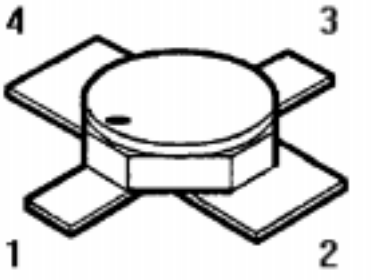
SIEMENS

HiRel NPN Silicon RF Transistor — BFY 280

Features

- **HiRel Discrete and Microwave Semiconductor**
- For low noise, low power amplifiers at collector currents from 0.2 mA to 8 mA
- Hermetically sealed microwave package
- f_T = 7.2 GHz, F = 2.5 dB at 2 GHz
- esa qualified
- ESA/SCC Detail Spec. No.: 5611/006



Micro-X1

ESD: Electro**s**tatic **d**ischarge sensitive device, observe handling precautions!

Type	Marking	Ordering Code	Pin Configuration				Package
BFY 280 (ql)	–	see below	C	E	B	E	Micro-X1

(ql) Quality Level: P: Professional Quality, Ordering Code: Q97302026
H: High Rel Quality, Ordering Code: on request
S: Space Quality, Ordering Code: on request
ES: ESA Space Quality, Ordering Code: Q97111414

(see **Chapter Order Instructions** for ordering example)

Table 1 Maximum Ratings

Parameter	Symbol	Limit Values	Unit
Collector-emitter voltage	V_{CEO}	8	V
Collector-emitter voltage, V_{BE} = 0	V_{CES}	15	V
Collector-base voltage	V_{CBO}	15	V
Emitter-base voltage	V_{EBO}	2	V
Collector current	I_C	10	mA
Base current	I_B	1.2 [1]	mA
Total power dissipation, $T_S \le 104$ °C [2]	P_{tot}	80	mW
Junction temperature	T_j	200	°C
Operating temperature range	T_{op}	– 65 … + 200	°C
Storage temperature range	T_{stg}	– 65 … + 200	°C
Thermal Resistance			
Junction soldering point [2]	$R_{th\ JS}$	< 450	K/W

[1] The maximum permissible base current for V_{FBE} measurements is 5 mA (spot measurement duration < 1 s).

[2] T_S is measured on the collector lead at the soldering point to the pcb.

Electrical Characteristics

Table 2 DC Characteristics at T_A = 25 °C unless otherwise specified

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	–	–	100	µA
Collector-emitter cutoff current V_{CE} = 8 V, I_B = 0.1 µA [3)]	I_{CEX}	–	–	100	µA
Collector-base cutoff current V_{CB} = 8 V, I_E = 0	I_{CBO}	–	–	50	nA
Emitter-base cutoff current V_{EB} = 2 V, I_C = 0	I_{EBO}	–	–	25	µA
Emitter-base cutoff current V_{EB} = 1 V, I_C = 0	I_{EBO}	–	–	0.5	µA
Base-emitter forward voltage I_E = 5 mA, I_C = 0	V_{FBE}	–	–	1	V
DC current gain I_C = 0.25 mA, V_{CE} = 1 V	h_{FE}	30	100	175	–

3) This test assures $V_{(BR)CE0}$ > 8 V.

Table 3 AC Characteristics at T_A = 25 °C unless otherwise specified

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Transition frequency I_C = 6 mA, V_{CE} = 5 V, f = 500 MHz	f_T	6.5	7.2		GHz
Collector-base capacitance V_{CB} = 5 V, V_{BE} = vbe = 0, f = 1 MHz	C_{CB}	–	0.2	0.27	pF
Collector-emitter capacitance V_{CE} = 10 V, V_{BE} = vbe = 0, f = 1 MHz	C_{CE}	–	0.34	–	pF
Emitter-base capacitance V_{EB} = 0.5 V, V_{CB} = vcb = 0, f = 1 MHz	C_{EB}	–	0.4	0.5	pF
Noise figure I_C = 2 mA, V_{CE} = 5 V, f = 2 GHz, $Z_S = Z_{Sopt}$	F	–	2.2	2.9	dB
Power gain I_C = 6 mA, V_{CE} = 5 V, f = 2 GHz, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$	G_{ma} [4)]	13	14	–	dB
Transducer gain I_C = 6 mA, V_{CE} = 5 V, f = 2 GHz, $Z_S = Z_L$ = 50 Ω	$\lvert S_{21e} \rvert^2$	9.5	11	–	dB

4) $G_{ma} = \left|\frac{S21}{S12}\right|(k - \sqrt{k^2 - 1}),\ G_{ms} = \left|\frac{S21}{S12}\right|$

Order Instructions

Full type variant including quality level must be specified by the orderer. For HiRel Discrete and Microwave Semiconductors the ordering code specifies device family and quality level.

