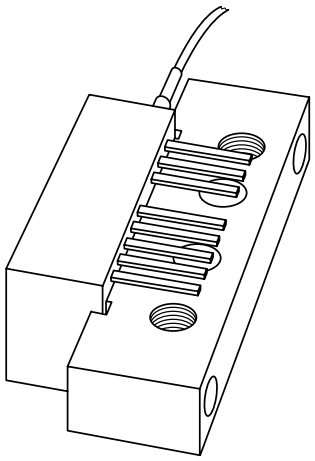
DATA SHEET



BGO827; BGO827/FC0; BGO827/SC0

870 MHz optical receivers

Product specification

2002 Dec 10

Supersedes data of 2002 Jun 27

Philips Semiconductors

PHILIPS

870 MHz optical receivers

BGO827; BGO827/FC0; BGO827/SC0

FEATURES

- Excellent linearity
- Low noise
- Excellent flatness
- Standard CATV outline
- Rugged construction
- Gold metallization ensures excellent reliability
- High optical input power range.

APPLICATIONS

CATV optical node systems operating in the 40 to 870 MHz frequency range.

DESCRIPTION

High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector or has an FC/APC or SC/APC connector.

The amplifier supply voltage pin and the photo diode bias voltage pin both connect to 24 V (DC).

The modules have a monomode optical input suitable for 1290 to 1600 nm wavelengths, a terminal to monitor the photo diode current and an electrical output having a characteristic impedance of 75 Ω.

PINNING

PIN	DESCRIPTION
1	monitor current
2	common
3	common
4	$+V_B$ of the photo diode
5	$+V_B$ of the amplifier
7	common
8	common
9	output

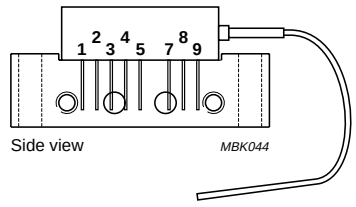


Fig.1 Simplified outline SOT115T (BGO827).

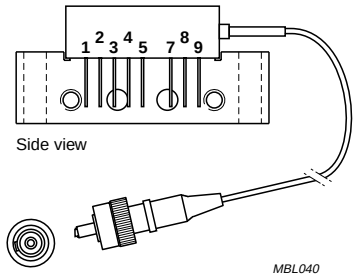


Fig.2 Simplified outline SOT115X (BGO827/FC0).

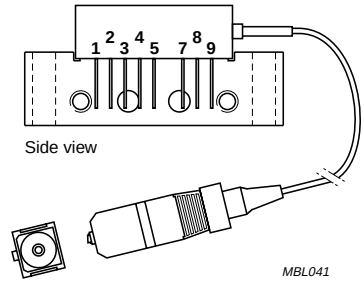


Fig.3 Simplified outline SOT115Y (BGO827/SC0).

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	870	MHz
s_{22}	output return losses	f = 40 to 870 MHz	11	–	dB
	optical input return losses		45	–	dB
d_2	second order distortion	f = 854.5 MHz	–	–57	dB
F	equivalent noise input	f = 40 to 870 MHz	–	8.5	pA/√Hz
I_{tot}	total current consumption (DC)	V_B = 24 V	175	205	mA

CAUTION

This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

HANDLING

Fibreglass optical coupling: maximum tensile strength = 5 N; minimum bending radius = 35 mm.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	870	MHz
T_{stg}	storage temperature		–40	+85	°C
T_{mb}	operating mounting base temperature		–20	+85	°C
P_{in}	optical input power	continuous	–	5	mW
ESD	ESD sensitivity	human body model; R = 1.5 kΩ; C = 100 pF	500	–	V

