

## 1. General description

Dual ultrafast power diode in TO263 (D2PAK) plastic package.

## 2. Features and benefits

- Low on-state loss
- Ultra low leakage
- Fast switching
- Soft recovery characteristic minimizes power consuming oscillations
- High reverse surge capability
- High thermal cycling performance
- Low thermal resistance

## 3. Applications

- Home appliance power supply

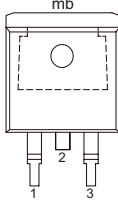
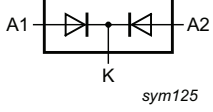
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
<b>Absolute maximum rating</b>						
$V_{RRM}$	repetitive peak reverse voltage		200			V
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 143$ °C; both diodes conducting; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	20			A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25$ $\mu$ s; $T_{mb} \leq 151$ °C; square-wave pulse ; per diode	20			A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; per diode; <a href="#">Fig. 4</a>	125			A
		$t_p = 8.3$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; per diode	137			A
$I_{RRM}$	repetitive peak reverse current	square-wave pulse; $f = 1$ kHz; $t_p = 2$ $\mu$ s; per diode	0.2			A
$V_{ESD}$	electrostatic discharge voltage	all pin; human body model; $C = 250$ pF; $R = 1.5$ k $\Omega$	8			kV
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 20$ A; $T_J = 25$ °C; per diode; <a href="#">Fig. 6</a>	-	1.06	1.15	V
		$I_F = 8$ A; $T_J = 150$ °C; per diode; <a href="#">Fig. 6</a>	-	0.76	0.85	V
<b>Dynamic characteristics</b>						
$t_{rr}$	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $di_F/dt = 100$ A/ $\mu$ s; $T_J = 25$ °C; per diode; <a href="#">Fig. 7</a>	-	18	25	ns

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode		
2	K	cathode		
3	A	anode		
mb	mb	mounting base; connected to cathod		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BYV32EB-200P	TO-263	plastic single-ended surface-mounted package (DPAK); 3-leads (one lead cropped)	DPAK

## 7. Marking

Table 4. Marking codes

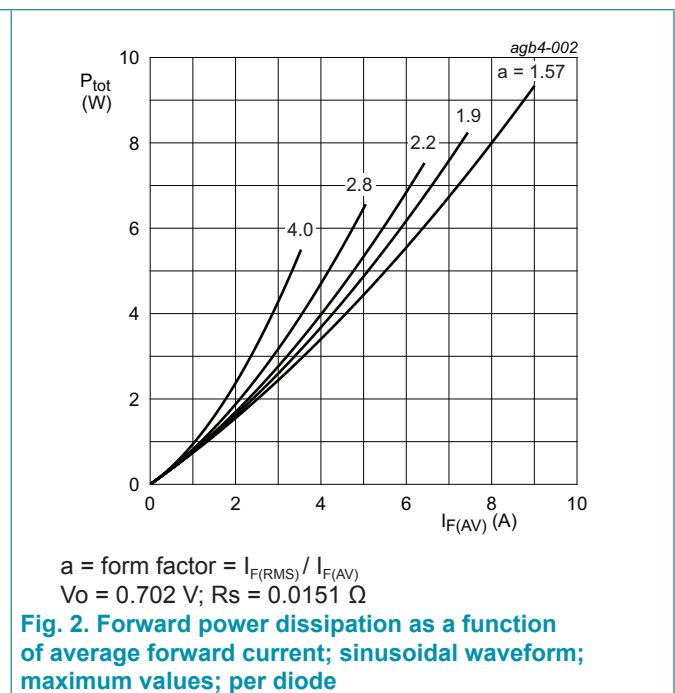
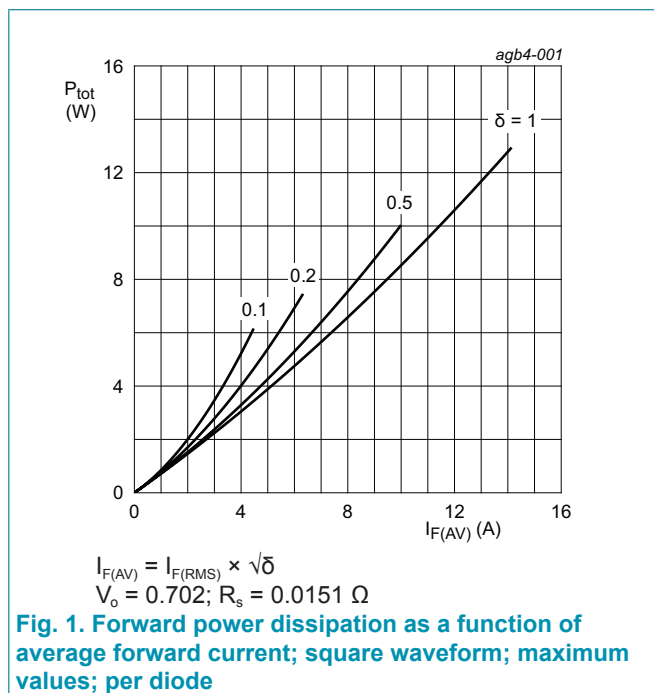
Type number	Marking codes
BYV32EB-200P	BYV32EB-200P