Ordering Form:

Ordering Code: Q…
BFY280 (x) (ql)
(ql): Quality Level

Ordering Example:

Ordering Code: Q97111414
BFY280 ES
For BFY280 in ESA Space Quality Level

Further Information

See our WWW-Pages:

– Discrete and RF-Semiconductors (Small Signal Semiconductors)
www.siemens.de/semiconductor/products/35/35.htm

– HiRel Discrete and Microwave Semiconductors
www.siemens.de/semiconductor/products/35/353.htm

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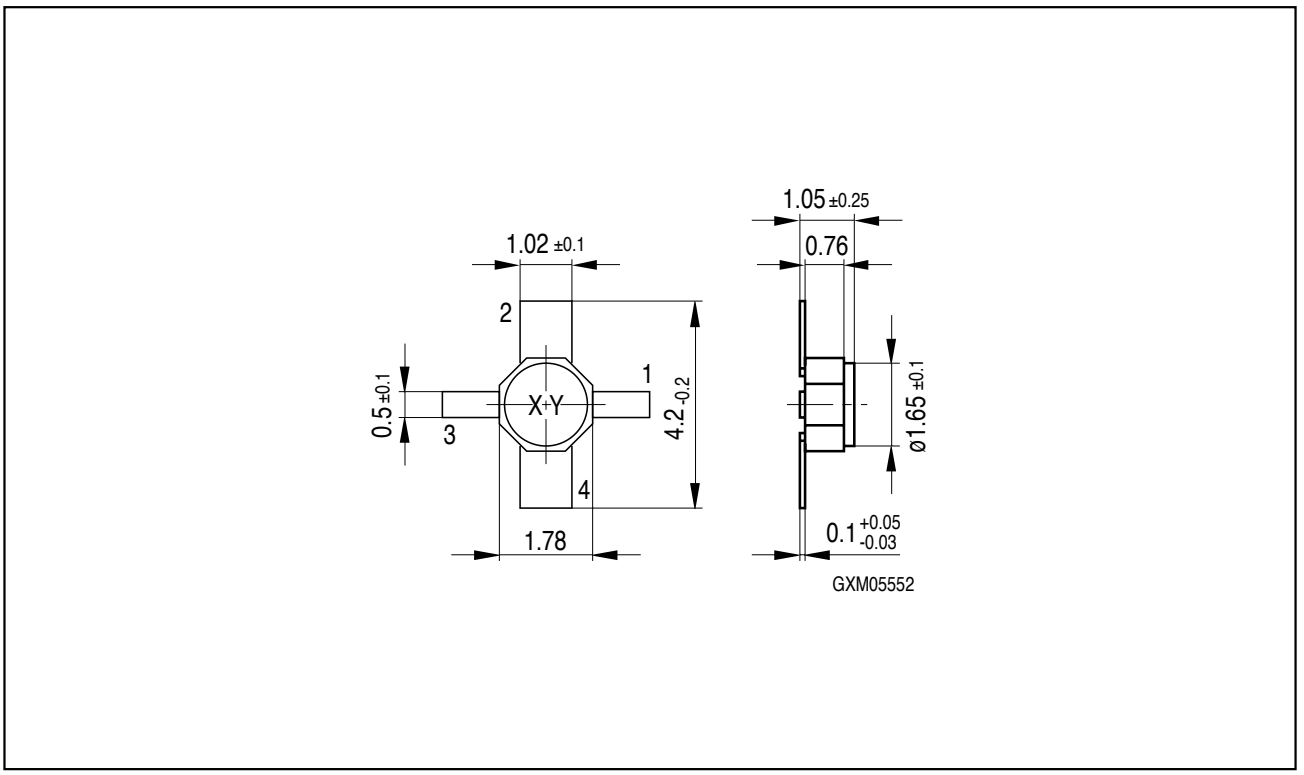

Figure 1 Micro-X1 Package