CHARACTERISTICS

Bandwidth 40 to 870 MHz; V_B = 24 V; T_{mb} = 30 °C; Z_L = 75 Ω.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
S	responsivity	λ = 1300 nm			
	BGO827		800	–	V/W
	BGO827/FC0, BGO827/SC0		750	–	V/W
FL	flatness straight line (peak to valley)	f = 40 to 870 MHz	–	1	dB
SL	slope straight line	f = 40 to 870 MHz	0	2	dB
s_{22}	output return losses	f = 40 to 870 MHz	11	–	dB
	optical input return losses		45	–	dB
d_2	second order distortion	f_m = 446.5 MHz; notes 1 and 3	–	–68	dB
		f_m = 746.5 MHz; notes 1 and 4		–63	dB
		f_m = 854.5 MHz; notes 1 and 5		–57	dB
d_3	third order distortion	f_m = 853.25 MHz; notes 2 and 6	–	–73	dB
F	equivalent noise input	f = 40 to 450 MHz	–	7	pA/√Hz
		f = 450 to 750 MHz	–	8	pA/√Hz
		f = 750 to 870 MHz	–	8.5	pA/√Hz
s_λ	spectral sensitivity	λ = 1310 ±20 nm	0.85	–	A/W
		λ = 1550 ±20 nm	0.9	–	A/W
λ	optical wavelength		1290	1600	nm
L	length of optical fibre	fibre; SM type; 9/125 μm			
	BGO827		1	–	m
	BGO827/FC0, BGO827/SC0		746	861	mm
I_{tot}	total current consumption (DC)		175	205	mA
I_{bias}	diode bias current at pin 4 (DC)		–	25	mA

Notes

1. Two laser test; each laser with a modulation index of 40%; P_{opt} = 1 mW (total).
2. Three laser test; each laser with a modulation index of 60%; P_{opt} = 1 mW (total).
3. f_m = 446.5 MHz; f_p = 97.25 MHz; f_q = 349.25 MHz.
4. f_m = 746.5 MHz; f_p = 133.25 MHz; f_q = 613.25 MHz.
5. f_m = 854.5 MHz; f_p = 133.25 MHz; f_q = 721.25 MHz.
6. f_m = 853.25 MHz; f_p = 133.25 MHz; f_q = 265.25 MHz; f_r = 721.25 MHz.

