

**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**

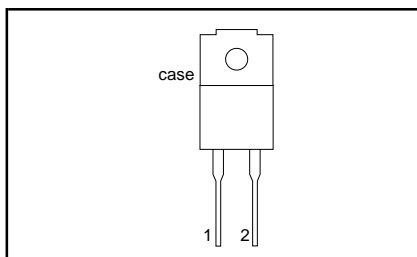
Ultra-fast epitaxial rectifier diodes intended for use in switched mode power supply output rectification, electronic lighting ballasts and high frequency switching circuits in general.

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

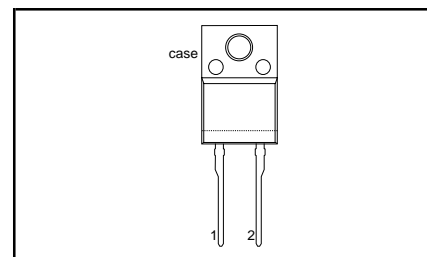
**PINNING**

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	<b>BYV29F/BYV29X</b> $T_{hs} \leq 138^\circ\text{C}^1$	-	300	400	500	V
$V_R$	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current <sup>2</sup>	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**

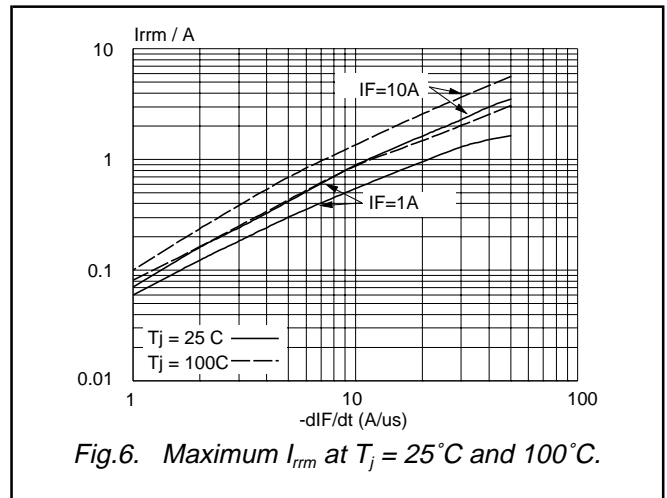
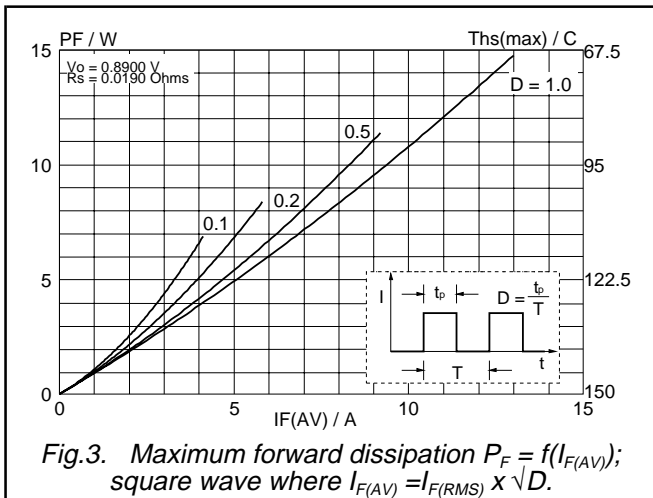
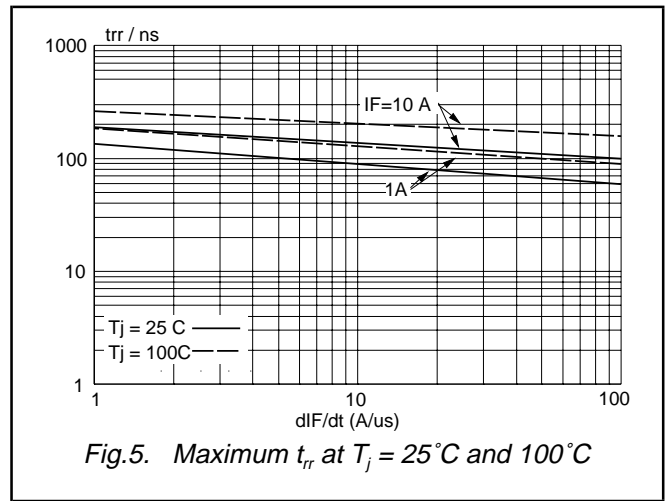
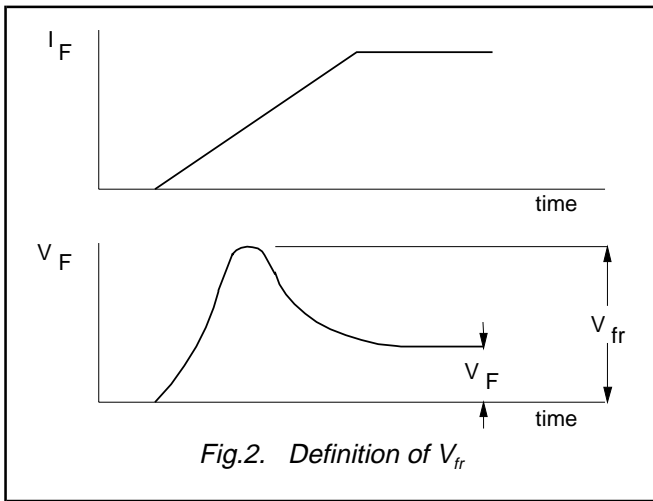
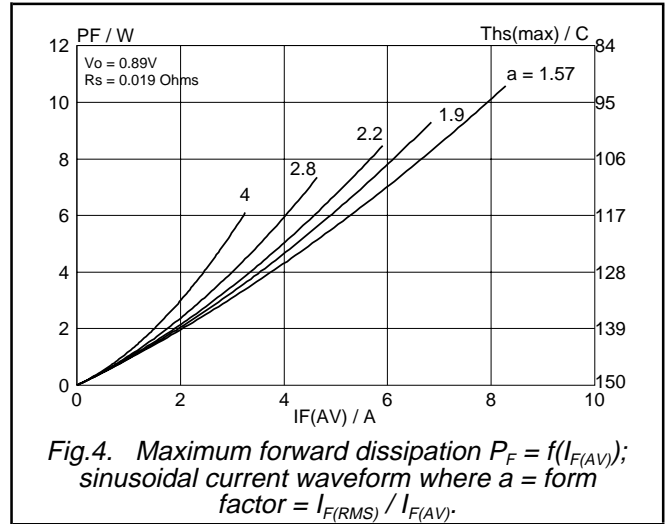
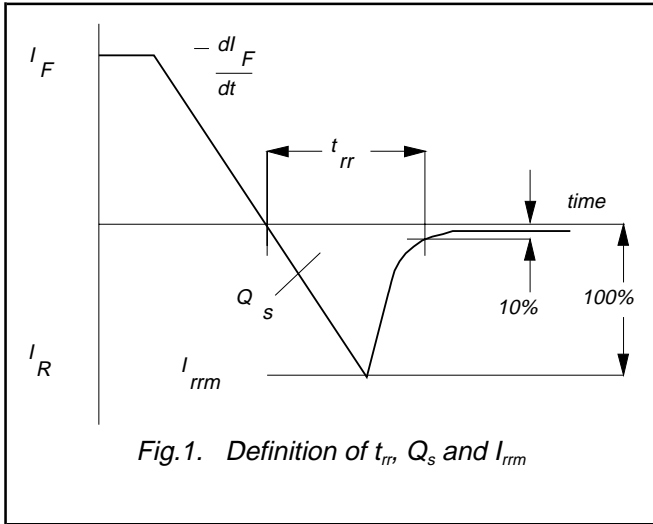
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

