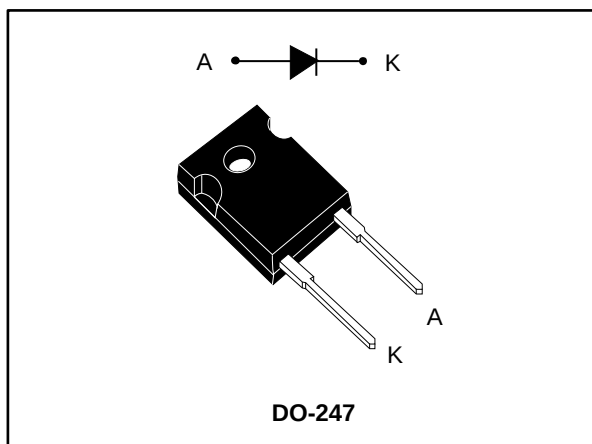


Automotive high voltage rectifier for bridge applications

Datasheet - production data



Description

The high quality design of this diode results in a device with consistently reproducible characteristics and intrinsic ruggedness. These characteristics make it ideal for heavy duty applications that demand long term reliability like automotive applications.

Thanks to its ultra-low conduction losses, this diode is especially suitable for use as input bridge diode in battery chargers.

Table 1: Device summary

Symbol	Value
$I_{F(AV)}$	60 A
V_{RRM}	1200 V
V_F (typ.)	0.95 V
T_j	-40 to +175 °C

Features

- AEC-Q101 qualified
- Ultra-low conduction losses
- Ultra-low reverse losses
- High junction temperature capability
- V_{RRM} guaranteed from -40 to +175 °C
- ECOPACK®2 compliant component
- PPAP capable



1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{RSM}	Non-repetitive surge reverse voltage	1500	V
V_{RRM}	Repetitive peak reverse voltage	$T_j = -40\text{ °C to }+175\text{ °C}$	V
$I_{F(RMS)}$	Forward rms current	90	A
$I_{F(AV)}$	Average forward current	$T_C = 135\text{ °C},$ $\delta = 0.5\text{ square wave}$	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms sinusoidal}$	A
T_{stg}	Storage temperature range	-65 to +175	°C
T_j	Operating junction temperature range	-40 to +175	°C

Table 3: Thermal parameters

Symbol	Parameter	Max. value	Unit
$R_{th(j-c)}$	Junction to case	0.45	°C/W

Table 4: Static electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$	-	5	μA
		$T_j = 150\text{ °C}$		-	25	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 60\text{ A}$	-	1.05	V
		$T_j = 150\text{ °C}$		-	0.95	

Notes:

⁽¹⁾Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$

⁽²⁾Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.96 \times I_{F(AV)} + 0.004 \times I_{F(RMS)}^2$$

Characteristics (curves)

Figure 1: Average forward power dissipation versus average forward current

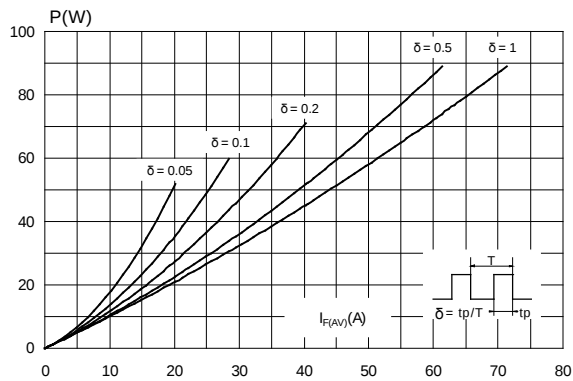


Figure 2: Forward voltage drop versus forward current (typical values)

