

### Description

This single rectifier is based on a proprietary technology, enabling to achieve the best in class  $V_F/I_R$  trade-off for a given silicon surface.

Packaged in PowerFLAT™ 5x6, this device is intended to be used in rectification and freewheeling operations in switch-mode power supplies.

Table 1: Device summary

Symbol	Value
$I_{F(AV)}$	20 A
$V_{RRM}$	60 V
$T_j$ (max.)	+150 °C
$V_F$ (typ.)	350 mV

### Features

- ST proprietary process
- Stable leakage current over reverse voltage
- Low forward voltage drop
- High frequency operation

 TM: PowerFLAT is a trademark of STMicroelectronics

# 1 Characteristics

**Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified, anode terminals short circuited)**

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		60	V
I <sub>F(RMS)</sub>	Forward rms current		45	A
I <sub>F(AV)</sub>	Average forward current δ = 0.5, square wave	T <sub>C</sub> = 115 °C	20	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	180	A
T <sub>stg</sub>	Storage temperature range		-65 to +175	°C
T <sub>j</sub>	Maximum operating junction temperature <sup>(1)</sup>		+150	°C

**Notes:**

<sup>(1)</sup>(dP<sub>tot</sub>/dT<sub>j</sub>) < (1/R<sub>th(j-a)</sub>) condition to avoid thermal runaway for a diode on its own heatsink.

**Table 3: Thermal resistance parameters**

Symbol	Parameter	Value	Unit
R <sub>th(j-c)</sub>	Junction to case	2.6	°C/W

**Table 4: Static electrical characteristics, anode terminals short circuited**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	-		800	μA
		T <sub>j</sub> = 125 °C		-	30	70	mA
V <sub>F</sub> <sup>(2)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 10 A	-	0.380	0.425	V
		T <sub>j</sub> = 125 °C		-	0.350	0.400	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 20 A	-	0.465	0.510	
		T <sub>j</sub> = 125 °C		-	0.465	0.505	

