

**Rectifier diodes
ultrafast**

BYV29F, BYV29X series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Isolated mounting tab

SYMBOL



QUICK REFERENCE DATA

$V_R = 300\text{ V} / 400\text{ V} / 500\text{ V}$
$V_F \leq 1.03\text{ V}$
$I_{F(AV)} = 9\text{ A}$
$t_{rr} \leq 60\text{ ns}$

GENERAL DESCRIPTION

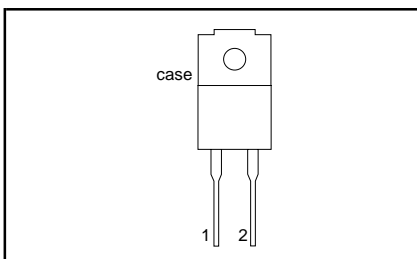
Ultra-fast epitaxial rectifier diodes intended for use in switched mode power supply output rectification, electronic lighting ballasts and high frequency switching circuits in general.

The BYV29F series is supplied in the SOD100 package.
The BYV29X series is supplied in the SOD113 package.

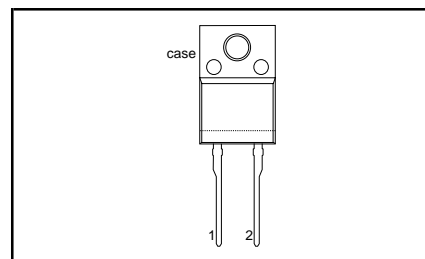
PINNING

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	isolated

SOD100



SOD113



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-300	-400	-500	
V_{RRM}	Peak repetitive reverse voltage	BYV29F/BYV29X $T_{hs} \leq 138^\circ\text{C}^1$	-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ²	square wave; $\delta = 0.5$; $T_{hs} \leq 90^\circ\text{C}$	-	9			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	100			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 T_{hs} de-rating for thermal stability.

2 Neglecting switching and reverse current losses

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ISOLATION LIMITING VALUE & CHARACTERISTIC $T_{hs} = 25\text{ °C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Peak isolation voltage from all terminals to external heatsink	SOD100 package; R.H. \leq 65%; clean and dustfree	-	-	1500	V
V_{isol}	R.M.S. isolation voltage from all terminals to external heatsink	SOD113 package; $f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; R.H. \leq 65%; clean and dustfree	-	-	2500	V
C_{isol}	Capacitance from pin 2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

