DATA SHEET

BFT46
N-channel silicon FET

Product specification
File under Discrete Semiconductors, SC07

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Philips
Semiconductors

PHILIPS

N-channel silicon FET BFT46

DESCRIPTION

Symmetrical n-channel silicon epitaxial planar junction field-effect transistor in a microminiature plastic envelope. The transistor is intended for low level general purpose amplifiers in thick and thin-film circuits.

PINNING

1 = drain
2 = source
3 = gate

Note : Drain and source are interchangeable.

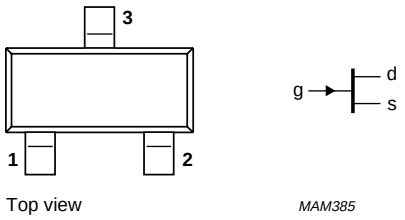

Fig.1 Simplified outline and symbol, SOT23.

Marking code

BFT46 = M3p

QUICK REFERENCE DATA

Drain-source voltage	$\pm V_{DS}$	max.	25	V
Gate-source voltage (open drain)	$-V_{GSO}$	max.	25	V
Total power dissipation up to T_{amb} = 40 °C	P_{tot}	max.	250	mW
Drain current				
V_{DS} = 10 V; V_{GS} = 0	I_{DSS}	>	0,2	mA
		<	1,5	mA
Transfer admittance (common source)				
I_D = 0,2 mA; V_{DS} = 10 V; f = 1 kHz	$\lvert y_{fs} \rvert$	>	0,5	mS
Equivalent noise voltage				
V_{DS} = 10 V; I_D = 200 µA; B = 0,6 to 100 Hz	V_n	<	0,5	µV

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RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	$\pm V_{DS}$	max.	25	V
Drain-gate voltage (open source)	V_{DGO}	max.	25	V
Gate-source voltage (open drain)	$-V_{GSO}$	max.	25	V
Drain current	I_D	max.	10	mA
Gate current	I_G	max.	5	mA
Total power dissipation up to T_{amb} = 40 °C(1)	P_{tot}	max.	250	mW
Storage temperature range	T_{stg}	−65 to +150		°C
Junction temperature	T_j	max.	150	°C

THERMAL RESISTANCE

From junction to ambient(1)	$R_{th\ j\text{-}a}$	=	430	K/W

Note

1. Mounted on a ceramic substrate of 8 mm × 10 mm × 0,7 mm.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Gate cut-off current				
$-V_{GS}$ = 10 V; V_{DS} = 0	$-I_{GSS}$	<	0,2	nA
Drain current				
V_{DS} = 10 V; V_{GS} = 0	I_{DSS}	>	0,2	mA
		<	1,5	mA
Gate-source voltage				
I_D = 50 µA; V_{DS} = 10 V	$-V_{GS}$	>	0,1	V
		<	1,0	V
Gate-source cut-off voltage				
I_D = 0,5 nA; V_{DS} = 10 V	$-V_{(P)GS}$	<	1,2	V
y-parameters at f = 1 kHz;				
V_{DS} = 10 V; V_{GS} = 0; T_{amb} = 25 °C				
Transfer admittance	$\lvert y_{fs} \rvert$	>	1,0	mS
Output admittance	$\lvert y_{os} \rvert$	<	10	µS
V_{DS} = 10 V; I_D = 200 µA; T_{amb} = 25 °C				
Transfer admittance	$\lvert y_{fs} \rvert$	>	0,5	mS
Output admittance	$\lvert y_{os} \rvert$	<	5	µS
Input capacitance at f = 1 MHz;				
V_{DS} = 10 V; V_{GS} = 0; T_{amb} = 25 °C	C_{is}	<	5	pF
Feedback capacitance at f = 1 MHz;				
V_{DS} = 10 V; V_{GS} = 0; T_{amb} = 25 °C	C_{rs}	<	1,5	pF
Equivalent noise voltage				
V_{DS} = 10 V; I_D = 200 µA; T_{amb} = 25 °C				
B = 0,6 to 100 Hz	V_n	<	0,5	µV

