1 Characteristics

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

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			45	V
$I_{F(RMS)}$	Forward rms current			30	A
$I_{F(AV)}$	Average forward current δ = 0.5, square wave	T_C = 160 °C	Per diode	12.5	A
I_{FSM}	Surge non repetitive forward current		t_p = 10 ms sinusoidal	200	A
I_{RRM}	Repetitive peak reverse current		t_p = 2 µs square, F = 1 kHz	1	A
I_{RSM}	Non repetitive peak reverse current		t_p = 100 µs square	2	A
P_{ARM}(1)	Repetitive peak avalanche power		t_p = 10 µs, T_j = 125 °C	340	W
T_{stg}	Storage temperature range			-65 to +175	°C
T_j	Maximum operating junction temperature (2)			-40 to +175	
dV / dt	Critical rate of rise reverse voltage			10000	V / µs

Notes:

(1)For pulse time duration deratings, please refer to Figure 3. More details regarding the avalanche energy measurements and diode validation in the avalanche are provided in the STMicroelectronics Application notes AN1768, “Admissible avalanche power of Schottky diodes” and AN2025, “Converter improvement using Schottky rectifier avalanche specification”.

(2)$(dP_{tot}/dT_j) < (1/R_{th(j-a)})$ condition to avoid thermal runaway for a diode on its own heatsink.

Table 3: Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.6	°C/W
		Total	1.1	
$R_{th(c)}$	Coupling		0.6	

When the diodes 1 and 2 are used simultaneously:

$\Delta T_{j\ (diode1)} = P_{(diode1)} \times R_{th(j-c)}$ (per diode) + $P_{(diode2)} \times R_{th(c)}$

Table 4: Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-		125	µA
		T_j = 125 °C		-	9	25	mA
V_F (1)	Forward voltage drop	T_j = 125 °C	I_F = 12.5 A	-	0.50	0.57	V
		T_j = 25 °C	I_F = 25 A	-		0.84	
		T_j = 125 °C		-	0.65	0.72	

Notes:

(1)Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.42 \times I_{F(AV)} + 0.012\ I_F{}^2{}_{(RMS)}$

1.1 Characteristics (curves)

Figure 1: Average forward power dissipation versus average forward current (per diode)

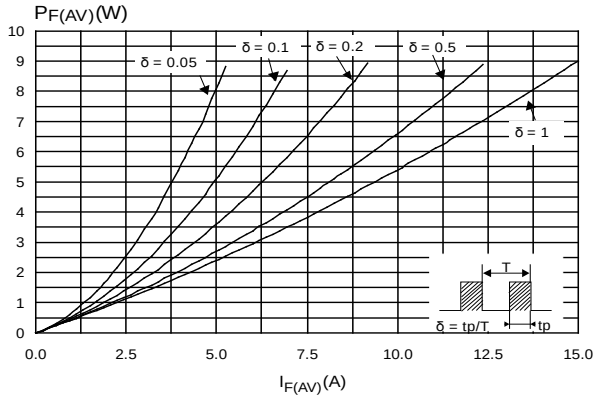


Figure 2: Average forward current versus ambient temperature (δ = 0.5, per diode)

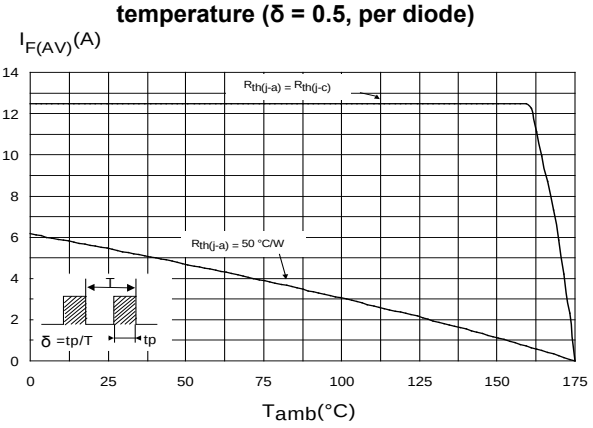


Figure 3: Normalized avalanche power deratings versus pulse duration (Tj = 125 °C)