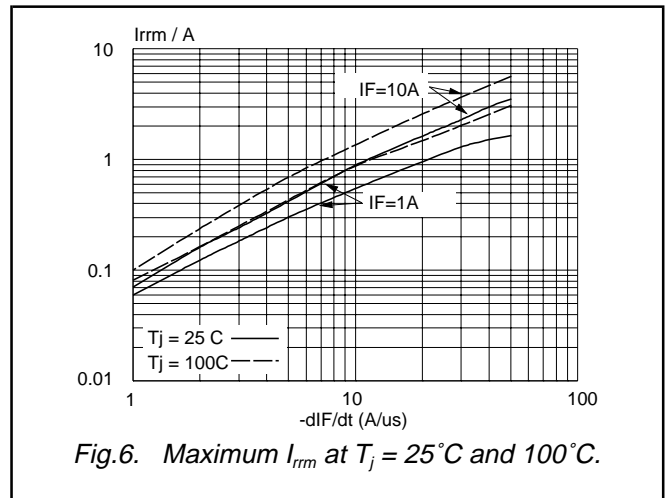
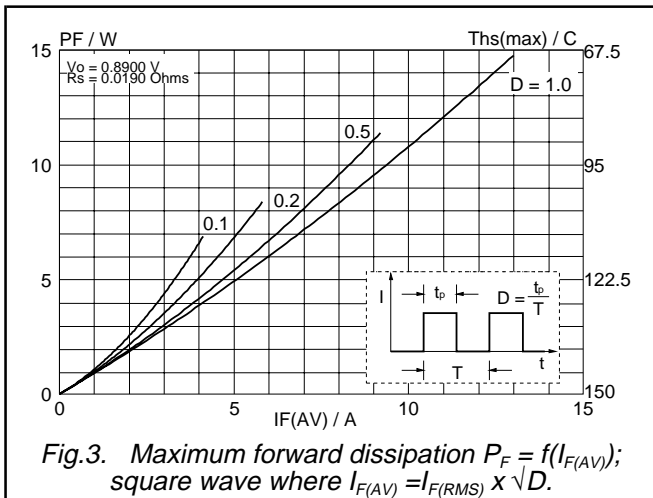
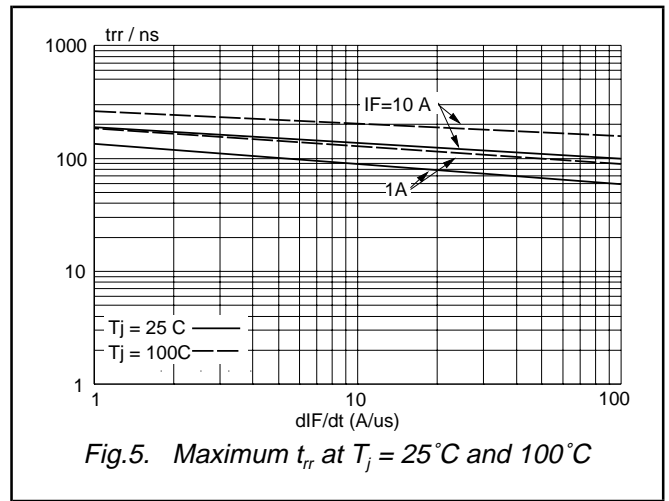
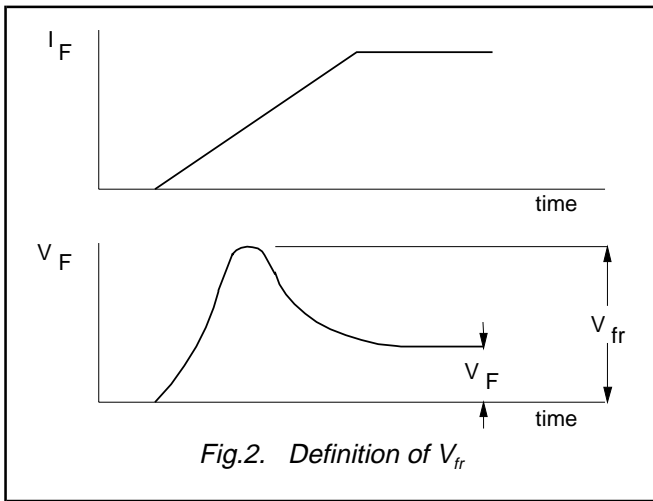
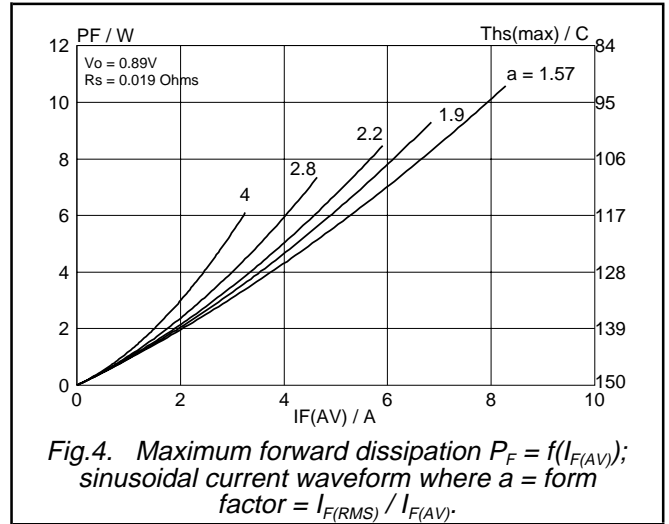
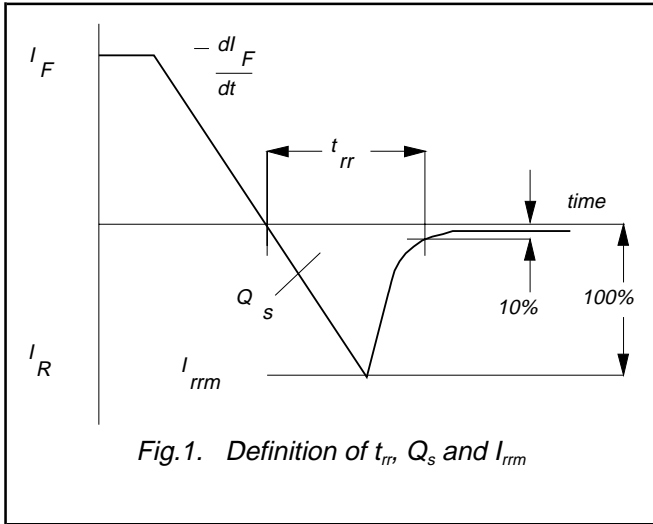
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