## 8. Limiting values

**Table 5. Limiting values**

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

Symbol	Parameter	Conditions	Values	Unit
$V_{RRM}$	repetitive peak reverse voltage		200	V
$V_{RWM}$	crest working reverse voltage		200	V
$V_R$	reverse voltage	DC	200	V
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 143\text{ }^\circ\text{C}$ ; both diodes conducting; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	20	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25\text{ }\mu\text{s}$ ; $T_{mb} \leq 151\text{ }^\circ\text{C}$ ; square-wave pulse ; per diode	20	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse; per diode; <a href="#">Fig. 4</a>	125	A
		$t_p = 8.3\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse; per diode	137	A
$I_{RRM}$	repetitive peak reverse current	square-wave pulse; $f = 1\text{ kHz}$ ; $t_p = 2\text{ }\mu\text{s}$ ; per diode	0.2	A
$I_{RSM}$	non-repetitive peak reverse current	square-wave pulse; $t_p = 100\text{ }\mu\text{s}$ ; per diode	0.2	A
$T_{stg}$	storage temperature		-65 to 175	$^\circ\text{C}$
$T_j$	junction temperature		175	$^\circ\text{C}$
$V_{ESD}$	electrostatic discharge voltage	all pin; human body model; $C = 250\text{ pF}$ ; $R = 1.5\text{ k}\Omega$	8	8kV



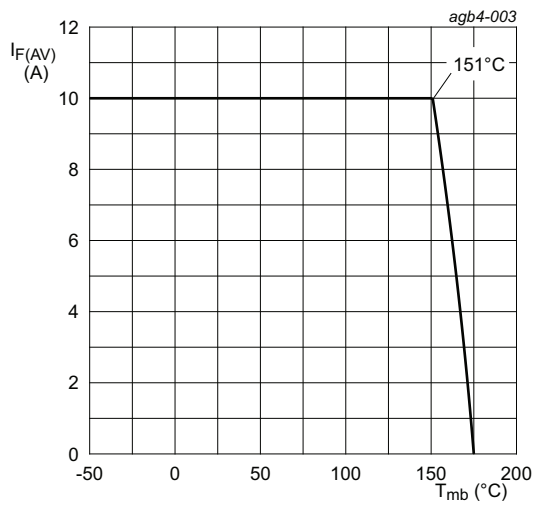


Fig. 3. Forward current as a function of mounting base temperature; maximum values; per diode