**Notes:**

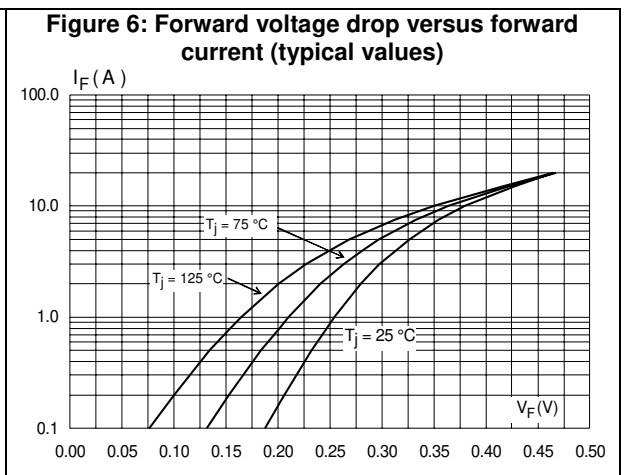
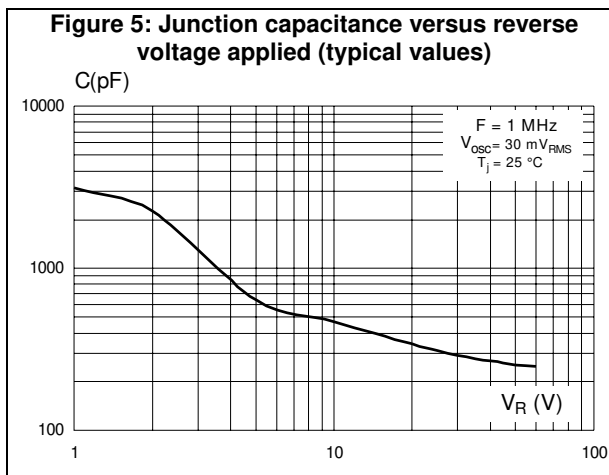
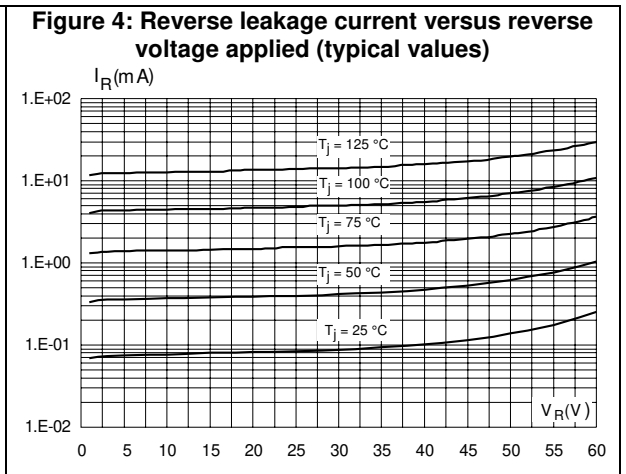
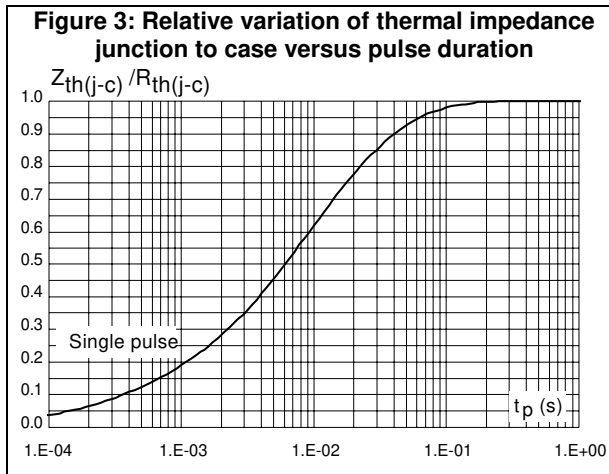
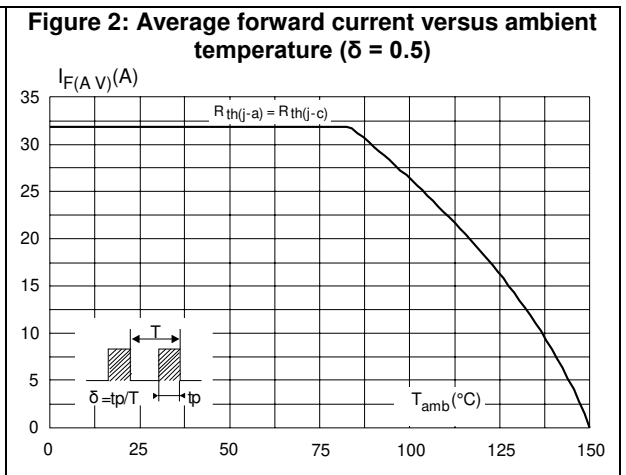
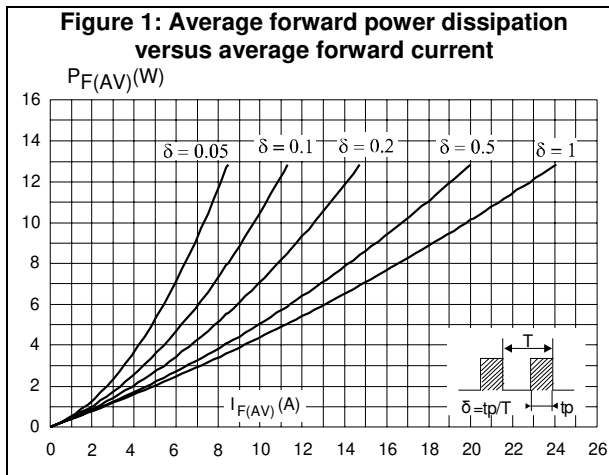
<sup>(1)</sup>Pulse test: t<sub>p</sub> = 5 ms, δ < 2%