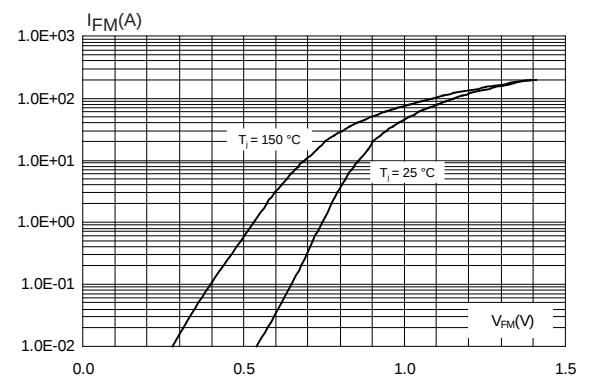


Figure 3: Forward voltage drop versus forward current (maximum values)

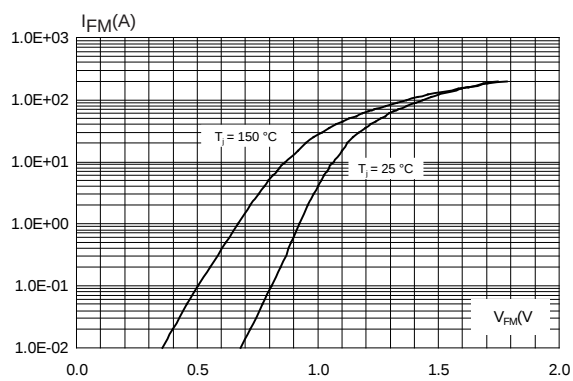


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration

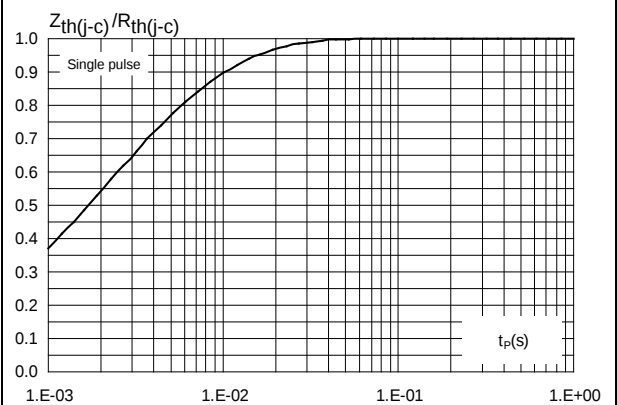
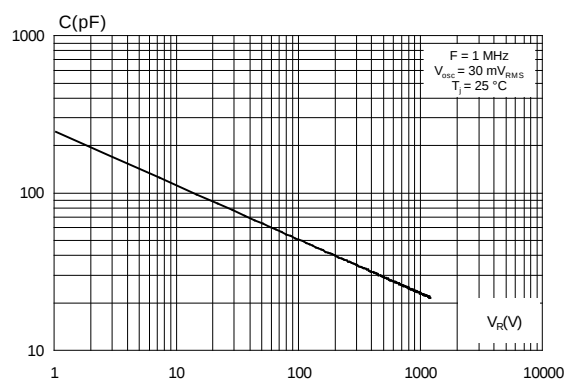


Figure 5: Junction capacitance versus reverse voltage applied (typical values)



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. ECOPACK® is an ST trademark.

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.55 N·m
- Maximum torque value: 1.0 N·m