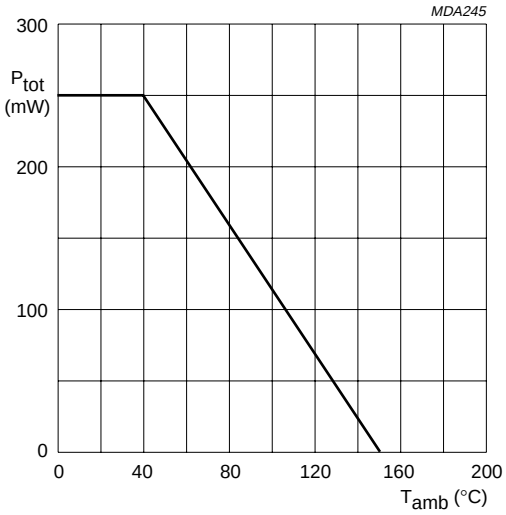


Fig.2 Power derating curve.

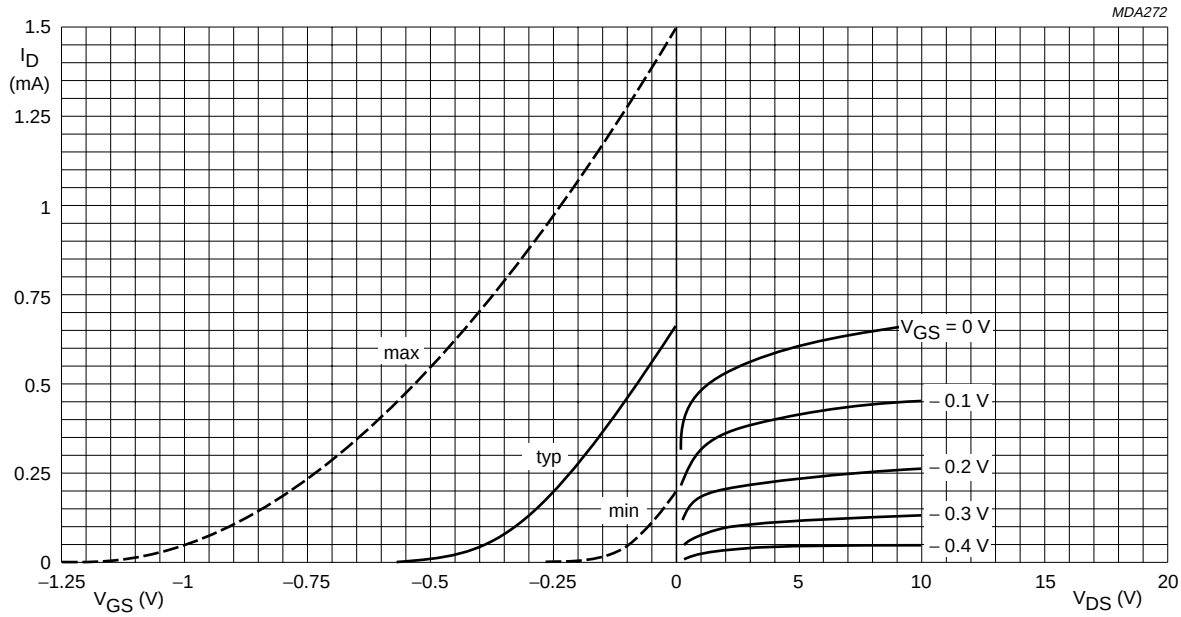


Fig.3 Typical values. V_{DS} = 10 V; T_j = 25 °C.

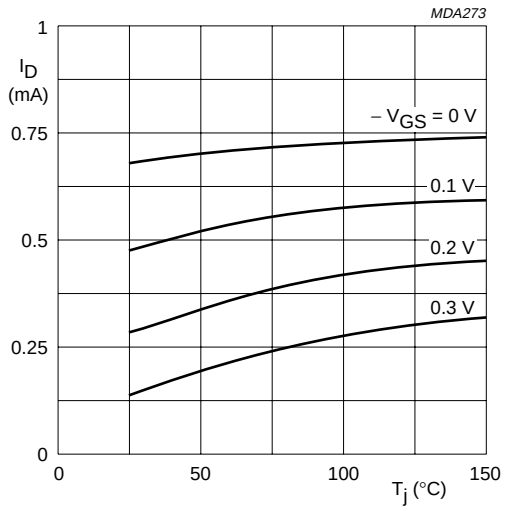


Fig.4 Typical values. V_{DS} = 10 V.