<sup>(2)</sup>Pulse test: t<sub>p</sub> = 380 μs, δ < 2%

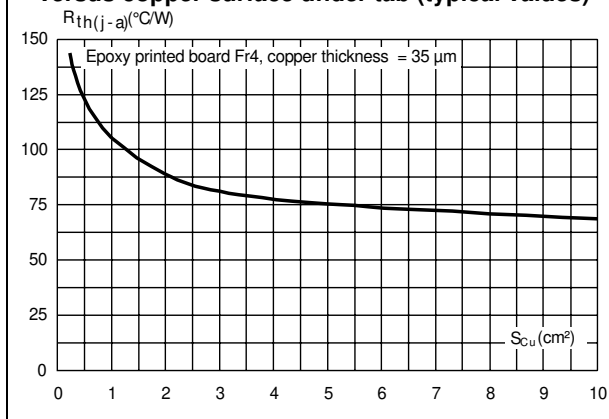
To evaluate the conduction losses use the following equation:

$$P = 0.295 \times I_{F(AV)} + 0.0105 I_{F(RMS)}^2$$

# 1.1 Characteristics (curves)



**Figure 7: Thermal resistance junction to ambient versus copper surface under tab (typical values)**



## 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

- Epoxy meets UL 94,V0
- Cooling method: by conduction (C)