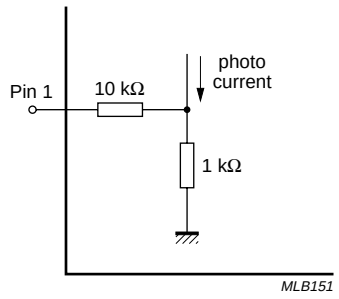
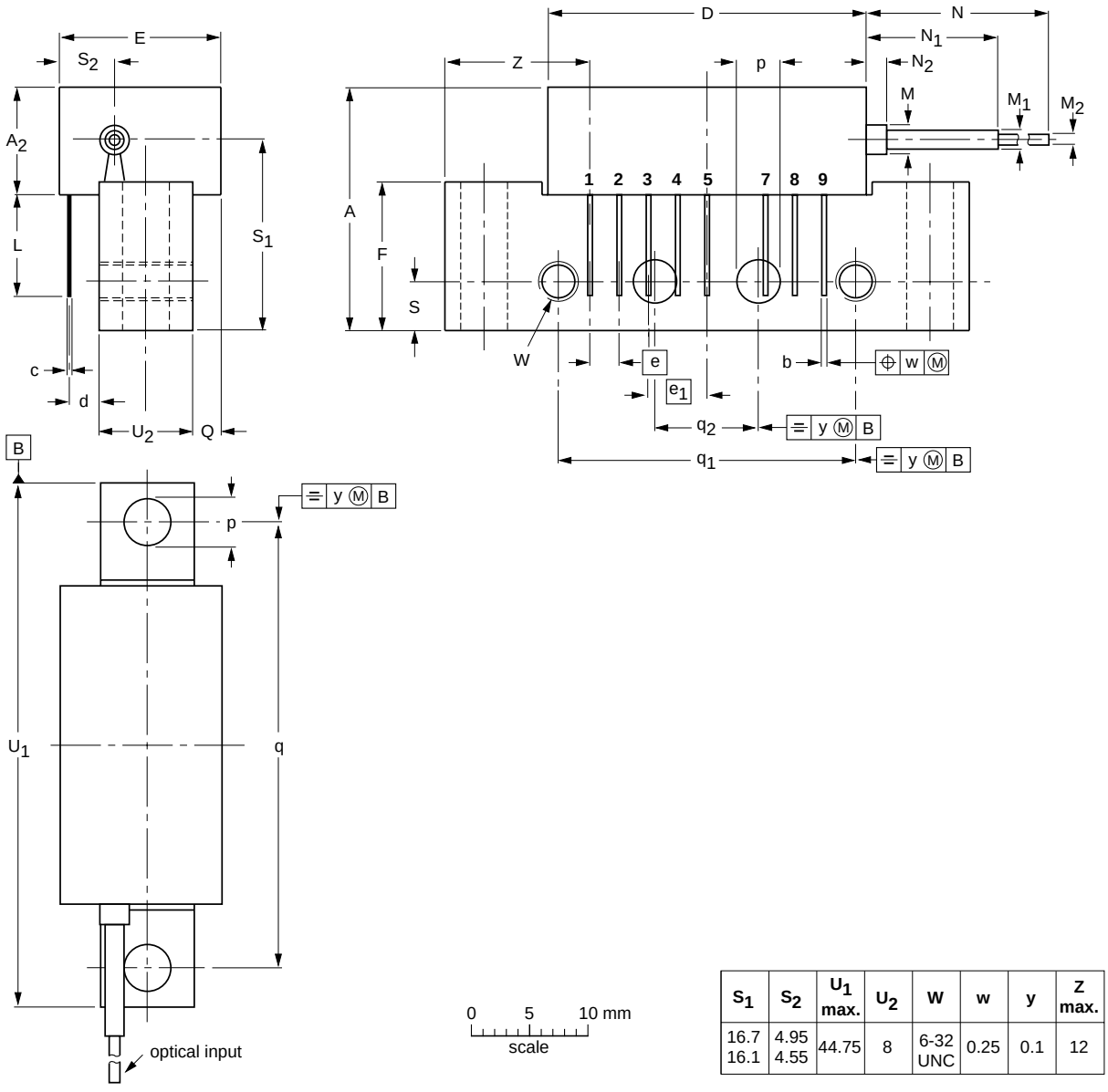


Fig.4 Monitor current pin.

PACKAGE OUTLINES

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; optical input; 8 gold-plated in-line leads **SOT115T**