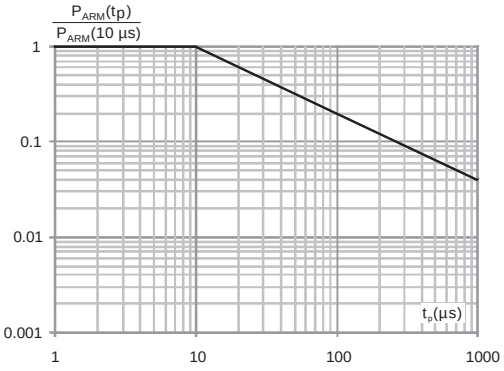


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration

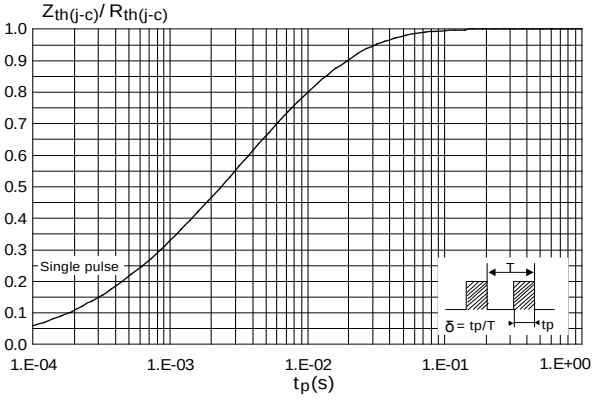


Figure 5: Junction capacitance versus reverse voltage applied (typical values, per diode)

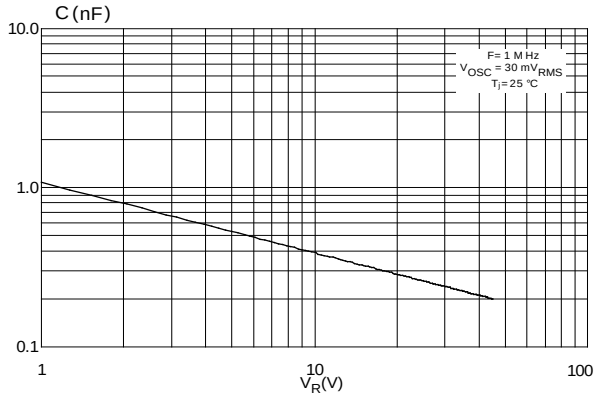


Figure 6: Reverse leakage current versus reverse voltage applied (typical values, per diode)

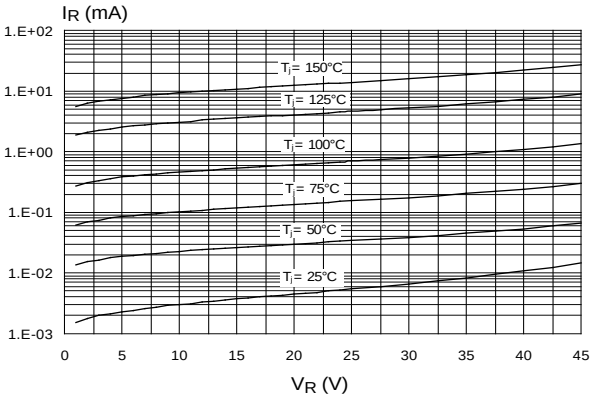


Figure 7: Forward voltage drop versus forward current

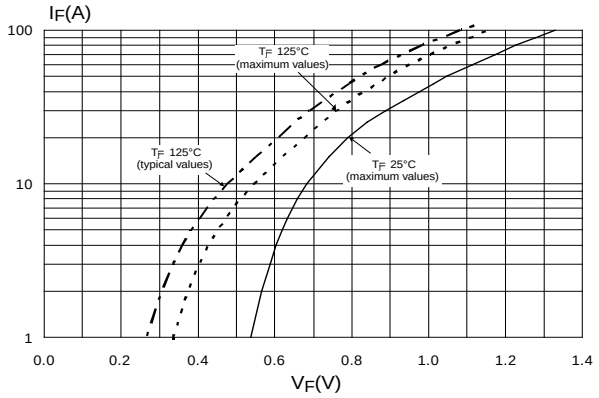
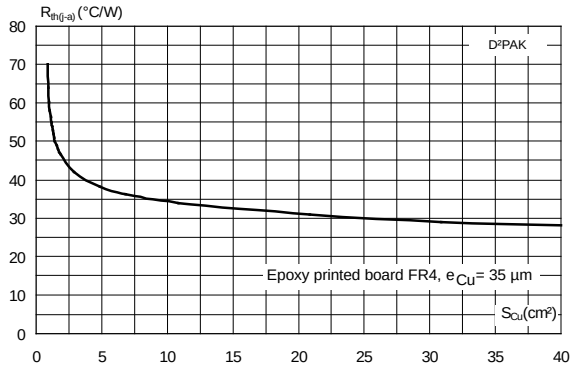


Figure 8: Thermal resistance junction to ambient versus copper surface under tab for D²PAK (typical values)



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.