2.1 DO-247 package information

Figure 6: DO-247 package outline

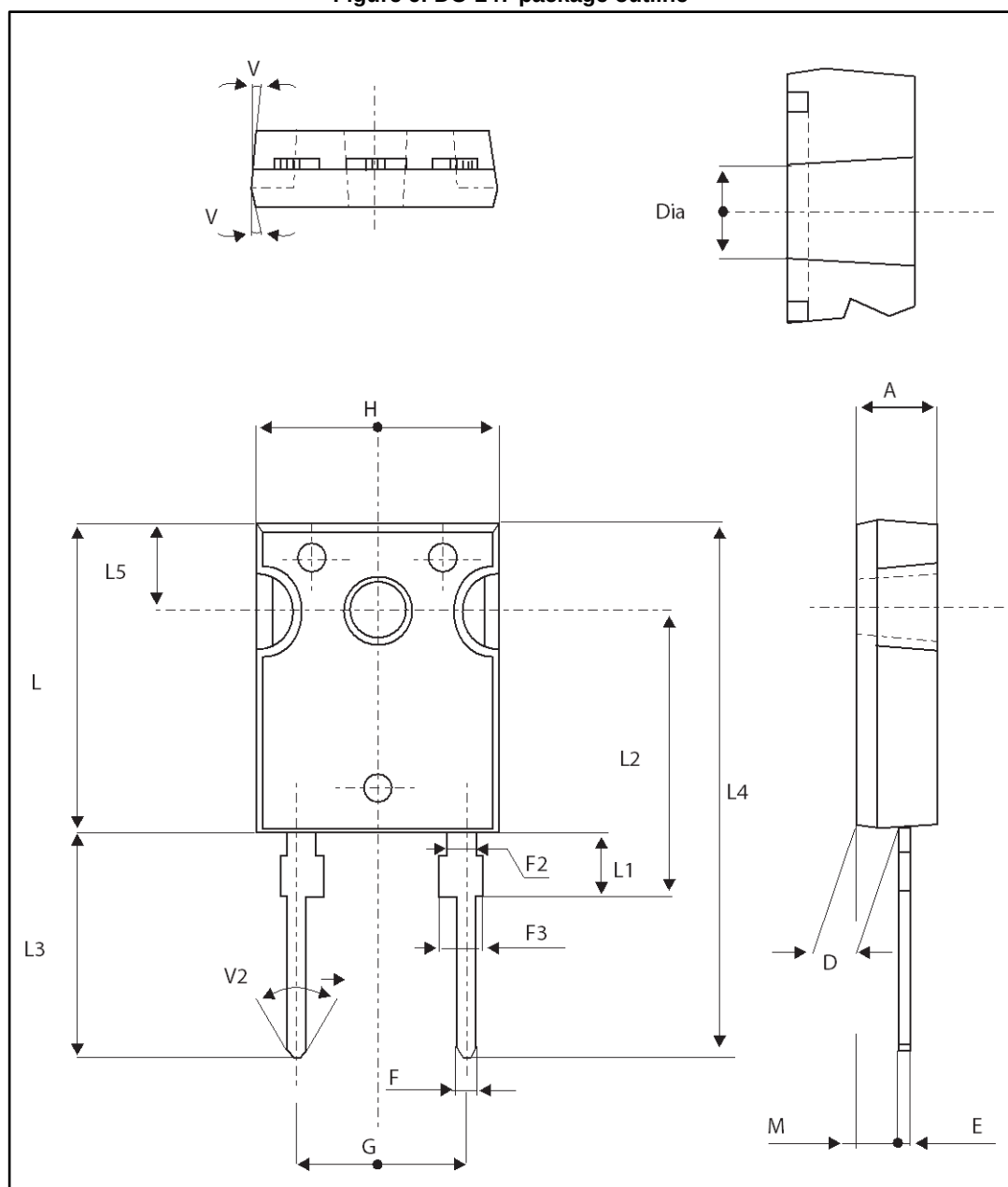


Table 5: DO-247 package mechanical data

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.85	5.15	0.191	0.203
D	2.20	2.60	0.086	0.102
E	0.40	0.80	0.015	0.031
F	1.00	1.40	0.039	0.055
F2	2.00 typ.		0.078 typ.	
F3	2.00	2.40	0.078	0.094
G	10.90 typ.		0.429 typ.	
H	15.45	15.75	0.608	0.620
L	19.85	20.15	0.781	0.793
L1	3.70	4.30	0.145	0.169
L2	18.50 typ.		0.728 typ.	
L3	14.20	14.80	0.559	0.582
L4	34.60 typ.		1.362 typ.	
L5	5.50 typ.		0.216 typ.	
M	2.00	3.00	0.078	0.118
V	5°		5°	
V2	60°		60°	
Dia.	3.55	3.65	0.139	0.143

3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STBR6012WY	STBR6012WY	DO-247	4.4 g	30	Tube

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
07-Nov-2016	1	First issue.

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