ELECTRICAL CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\text{ A}$; $T_j = 150\text{ °C}$	-	0.90	1.03	V
		$I_F = 8\text{ A}$	-	1.05	1.25	V
		$I_F = 20\text{ A}$	-	1.20	1.40	V
I_R	Reverse current	$V_R = V_{RRM}$	-	2.0	50	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ °C}$	-	0.1	0.35	mA
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
I_{rrm}	Peak reverse recovery current	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ °C}$	-	4.0	5.5	A
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

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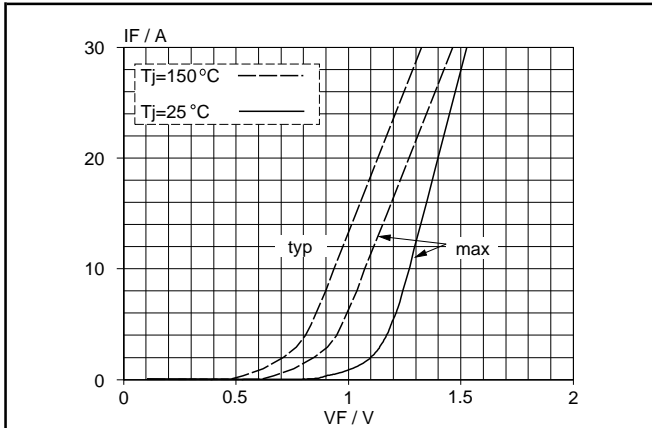