**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	$\mu\text{A}$
		$V_R = V_{RRM}$ ; $T_j = 100\text{ °C}$	-	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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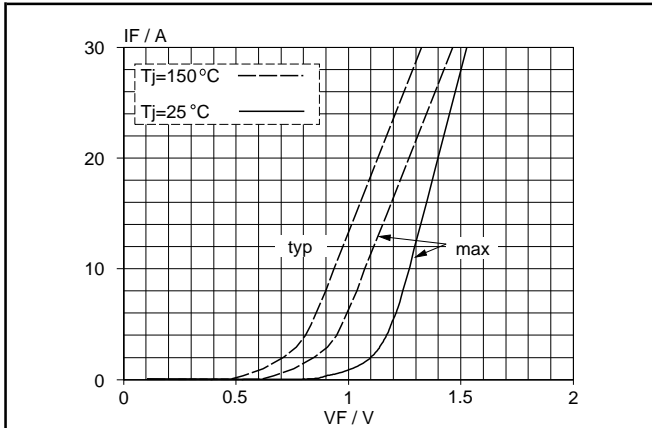


Fig.7. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$

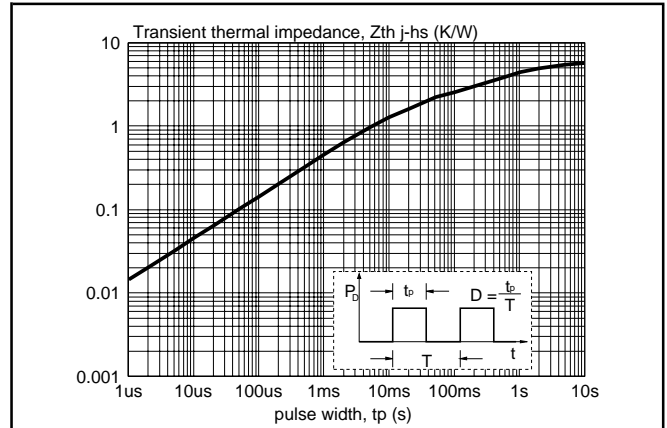


Fig.9. Transient thermal impedance  $Z_{th\ j-hs} = f(t_p)$

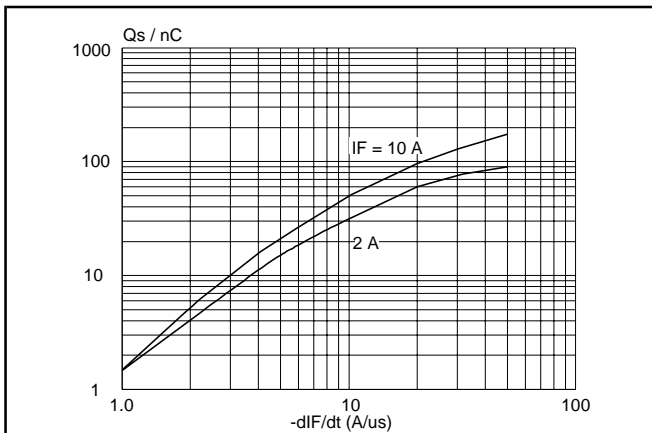
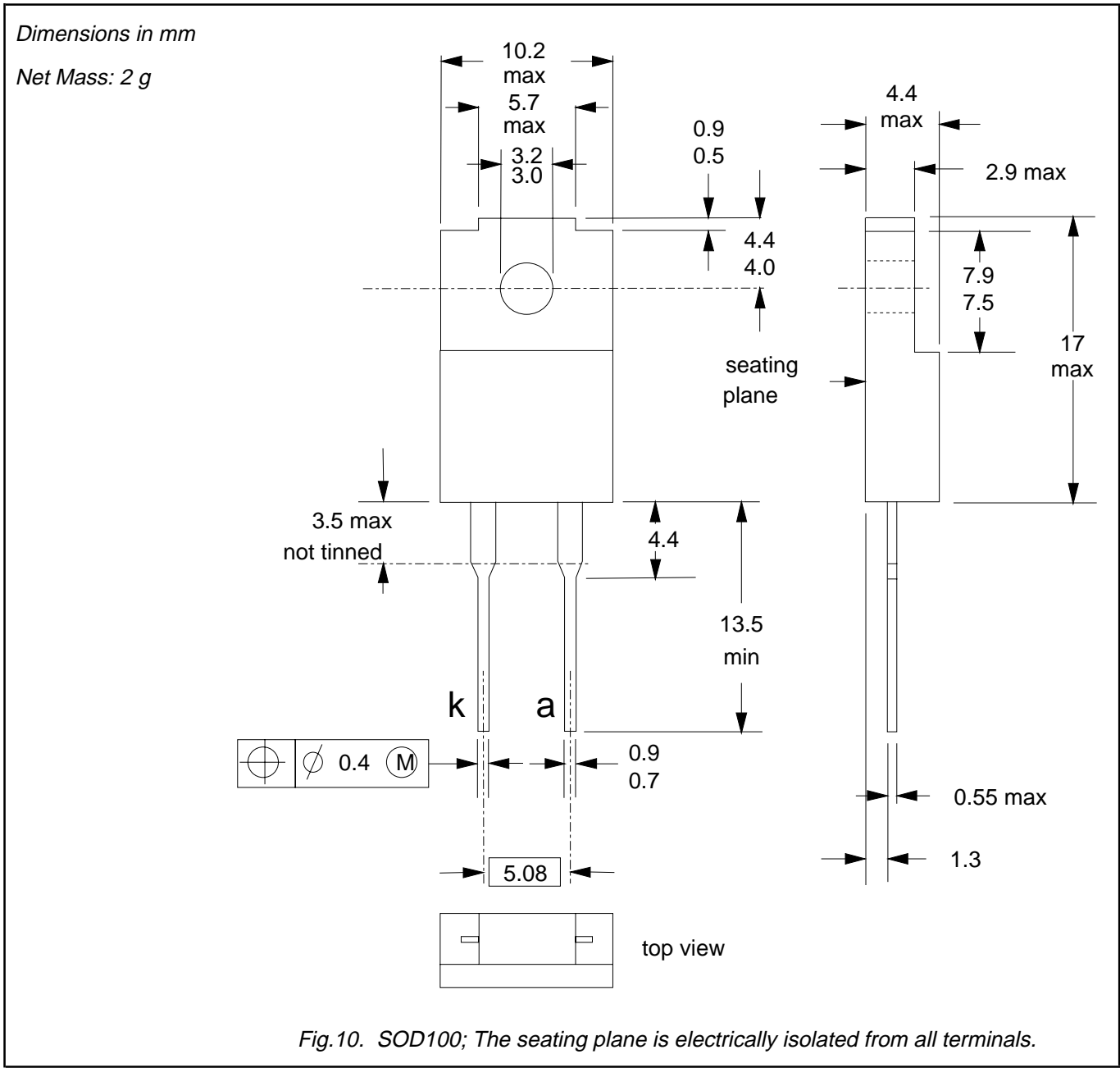


