

# BFY 33, BFY 34 (2N 1613); BFY 46 (2N 1711)

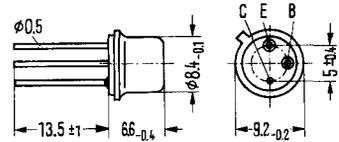
## NPN-Transistors for universal RF application

Not for new development

BFY 33, BFY 34 and BFY 46 are double-diffused planar NPN silicon RF-transistors in a case 5 C 3 DIN 41873 (TO-39). The collector is electrically connected to the case. The transistors are for universal application.

BFY 34 corresponds to type 2 N 1613;  
BFY 46 corresponds to type 2 N 1711.

Type	Order number
BFY 33	Q 60206-Y 33
BFY 34	Q 60206-Y 34
BFY 46	Q 60206-Y 46



Weight approx. 1.5 g Dimensions in mm

Maximum ratings		BFY 33	BFY 34	BFY 46	
Collector-emitter voltage ( $I_{CEO} = 30 \text{ mA}$ )	$V_{CEO}$	24	30	30	V
Collector-emitter voltage ( $R_{BE} < 10 \Omega$ )	$V_{CER}$	30	50	50	V
Collector-base voltage	$V_{CBO}$	50	75	75	V
Emitter-base voltage	$V_{EBO}$	7	7	7	V
Collector current	$I_C$	500	500	500	mA
Junction temperature	$T_j$	200	200	200	°C
Storage temperature	$T_s$	-65 to +200	-65 to +200	-65 to +200	°C
Total power dissipation ( $T_{case} \leq 45 \text{ °C}$ )	$P_{tot}$	2.6	2.6	2.6	W
<b>Thermal resistance</b>					
Junction to ambient air	$R_{thJamb}$	$\leq 220$	$\leq 220$	$\leq 220$	K/W
Junction to case	$R_{thJcase}$	$\leq 60$	$\leq 60$	$\leq 60$	K/W

# BFY 34, BFY 46

Not for new development

## Static characteristics ( $T_{amb} = 25\text{ °C}$ ) **BFY 34**

Collector-emitter breakdown voltage ( $I_{CEO} = 30\text{ mA}$ )	$V_{(BR)CEO}$	> 30	V
Collector-emitter breakdown voltage ( $I_{CER} = 100\text{ mA}$ ; $R_{BE} \leq 10\ \Omega$ )	$V_{(BR)CER}$	> 50	V
Collector-base breakdown voltage ( $I_{CBO} = 100\ \mu\text{A}$ )	$V_{(BR)CBO}$	> 75	V
Emitter-base breakdown voltage ( $I_{EBO} = 100\ \mu\text{A}$ )	$V_{(BR)EBO}$	> 7	V

## Static characteristics ( $T_{amb} = 25\text{ °C}$ ) **BFY 46**

For a collector voltage of  $V_{CE} = 10\text{ V}$  and the listed collector currents  $I_C$ :

$I_C$ mA	$I_B$ mA	$h_{FE}$ $I_C/I_B$	$V_{BEsat}^3$ V	$V_{CESat}^3$ V
0.01	$0.167 (<0.5) \cdot 10^{-3}$	60 (>20)	—	—
0.1	$1.25 (<2.9) \cdot 10^{-3}$	80 (>35)	—	—
10 <sup>1)</sup>	$0.154 (<2.9)^2$	65 (>35)	—	—
10 <sup>1)</sup>	0.077 (<0.134)	130 (>75)	—	—
150 <sup>1)</sup>	0.5 to 1.5	100 to 300*	—	—
150	15	10	0.95 (<1.3)	0.5 (<1.5)*
500 <sup>1)</sup>	6.67 (<12.5)	75 (>40)*	—	—

	$T_{amb}$	150	25	°C
Collector-base cutoff current ( $V_{CBO} = 60\text{ V}$ )	$I_{CBO}$	—	0.3 (<10)*	nA
Collector-base cutoff current ( $V_{CBO} = 60\text{ V}$ )	$I_{CBO}$	0.4 (<10)	—	$\mu\text{A}$
Emitter-base cutoff current ( $V_{EBO} = 5\text{ V}$ )	$I_{EBO}$	—	0.05 (<5)*	nA