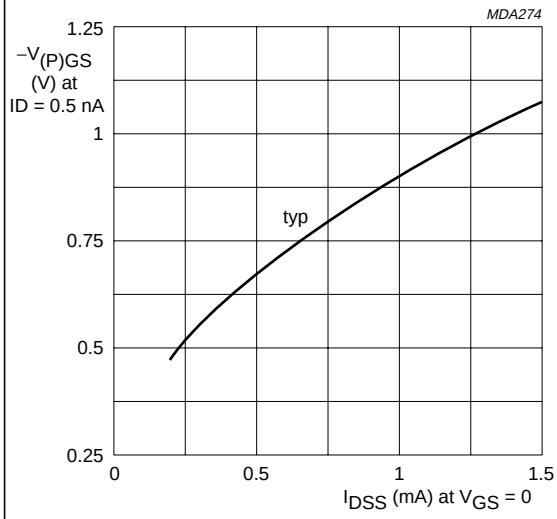


Fig.5 Correlation between $-V_{(P)GS}$ and I_{DSS}. V_{DS} = 10 V; T_j = 25 °C.

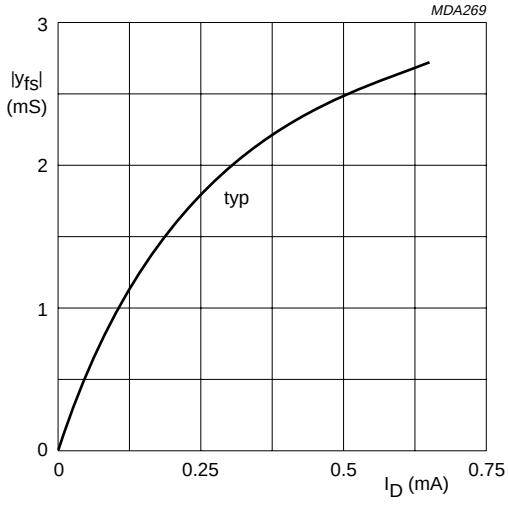


Fig.6 $|y_{fs}|$ versus I_D. V_{DS} = 10 V; f = 1 kHz; T_{amb} = 25 °C.

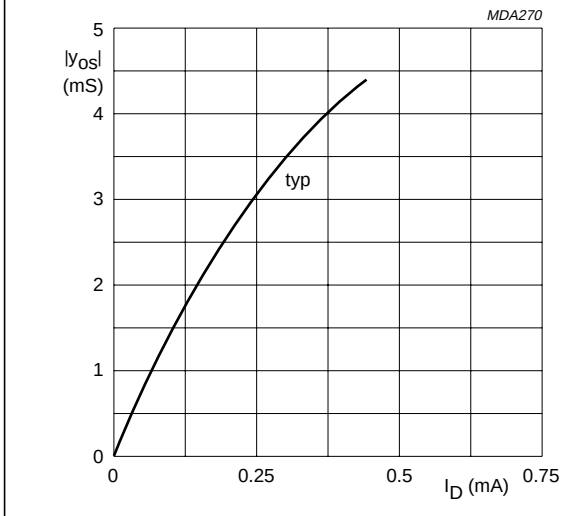


Fig.7 $|y_{os}|$ versus I_D. V_{DS} = 10 V; f = 1 kHz; T_{amb} = 25 °C.