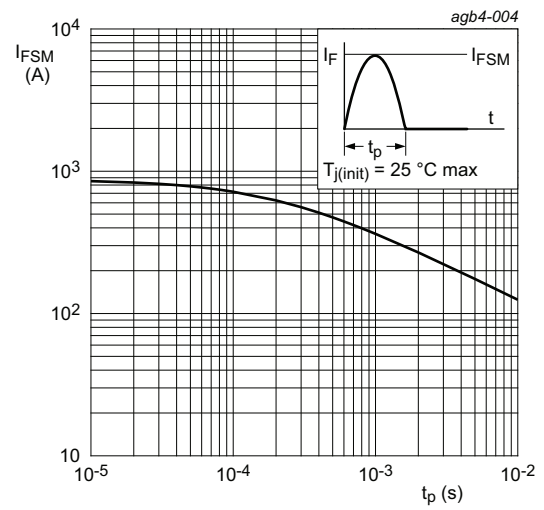


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

### 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	per diode; <a href="#">Fig. 5</a>	-	-	2.4	K/W
		both diodes conducting; <a href="#">Fig. 5</a>	-	-	1.6	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	50	-	K/W

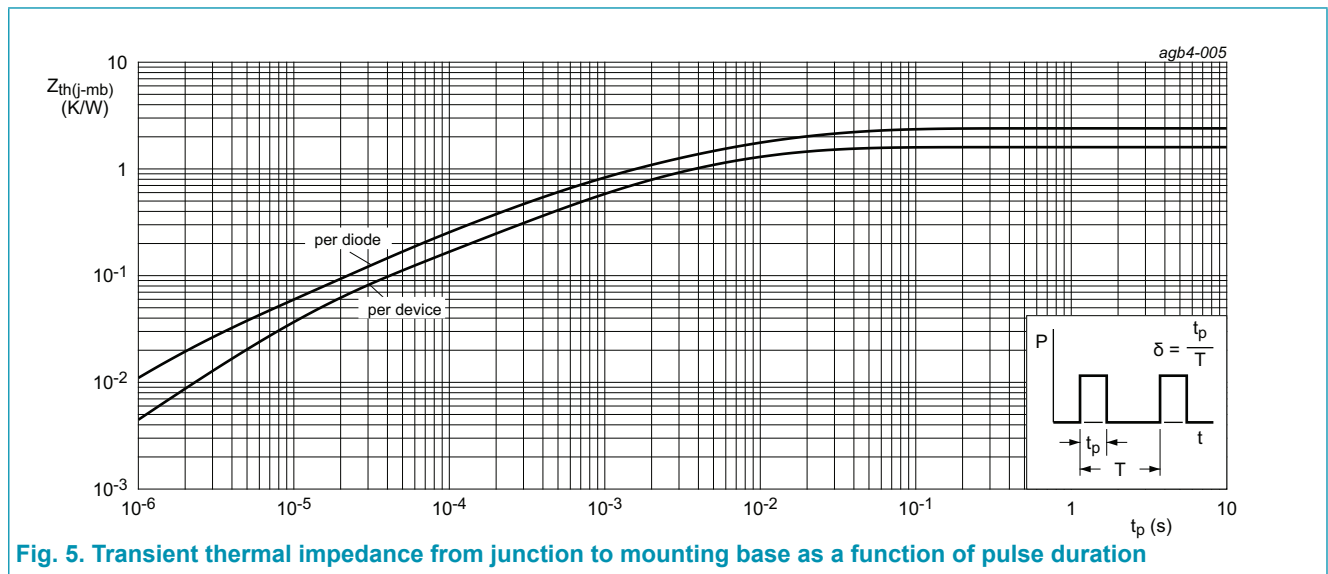
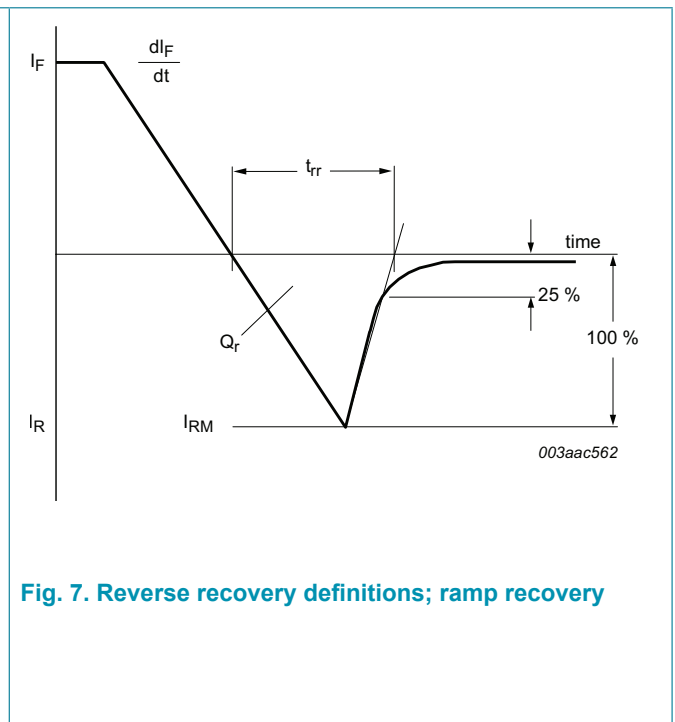
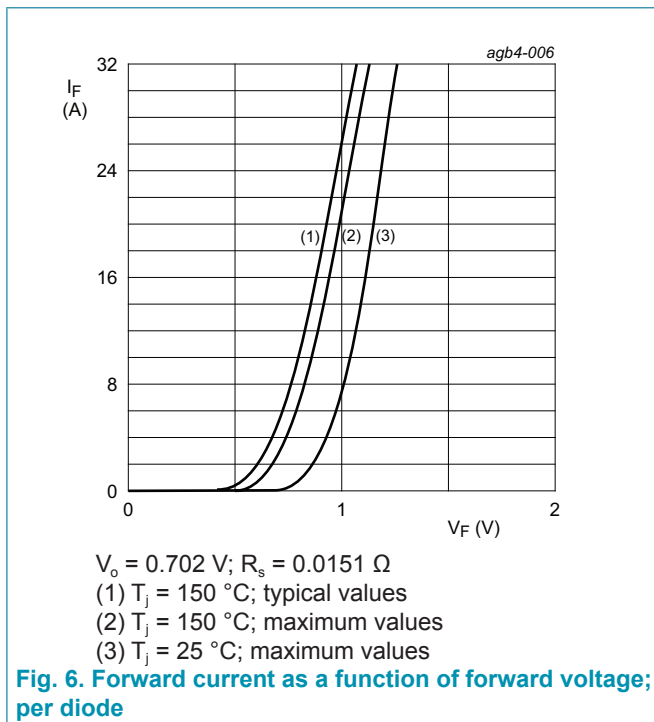