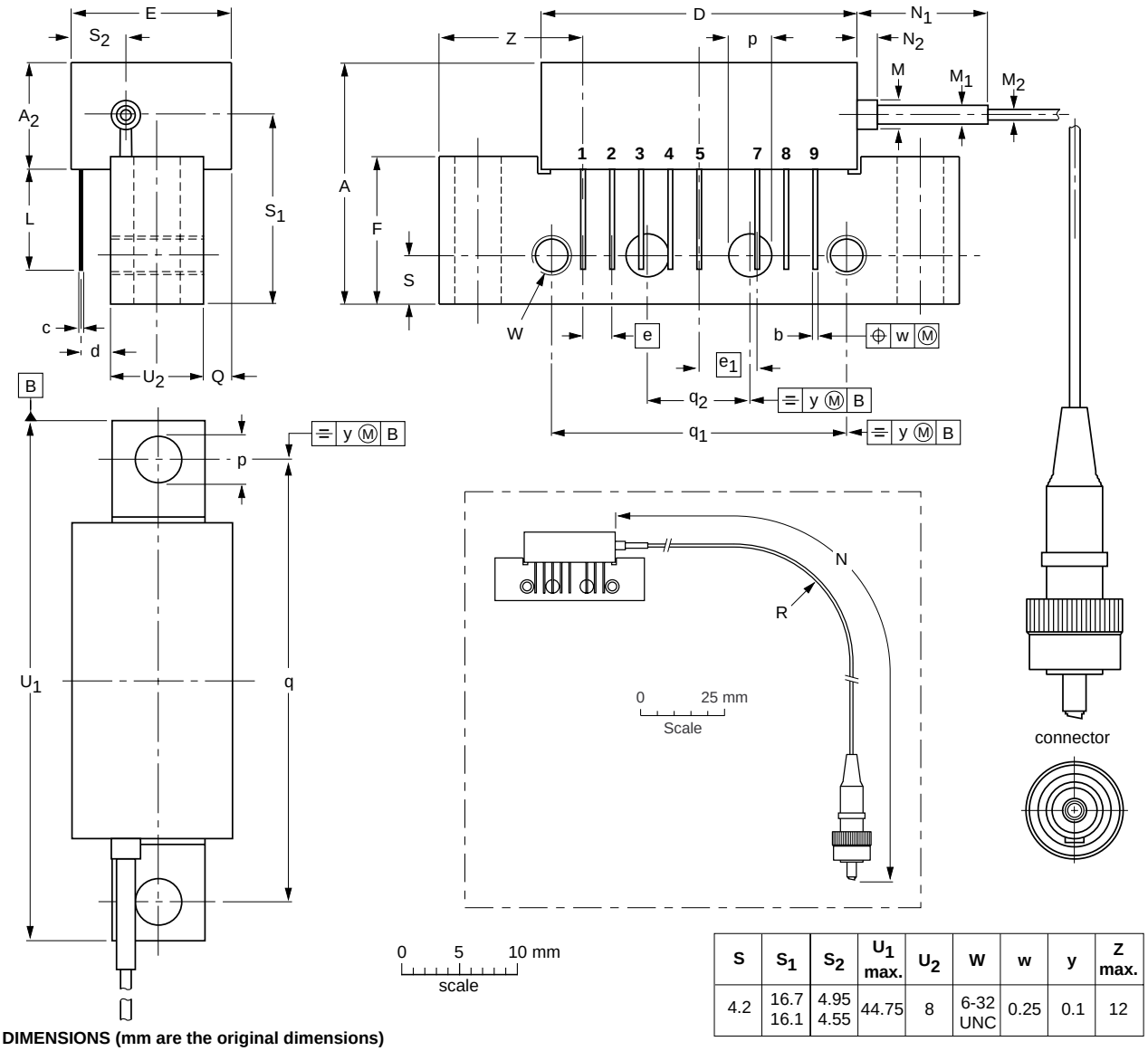
S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
16.7 16.1	4.95 4.55	44.75	8	6-32 UNC	0.25	0.1	12

DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d max.	E max.	e	e_1	F	L min.	M	M_1	M_2	N min.	N_1 max.	N_2 max.	p	Q max.	q	q_1	q_2	S
mm	20.8	9.1	0.51 0.38	0.25	27.2	2.54	13.75	2.54	5.08	12.7	8.8	2.5	1.6	0.9	1000	10.7	5	4.15 3.85	2.4	38.1	25.4	10.2	4.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115T						~~99-04-13~~ 01-08-10

Rectangular single-ended package; aluminium flange;
2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes;
optical input with connector; 8 gold-plated in-line leads **SOT115X**