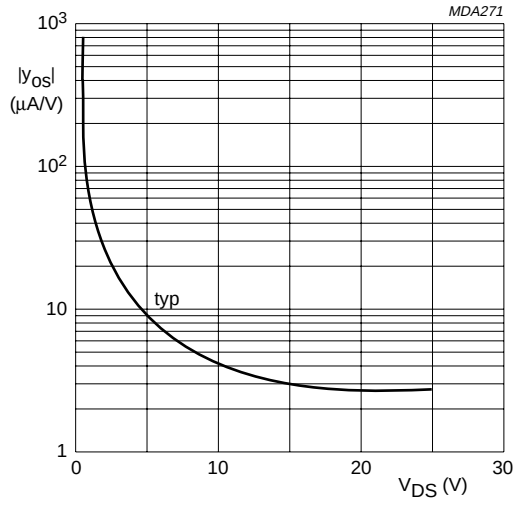


Fig.8 $|y_{os}|$ versus V_{DS}. I_D = 0,4 mA; f = 1 kHz; T_{amb} = 25 °C.

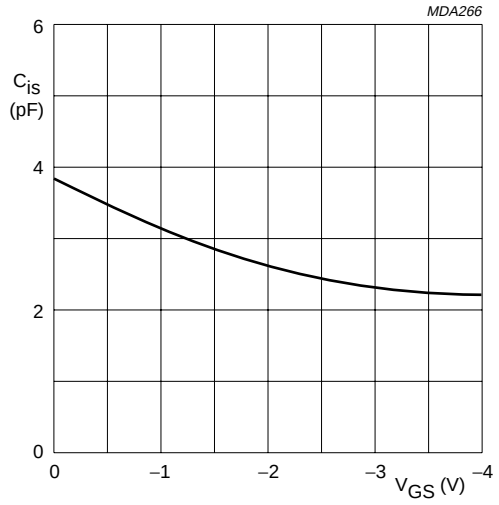


Fig.9 Typical values. V_{DS} = 10 V; T_{amb} = 25 °C.

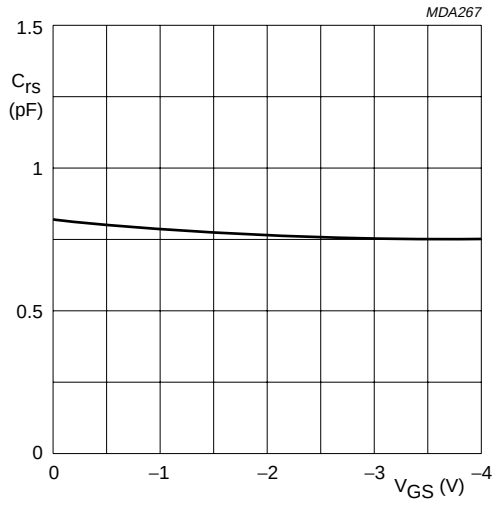


Fig.10 Typical values. V_{DS} = 10 V, T_{amb} = 25 °C.

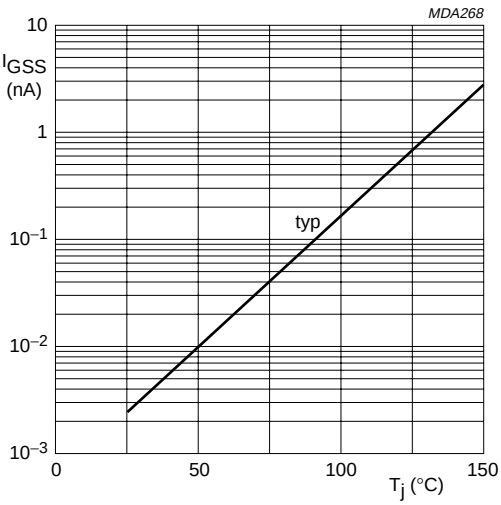


Fig.11 I_{GSS} versus T_j. $-V_{GSS}$ = 10V; V_{DS} = 0.

