DATA SHEET

BF246A; BF246B; BF246C; BF247A; BF247B; BF247C

N-channel silicon junction field-effect transistors

Product specification
Supersedes data of April 1995
File under Discrete Semiconductors, SC07

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Philips Semiconductors

PHILIPS

N-channel silicon junction field-effect transistors

BF246A; BF246B; BF246C; BF247A; BF247B; BF247C

FEATURES

- Interchangeability of drain and source connections
- High I_{DSS} range
- Frequency up to 450 MHz.

APPLICATIONS

- VHF and UHF amplifiers
- Mixers
- General purpose switching.

DESCRIPTION

General purpose N-channel symmetrical silicon junction field-effect transistors in a plastic TO-92 variant package.

CAUTION
The device is supplied in an antistatic package. The gate-source input must be protected against static discharge during transport or handling.

PINNING

PIN	SYMBOL	DESCRIPTION
BF246A; BF246B; BF246C		
1	d	drain
2	g	gate
3	s	source
BF247A; BF247B; BF247C		
1	d	drain
2	s	source
3	g	gate

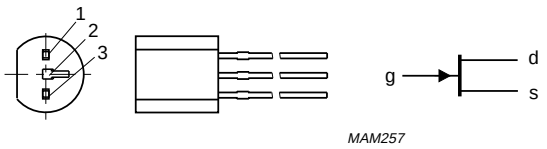


Fig.1 Simplified outline (TO-92 variant) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{DS}	drain-source voltage		–	–	±25	V
V_{GSoff}	gate-source cut-off voltage	I_D = 10 nA; V_{DS} = 15 V	–0.6	–	–14.5	V
I_{DSS}	drain current	V_{DS} = 15 V; V_{GS} = 0				
	BF246A; BF247A		30	–	80	mA
	BF246B; BF247B		60	–	140	mA
	BF246C; BF247C		110	–	250	mA
P_{tot}	total power dissipation	up to T_{amb} = 50 °C	–	–	400	mW
$\lvert y_{fs} \rvert$	forward transfer admittance	I_D = 10 mA; V_{DS} = 15 V; f = 1 kHz	8	–	–	mS
C_{rs}	reverse transfer capacitance	I_D = 10 mA; V_{DS} = 15 V; f = 1 MHz	–	3.5	–	pF
T_j	operating junction temperature		–	–	150	°C

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	±25	V
I_G	gate current		–	10	mA
P_{tot}	total power dissipation	up to T_{amb} = 50 °C	–	400	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–	150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air	250	K/W

STATIC CHARACTERISTICS

T_{amb} = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)GSS}$	gate-source breakdown voltage	I_G = –1 μA; V_{DS} = 0	–25	–	–	V
V_{GSoff}	gate-source cut-off voltage	I_D = 10 nA; V_{DS} = 15 V	–0.6	–	–14.5	V
V_{GS}	gate-source voltage	I_D = 200 μA; V_{DS} = 15 V				
	BF246A; BF247A		–1.5	–	–4.0	V
	BF246B; BF247B		–3.0	–	–7.0	V
	BF246C; BF247C		–5.5	–	–12.0	V
I_{DSS}	drain current	V_{GS} = 0; V_{DS} = 15 V; note 1				
	BF246A; BF247A		30	–	80	mA
	BF246B; BF247B		60	–	140	mA
	BF246C; BF247C		110	–	250	mA
I_{GSS}	gate leakage current	V_{GS} = –15 V; V_{DS} = 0	–	–	–5	nA

Note

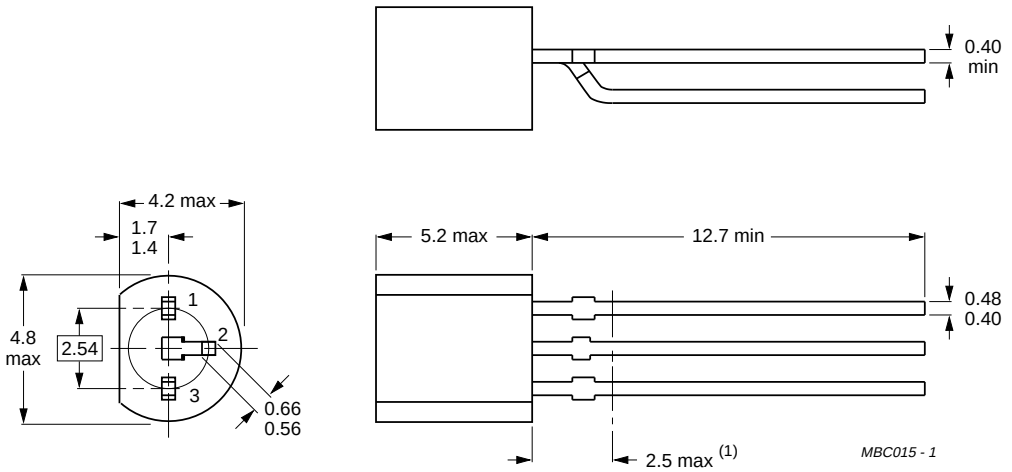
1. Measured under pulse conditions: t_p = 300 μs; $\delta \leq 0.02$.

DYNAMIC CHARACTERISTICS

T_{amb} = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
C_{is}	input capacitance	I_D = 10 mA; f = 1 MHz; V_{DS} = 15 V	–	11	–	pF
C_{rs}	reverse transfer capacitance	I_D = 10 mA; f = 1 MHz; V_{DS} = 15 V	–	3.5	–	pF
C_{os}	output capacitance	I_D = 10 mA; f = 1 MHz; V_{DS} = 15 V	–	5	–	pF
$\lvert y_{fs} \rvert$	forward transfer admittance	I_D = 10 mA; f = 1 kHz; V_{DS} = 15 V	8	17	–	mS
f_{gfs}	cut-off frequency	g_{fs} = 0.7 of its value at 1 kHz; V_{GS} = 0	–	450	–	MHz

PACKAGE OUTLINE



Dimensions in mm.

(1) Terminal dimensions in this zone are uncontrolled.

Fig.2 TO-92 variant.

DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.