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

### 10. Characteristics

Table 7. Characteristics

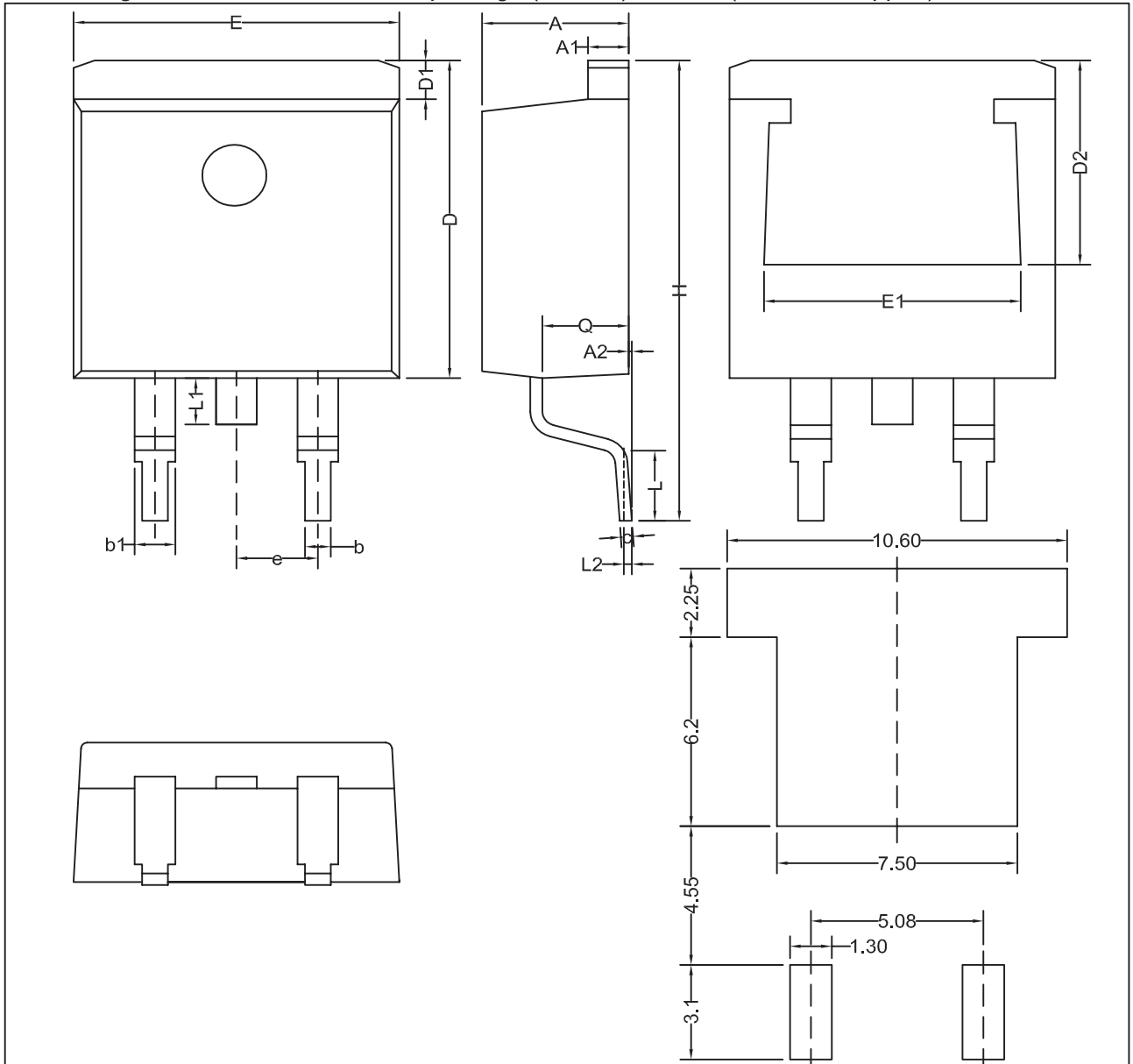
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward current	$I_F = 20 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>	-	1.06	1.15	V
		$I_F = 10 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>	-	0.95	-	V
		$I_F = 8 \text{ A}; T_j = 150 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>	-	0.76	0.85	V
$I_R$	reverse current	$V_R = 200 \text{ V}; T_j = 25 \text{ }^\circ\text{C};$ per diode	-	0.3	5	$\mu\text{A}$
		$V_R = 200 \text{ V}; T_j = 150 \text{ }^\circ\text{C};$ per diode	-	70	250	$\mu\text{A}$
<b>Dynamic characteristics</b>						
$Q_r$	reverse charge	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a>	-	14.5	-	nC
		$I_F = 2 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 20 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a>	-	13.5	-	nC
$t_{rr}$	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a>	-	18	25	ns
$I_{RM}$	peak reverse recovery current	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a>	-	1.7	-	A



### 11. Package outline

Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped)

TO263



Recommended Footprint

	A	A1	A2	b	b1	c	D	D1	D2	e	E	E1	H	L	L1	L2	Q
min	4.10	1.22	0.00	0.60	1.05	0.34	---	1.20	6.60	2.54 (BSC)	9.70	7.80	14.80	2.10	---	0.25 (BSC.)	2.20
max	4.70	1.40	0.25	0.90	1.45	0.64	11.00	1.60	---	---	10.30	---	15.80	2.90	1.75	---	2.79

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### Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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## 13. Contents

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1. General description.....	1
2. Features and benefits .....	1
3. Applications .....	1
4. Quick reference data .....	1
5. Pinning information.....	2
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values .....	3
9. Thermal characteristics .....	5
10. Characteristics.....	6
11. Package outline .....	7
12. Legal information .....	8
13. Contents .....	10

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