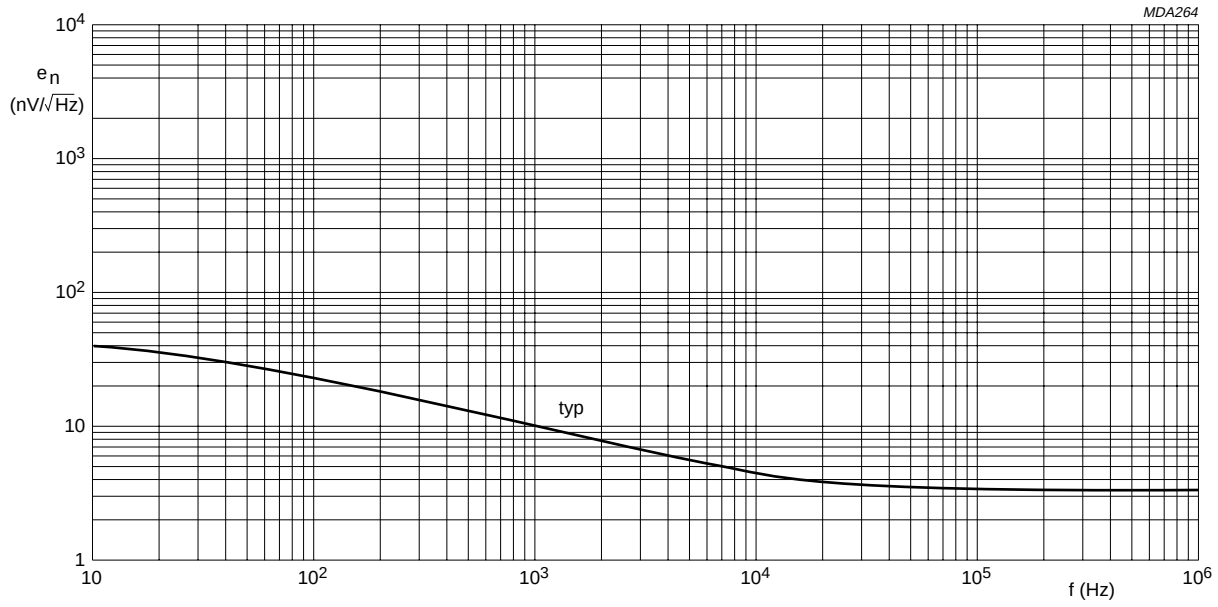


Fig.12 V_{DS} = 10 V; I_D = 0,2 mA; T_{amb} = 25 °C.