Fig.7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

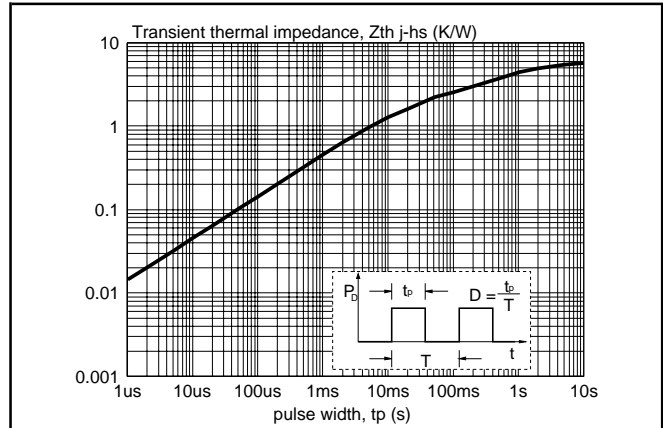


Fig.9. Transient thermal impedance $Z_{th\ j-hs} = f(t_p)$

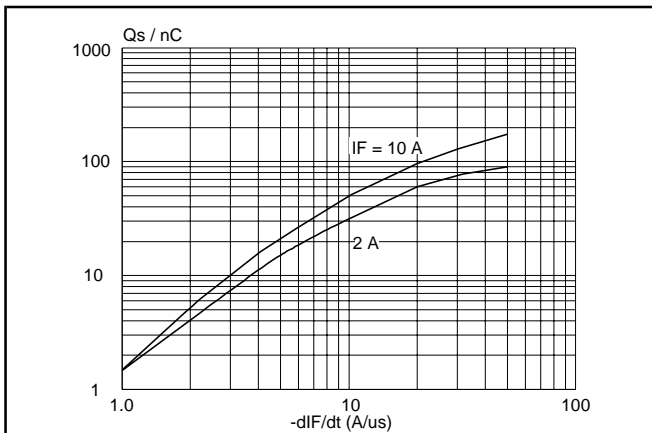
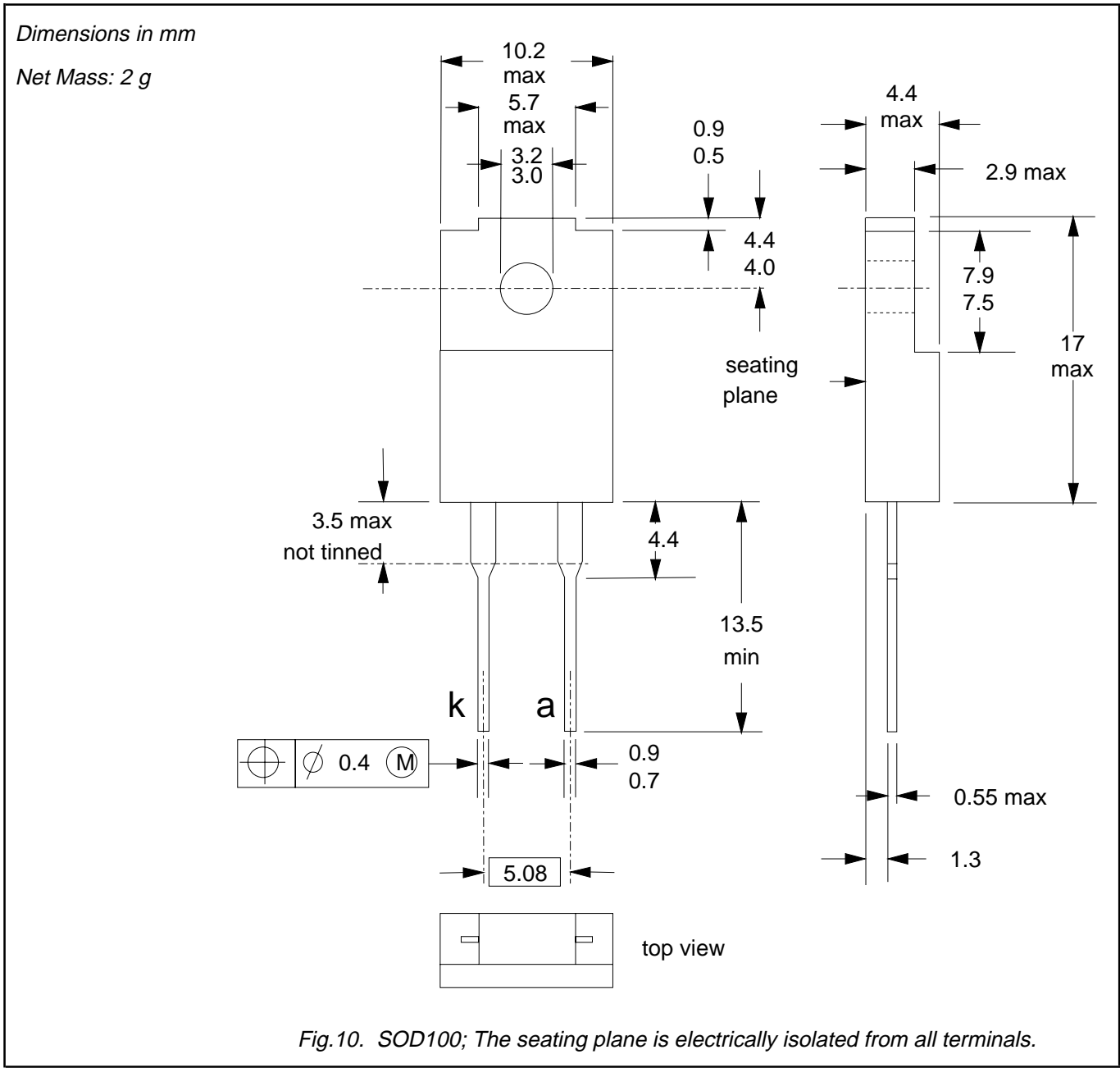