Fig.8. Maximum  $Q_s$  at  $T_j = 25^\circ\text{C}$

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**MECHANICAL DATA**



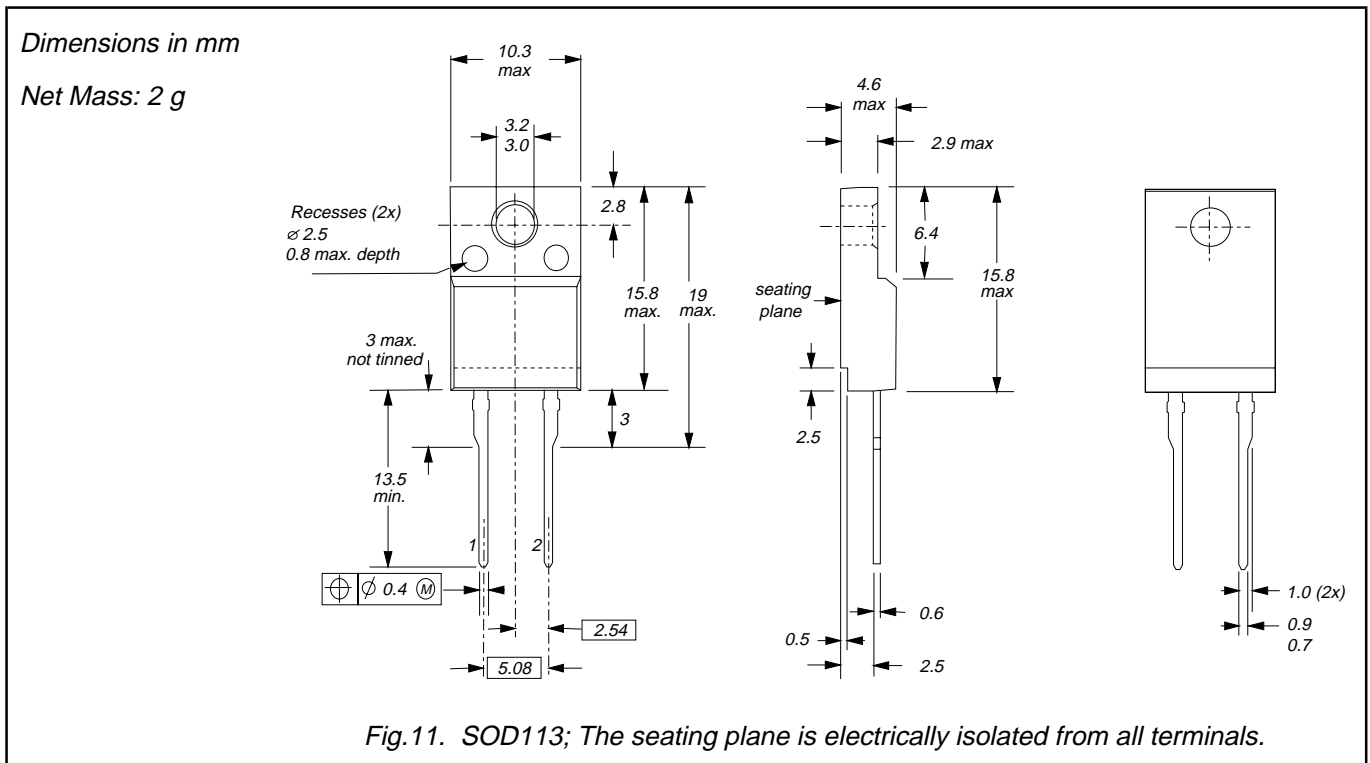
**Notes**

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

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**MECHANICAL DATA**



**Notes**

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**DEFINITIONS**

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
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