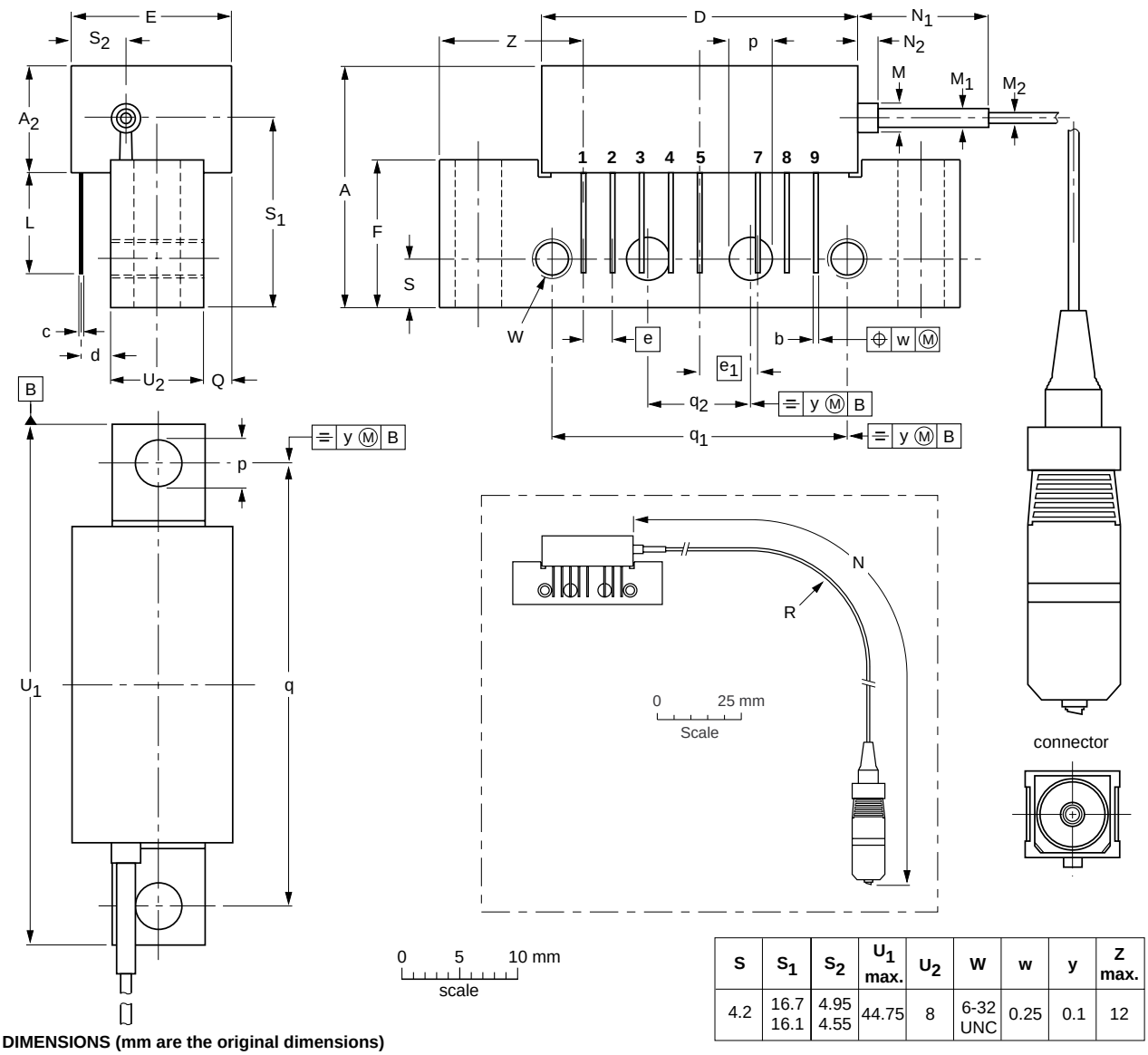
S	S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
4.2	16.7 16.1	4.95 4.55	44.75	8	6-32 UNC	0.25	0.1	12

DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d max.	E max.	e	e_1	F	L min.	M	M_1	M_2	N	N_1 max.	N_2 max.	p	Q max.	q	q_1	q_2	R min.
mm	20.8	9.1	0.51 0.38	0.25	27.2	2.54	13.75	2.54	5.08	12.7	8.8	2.5	1.6	0.9	861 746	10.7	5	4.15 3.85	2.4	38.1	25.4	10.2	35

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115X						~~00-01-06~~ 01-08-10

Rectangular single-ended package; aluminium flange;
2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes;
optical input with connector; 8 gold-plated in-line leads **SOT115Y**



S	S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
4.2	16.7 16.1	4.95 4.55	44.75	8	6-32 UNC	0.25	0.1	12

DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d max.	E max.	e	e_1	F	L min.	M	M_1	M_2	N	N_1 max.	N_2 max.	p	Q max.	q	q_1	q_2	R min.
mm	20.8	9.1	0.51 0.38	0.25	27.2	2.54	13.75	2.54	5.08	12.7	8.8	2.5	1.6	0.9	861 746	10.7	5	4.15 3.85	2.4	38.1	25.4	10.2	35

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115Y						~~00-01-06~~ 01-08-10

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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