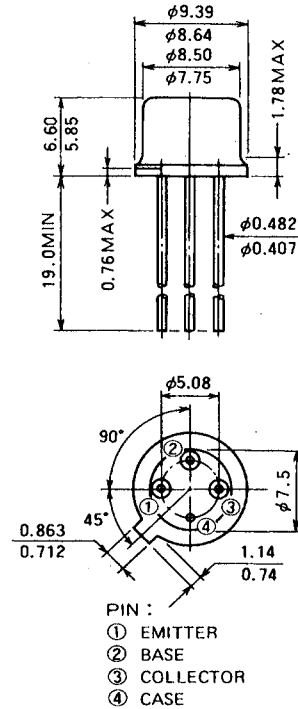
- High power gain: $G_{pe} \geq 9\text{dB}$
@ $V_{CC} = 15\text{V}$, $I_C = 30\text{mA}$, $f = 770\text{MHz}$
- TO-12 metal sealed package with case grounded pin for high reliability and good performances.
- All electrodes excepted ground pin are isolated from the case.

APPLICATION

Broadband amplifiers from VHF to UHF band.

OUTLINE DRAWING

Dimensions in mm



T-8

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	$R_{BE} = \infty$	25	V
I_C	Collector current		150	mA
P_C	Collector dissipation	$T_a = 25^\circ\text{C}$	0.8	W
		$T_C = 25^\circ\text{C}$	3	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	187.5	$^\circ\text{C/W}$
R_{th-c}		Junction to case	50	$^\circ\text{C/W}$

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	$I_E = 1\text{mA}$, $I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 1\text{mA}$, $I_E = 0$	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = \infty$	25			V
I_{CBO}	Collector cutoff current	$V_{CB} = 25\text{V}$, $I_E = 0$			50	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}$, $I_C = 0$			75	μA
h_{FE}	DC forward current gain *	$V_{CE} = 15\text{V}$, $I_C = 30\text{mA}$	20	70	180	—
G_{pe}	Power gain	$V_{CC} = 15\text{V}$, $f = 770\text{MHz}$, $I_C = 30\text{mA}$	9	10		dB
f_T	Transition frequency	$V_{CE} = 15\text{V}$, $I_C = 30\text{mA}$		1.7		GHz
NF	Noise figure	$V_{CC} = 15\text{V}$, $I_C = 30\text{mA}$, $f = 500\text{MHz}$, $R_G = 50\Omega$		5		dB

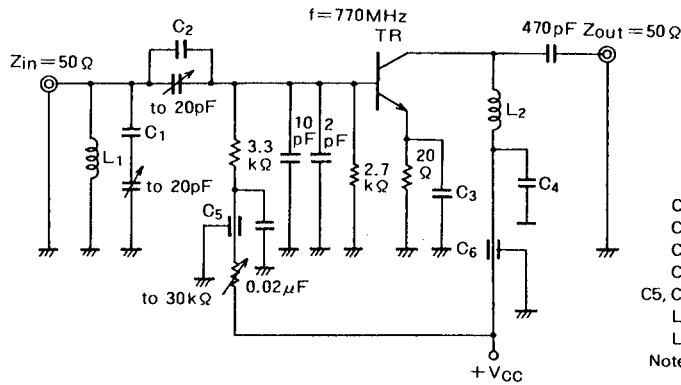
Note. * Pulse test, $P_w = 150\mu\text{s}$, duty=5%.

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

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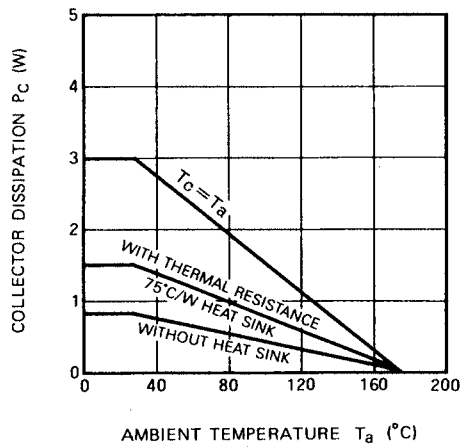
TEST CIRCUIT



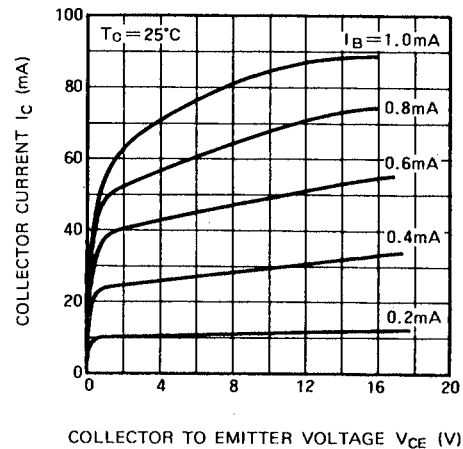
- C1: 2pF, 3pF in parallel
 C2: 3pF, 4pF in parallel
 C3: 500pF, 0.02μF in parallel
 C4: 0.05μF, 0.03μF, 0.01μF in parallel
 C5, C6: 1500pF
 L1: 4mm core, 10T, enameled wire
 L2: Width 2mm, length 20mm ribbon lead (silver plated copper plate)
 Notes: Coil dimensions in milli-meter
 T: Turn number of coil

