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# 2SC3413

Silicon NPN Epitaxial

# HITACHI

ADE-208-1085 (Z)  
1st. Edition  
Mar. 2001

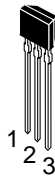
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## Application

- Low frequency low noise amplifier
- HF amplifier

## Outline

SPAK



1. Emitter
2. Collector
3. Base

## 2SC3413

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

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	40	V
Collector to emitter voltage	$V_{CEO}$	30	V
Emitter to base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C$	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

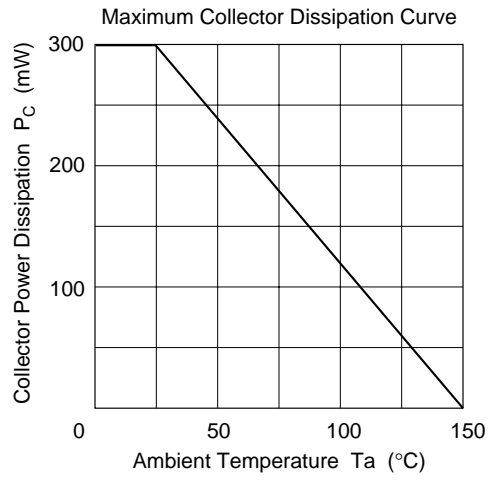
### Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	40	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	$\mu A$	$V_{EB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	100	—	500		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.2	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Gain bandwidth product	$f_T$	—	200	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	—	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	1.0	5.0	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, R_g = 1 \text{ k}\Omega, f = 1 \text{ kHz}$

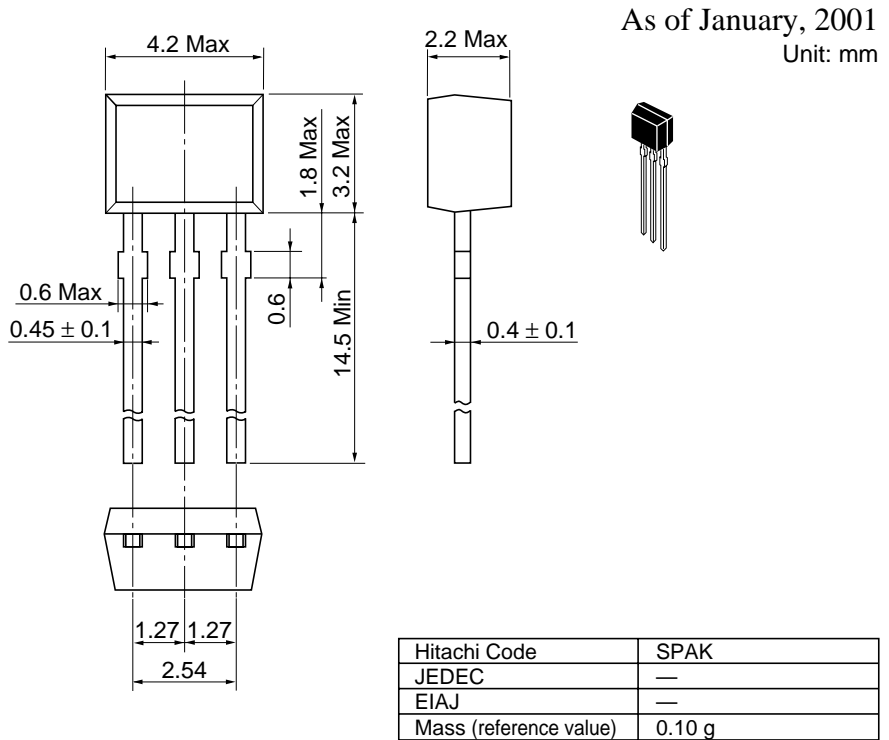
Note: 1. The 2SC3413 is grouped by  $h_{FE}$  as follows.

B	C	D
100 to 200	160 to 320	250 to 500

See characteristic curves of 2SC458(LG).



## Package Dimensions



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