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# 2SC2733

Silicon NPN Epitaxial

# HITACHI

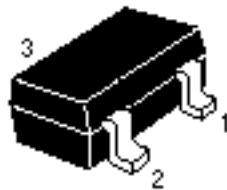
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## Application

VHF frequency converter

## Outline

MPAK



- 1. Emitter
- 2. Base
- 3. Collector

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## 2SC2733

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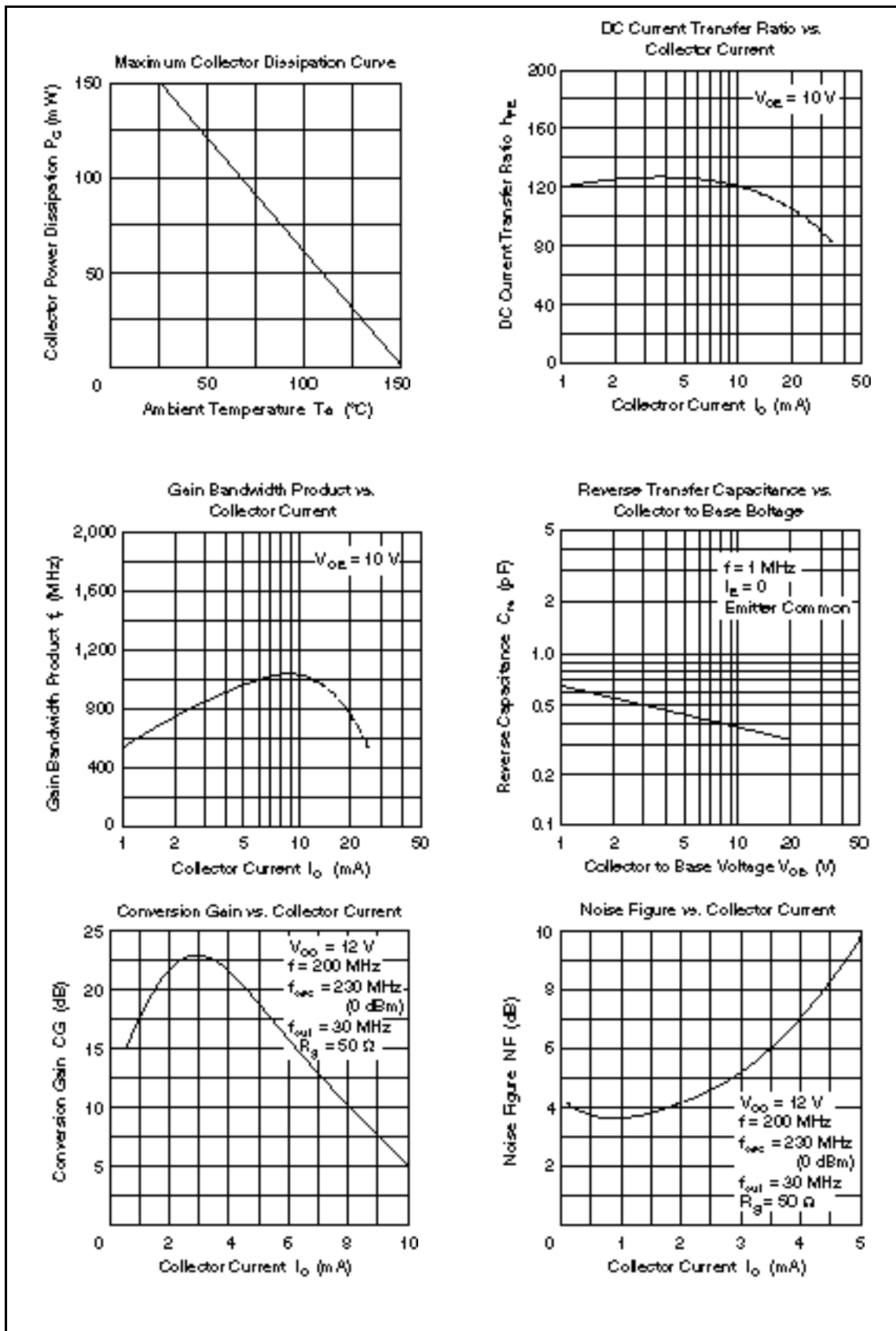
### Absolute Maximum Ratings (Ta = 25°C)