### 2.1 PowerFLAT™ 5x6 8L package information

Figure 8: PowerFLAT™ 5x6 8L package outline

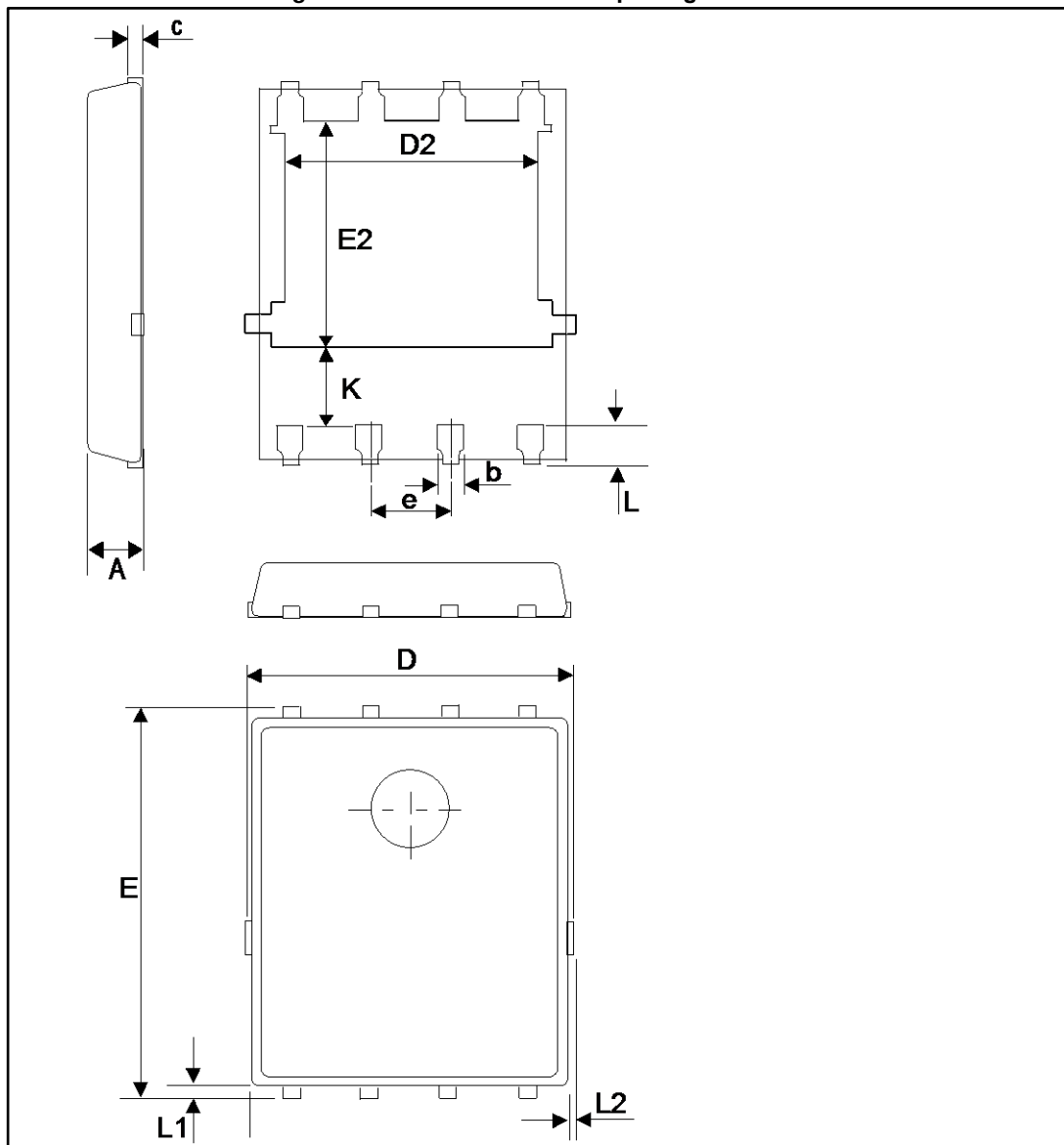
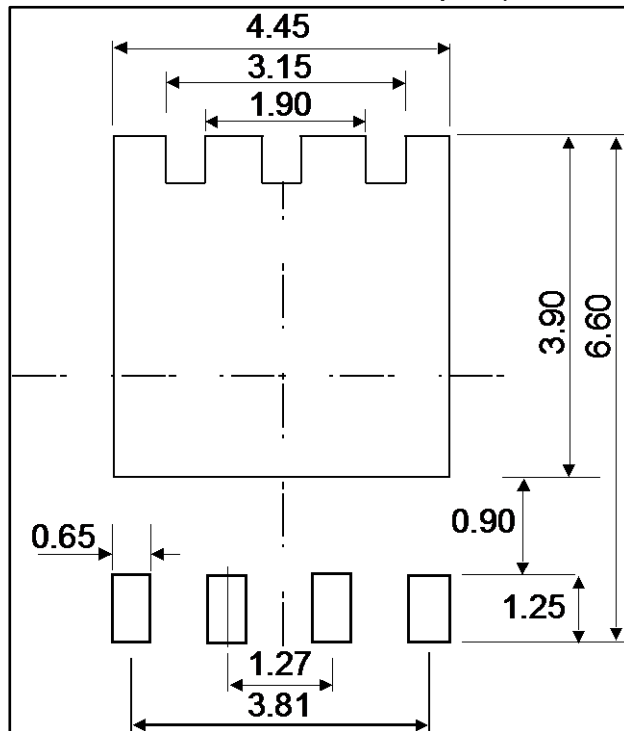


Table 5: PowerFLAT™ 5x6 8L mechanical data

Ref	Dim.					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.80		1.00	0.031		0.039
b	0.30		0.50	0.011		0.019
c		0.25			0.10	
D			5.10			0.201
D2	3.91		4.11	0.153		0.162
e		1.27			0.05	
E	5.90		6.10	0.232		0.240
E2	3.34		3.54	0.131		0.139
K	1.10		1.575	0.043		0.062
L	0.50		0.80	0.019		0.031
L1	0.06		0.20	0.002		0.008
L2			0.10			0.004

Figure 9: PowerFLAT™ 5x6 8L recommended footprint (dimensions are in mm)



### 3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
FERD20U60DJFD-TR	FD20U60	PowerFLAT 5x6	0.9 g	3000	Tape and reel

### 4 Revision history

Table 7: Document revision history

Date	Revision	Changes
11-Feb-2015	1	Initial release.
27-Sep-2017	2	Updated description in cover page. Minor text changes.

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