Collector-emitter breakdown voltage ( $I_{CEO} = 30\text{ mA}$ )	$V_{(BR)CEO}$	> 30	V
( $I_{CER} = 100\text{ mA}$ [Impulse]; $R_{BE} \leq 10\ \Omega$ )	$V_{(BR)CER}$	> 50	V
Collector-base breakdown voltage ( $I_{CBO} = 100\ \mu\text{A}$ )	$V_{(BR)CBO}$	> 75	V
Emitter-base breakdown voltage ( $I_{EBO} = 100\ \mu\text{A}$ )	$V_{(BR)EBO}$	> 7	V

<sup>1)</sup> Measured with impulses: impulse length 200  $\mu\text{s}$ ; duty cycle < 0.01

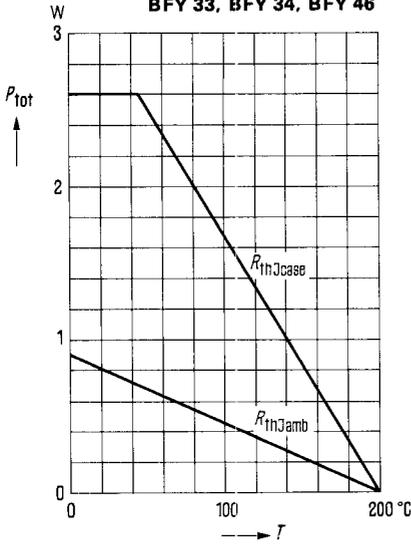
<sup>2)</sup> For  $T_{amb} = -55\text{ °C}$

<sup>3)</sup> The transistor has been overdriven to such an extent that the DC current gain has fallen to a value  $h_{FE} = 10$

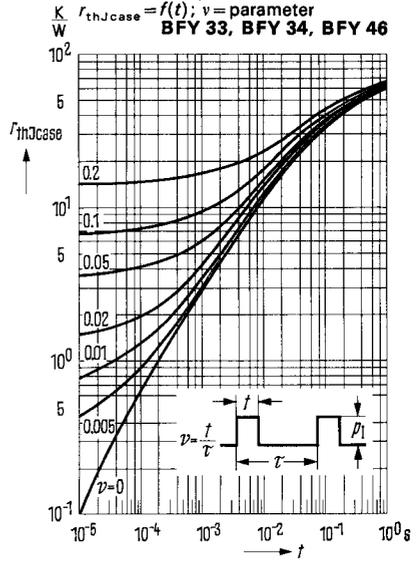
\* AQL = 0.65%

Not for new development

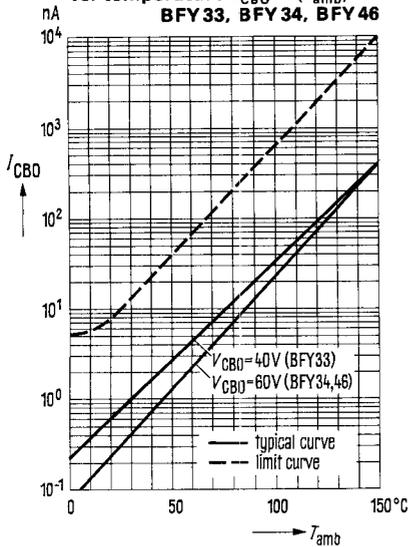
**Total power dissipation**  
 $P_{tot} = f(T); R_{th} = \text{parameter}$   
**BFY 33, BFY 34, BFY 46**



**Permissible pulse load**  
 $r_{thJcase} = f(t); v = \text{parameter}$   
**BFY 33, BFY 34, BFY 46**



**Collector-base cutoff current vs. temperature**  
 $I_{CBO} = f(T_{amb})$   
**BFY 33, BFY 34, BFY 46**



**Current-gain bandwidth product**  
 $f_T = f(I_C)$   
 $V_{CE} = \text{parameter}$   
**BFY 33, BFY 34, BFY 46**