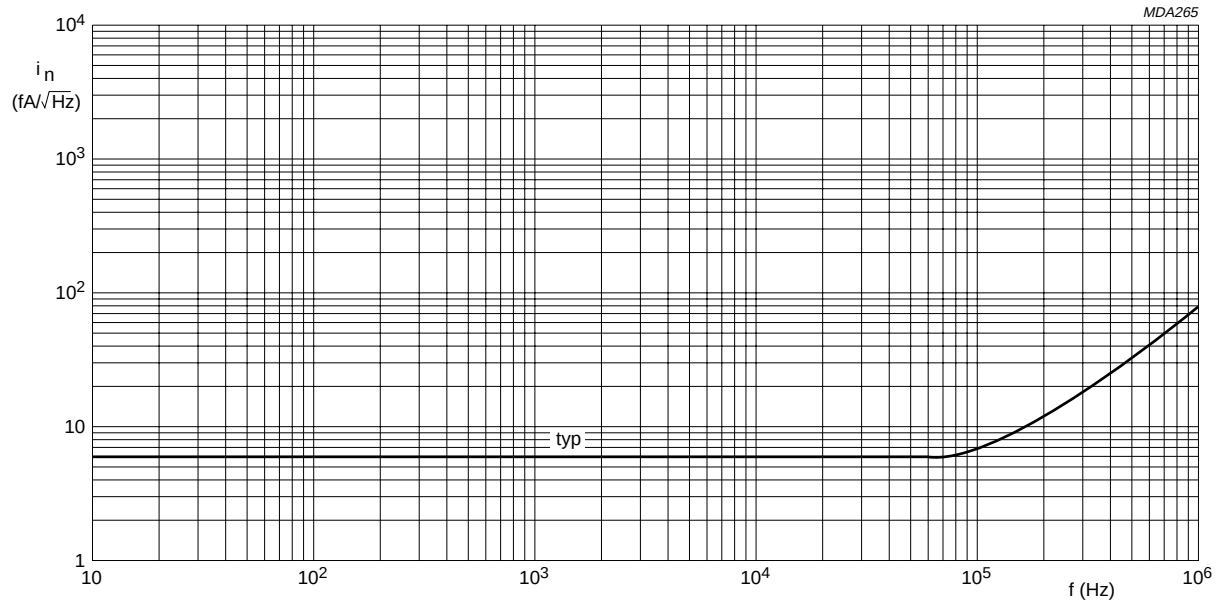
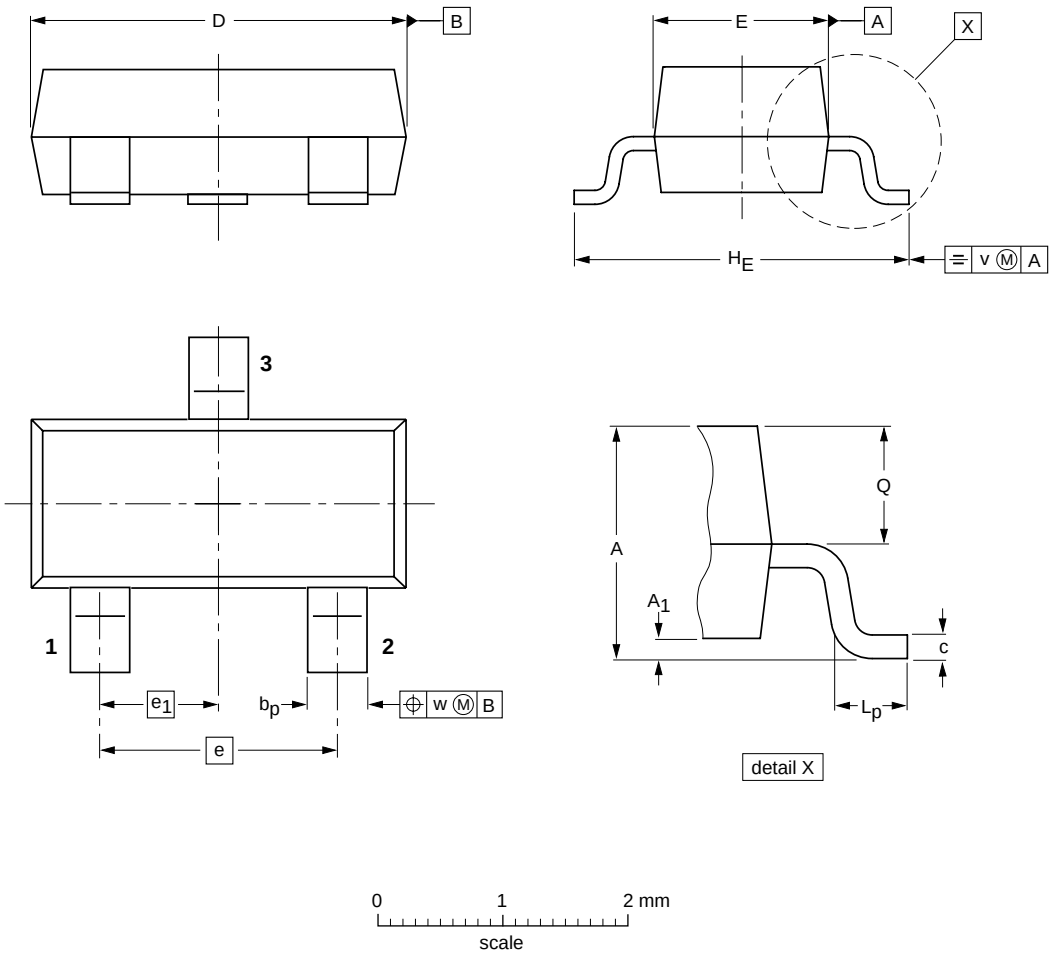


Fig.13 V_{DS} = 10 V; I_D = 0,2 mA; T_{amb} = 25 °C.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

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.
Short-form specification	The data in this specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.
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.	

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