Fig.8. Maximum Q_s at $T_j = 25^\circ\text{C}$

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MECHANICAL DATA



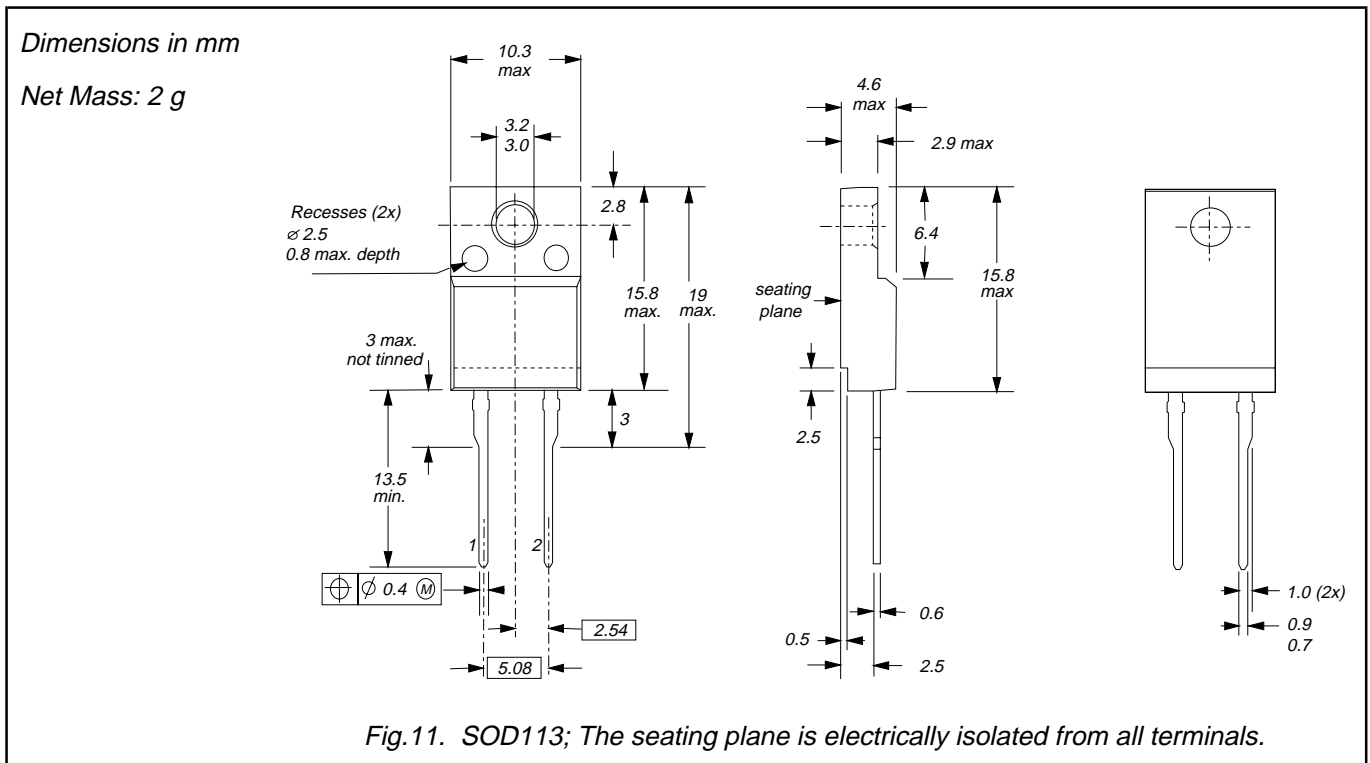
Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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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 are given 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 this 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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