2.1 D²PAK package information

Figure 9: D²PAK package outline

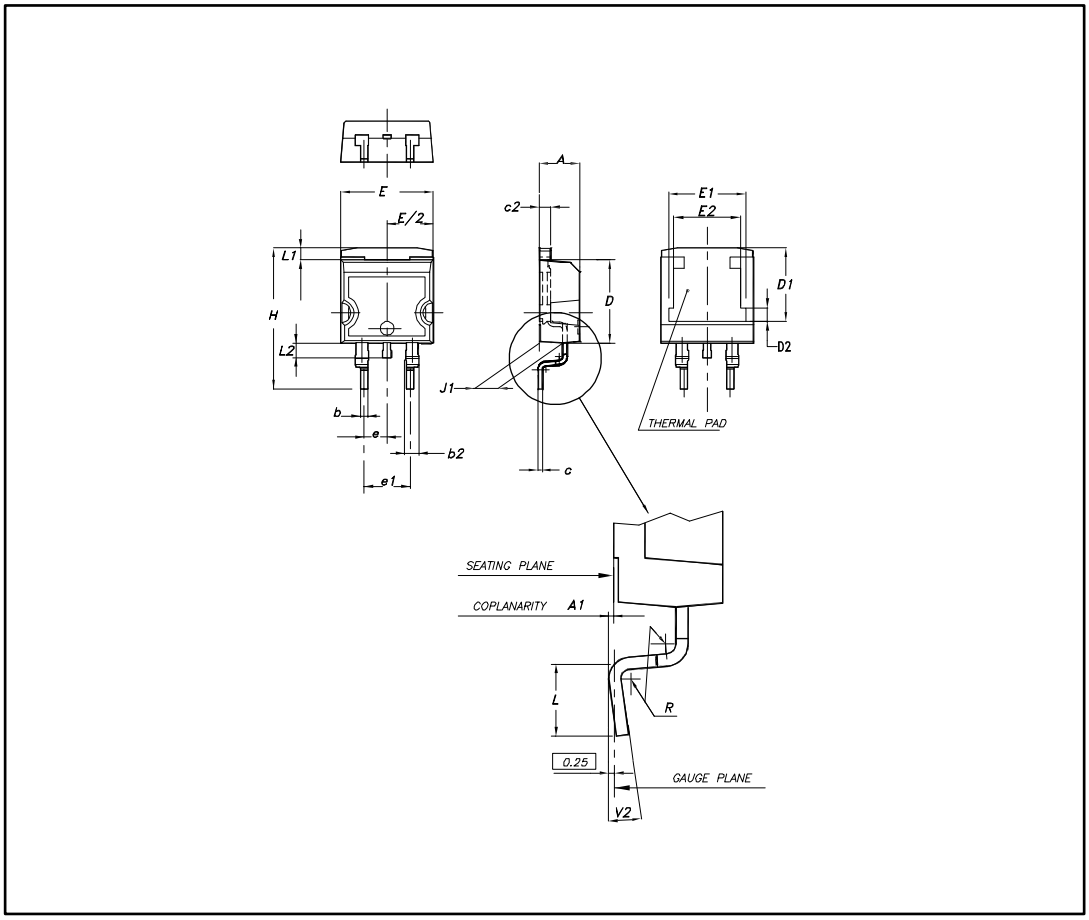
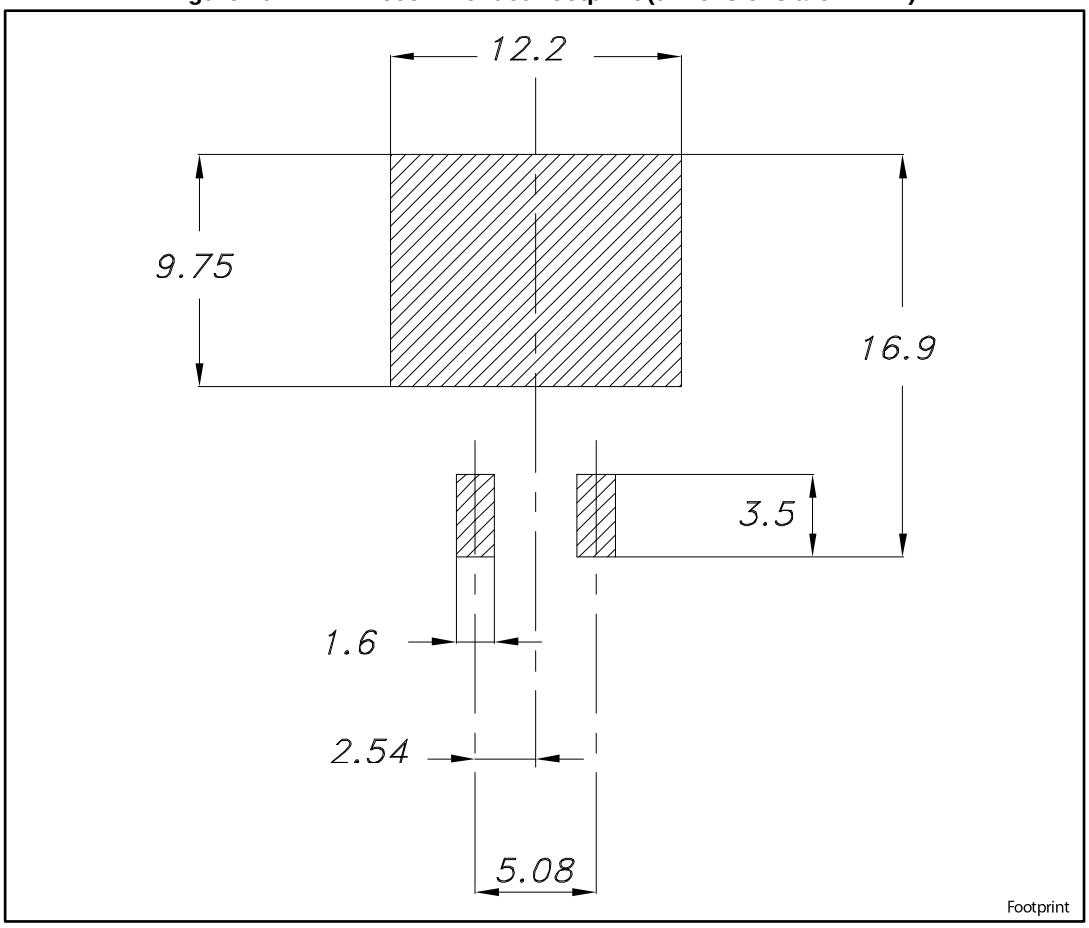