TYPICAL PERFORMANCE DATA

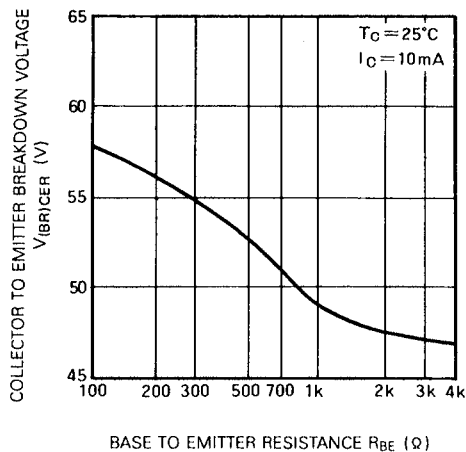
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



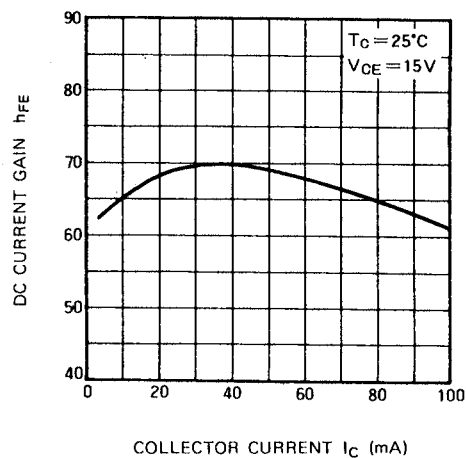
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



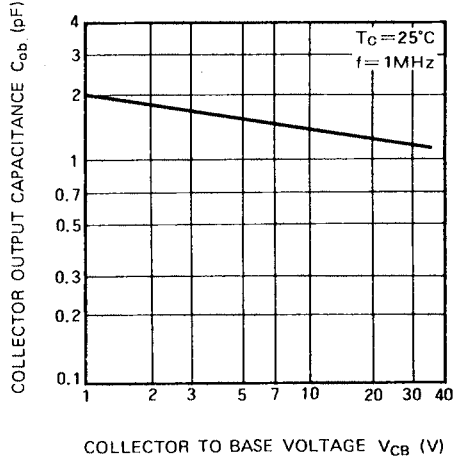
DC CURRENT GAIN VS. COLLECTOR CURRENT



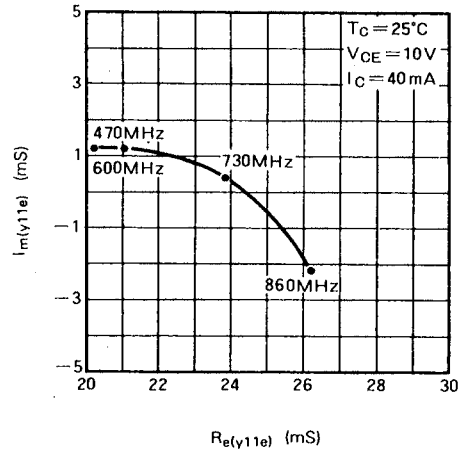
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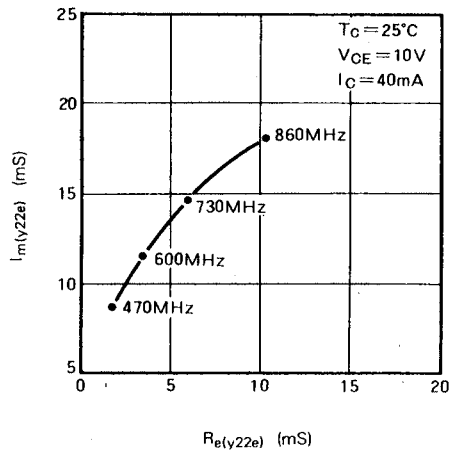
**COLLECTOR OUTPUT CAPACITANCE VS.
COLLECTOR TO BASE VOLTAGE**



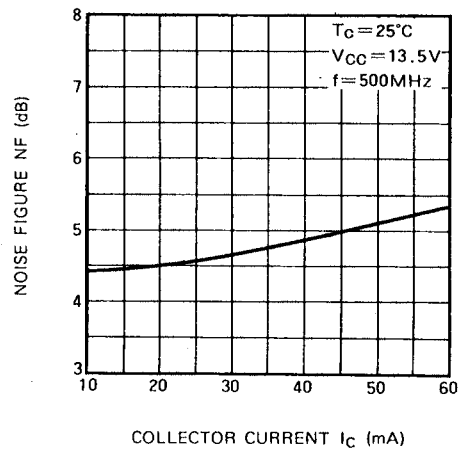
**INPUT ADMITANCE
VS. FREQUENCY**



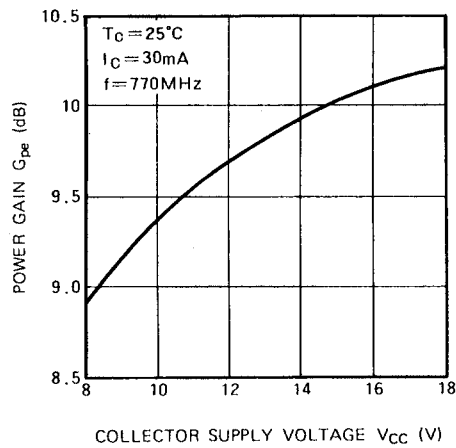
**OUTPUT ADMITANCE
VS. FREQUENCY**



**NOISE FIGURE VS.
COLLECTOR CURRENT**



**POWER GAIN VS.
COLLECTOR SUPPLY VOLTAGE**



**POWER GAIN VS.
COLLECTOR CURRENT**