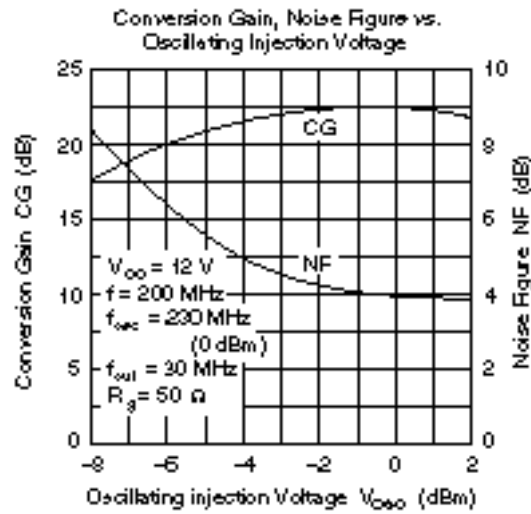
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	30	V
Collector to emitter voltage	$V_{CEO}$	20	V
Emitter to base voltage	$V_{EBO}$	3	V
Collector current	$I_C$	50	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

### Electrical Characteristics (Ta = 25°C)

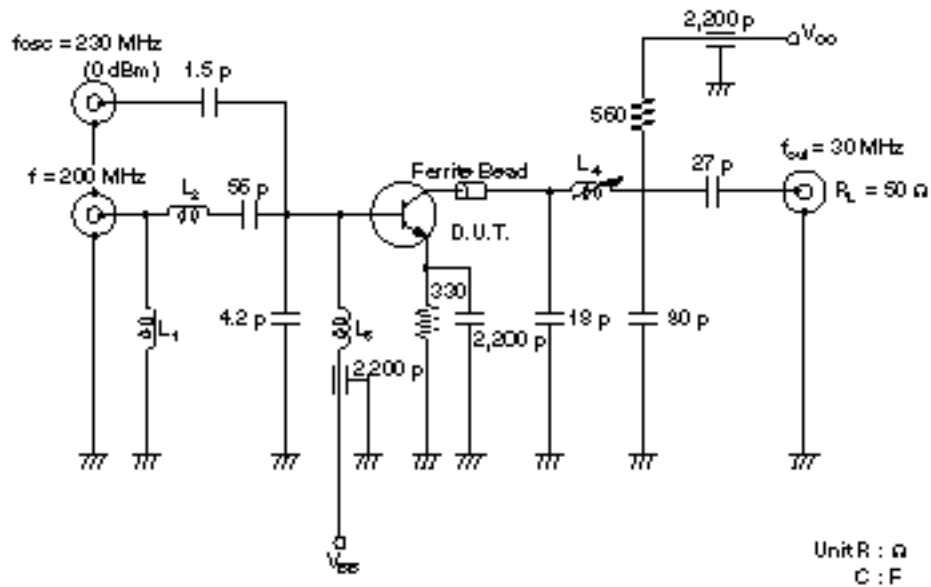
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 10 \text{ V}, I_C = 0$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C = 20 \text{ mA}, I_B = 4 \text{ mA}$
DC current transfer ratio	$h_{FE}$	60	120	—		$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Gain bandwidth product	$f_T$	600	1000	—	MHz	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	0.35	0.65	pF	$V_{CB} = 10 \text{ V}, \text{Emitter ground}, f = 1 \text{ MHz}$
Conversion gain	CG	—	21	—	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}, f = 200 \text{ MHz}, f_{OSC} = 230 \text{ MHz (0dBm)}, f_{out} = 30 \text{ MHz}$
Noise figure	NF	—	4.0	—	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}, f = 200 \text{ MHz}, f_{OSC} = 230 \text{ MHz (0dBm)}, f_{out} = 30 \text{ MHz}$

Note: Marking is "HC".





Conversion Gain, Noise Figure Test Circuit



- $L_1$   $\phi 0.5\text{ mm}$  Enameled Copper wire 4 Turns inside dia  $\phi 5\text{ mm}$
- $L_2$   $\phi 0.5\text{ mm}$  Enameled Copper wire 4 Turns inside dia  $\phi 4\text{ mm}$
- $L_3$   $\phi 0.2\text{ mm}$  Enameled Copper wire 5 Turns inside dia  $\phi 3\text{ mm}$
- $L_4$  Outside dia  $\phi 5\text{ mm}$  Bobbin,  $\phi 0.2\text{ mm}$  Enameled Copper wire 16 Turns, using Ferrite bead.

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