Table 5: D²PAK package mechanical data

Dim.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
A1	0.03		0.23	0.001		0.009
b	0.70		0.93	0.028		0.037
b2	1.14		1.70	0.045		0.067
c	0.45		0.60	0.018		0.024
c2	1.23		1.36	0.048		0.054
D	8.95		9.35	0.352		0.368
D1	7.50	7.75	8.00	0.295	0.305	0.315
D2	1.10	1.30	1.50	0.043	0.051	0.059
E	10		10.40	0.394		0.409
E1	8.50	8.70	8.90	0.335	0.343	0.350
E2	6.85	7.05	7.25	0.270	0.278	0.285
e		2.54			0.100	
e1	4.88		5.28	0.192		0.208
H	15		15.85	0.591		0.624
J1	2.49		2.69	0.098		0.106
L	2.29		2.79	0.090		0.110
L1	1.27		1.40	0.05		0.055
L2	1.30		1.75	0.051		0.069
R		0.4			0.016	
V2	0°		8°	0°		8°

Figure 10: D²PAK recommended footprint (dimensions are in mm)



3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS2545CGY-TR	STPS2545CGY	D²PAK	1.43 g	1000	Tape and reel

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
03-Nov-2011	1	Initial release.
28-Jun-2012	2	Corrected typographical error in *Table 3*.
05-Oct-2016	3	Updated *Figure 4: "Relative variation of thermal impedance junction to case versus pulse duration"* and *Figure 8: "Thermal resistance junction to ambient versus copper surface under tab for D²PAK (typical values)"* and *Table 2: "Absolute ratings (limiting values, per diode, at 25 °C, unless otherwise specified)"*.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.