1 Characteristics

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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(RMS)}$	Forward rms current		11	A
$I_{F(AV)}$	Average forward current δ = 0.5, square wave	T_c = 160 °C	3	A
		T_c = 155 °C	6	
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal	60	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	Per diode	5	°C/W
		Per device	3	
$R_{th(c)}$	Coupling		1	

When the two diodes 1 and 2 are used simultaneously:

ΔT_j(diode 1) = P (diode 1) x $R_{th(j-c)}$ (Per diode) + P (diode 2) x $R_{th(c)}$

Table 4: Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-		3	µA
		T_j = 125 °C		-	3	30	
V_F (2)	Forward voltage drop	T_j = 25 °C	I_F = 3 A	-	0.98	1.1	V
		T_j = 150 °C		-	0.8	0.95	
		T_j = 25 °C	I_F = 6 A	-	1.1	1.25	
		T_j = 150 °C		-	0.9	1.05	

Notes:

(1)Pulse test: t_p = 5 ms, δ < 2%

(2)Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses, use the following equation:

$P = 0.85 \times I_{F(AV)} + 0.033 \times I_{F^2(RMS)}$

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Table 5: Dynamic characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 1 A, dI_F/dt = -100 A/µs, V_R = 30 V, T_j = 25 °C	-	14	20	ns
		I_F = 1 A, dI_F/dt = -50 A/µs, V_R = 30 V, T_j = 25 °C	-	21	30	
I_{RM}	Reverse recovery current	I_F = 3 A, dI_F/dt = 200 A/µs, V_R = 160 V, T_j = 125 °C	-	4	5.5	A
t_{fr}	Forward recovery time	I_F = 3 A, dI_F/dt = 200 A/µs V_{FR} = 1.1 x V_{Fmax}, T_j = 25 °C	-	24		ns
V_{FP}	Forward recovery voltage	I_F = 3 A, dI_F/dt = 200 A/µs, T_j = 25 °C	-	3.7		V

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1.1 Characteristics (curves)

Figure 1: Peak current versus duty cycle (per diode)

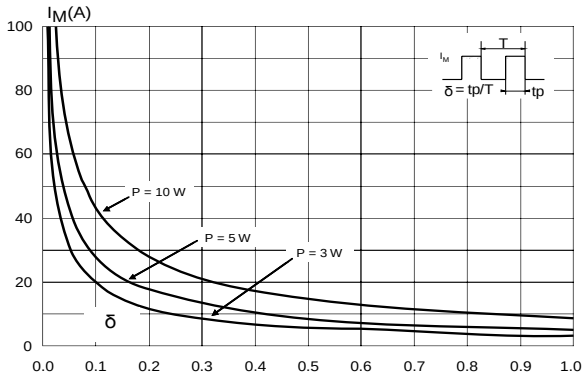

Figure 2: Forward voltage drop versus forward current (typical values, per diode)

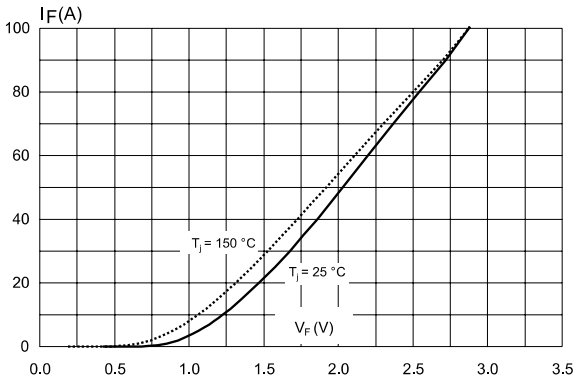

Figure 3: Forward voltage drop versus forward current (maximum values, per diode)

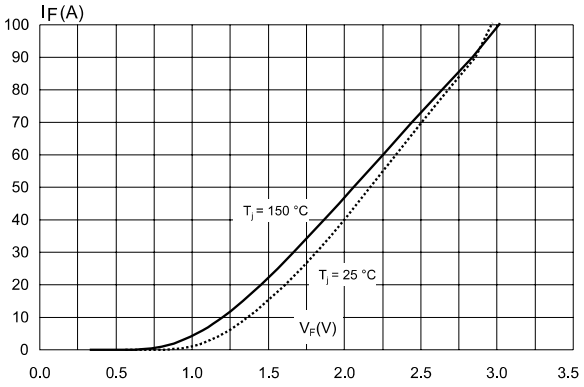

Figure 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode)

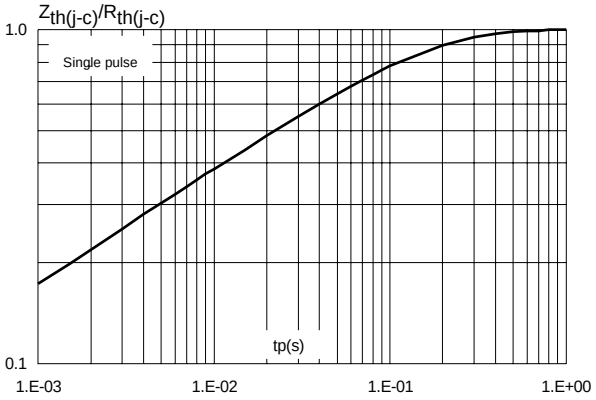

Figure 5: Junction capacitance versus reverse applied voltage (typical values, per diode)

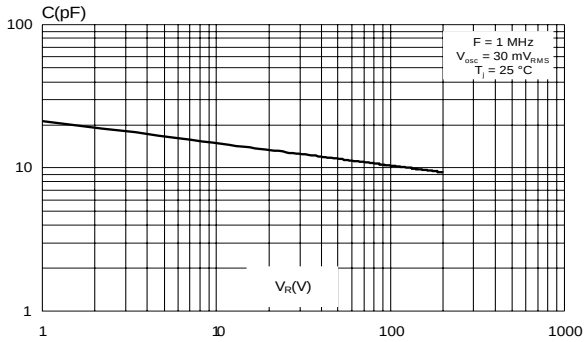

Figure 6: Reverse recovery charges versus dI_F/dt (typical values, per diode)

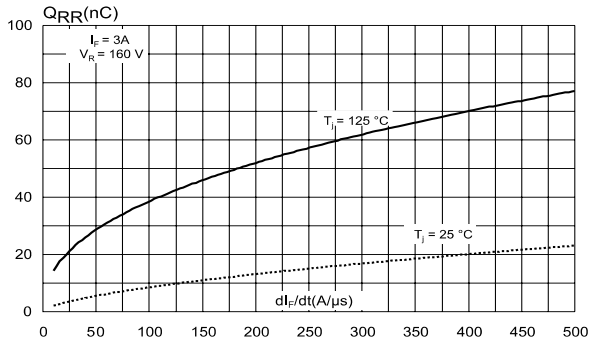

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Figure 7: Reverse recovery time versus dI_F/dt (typical values, per diode)

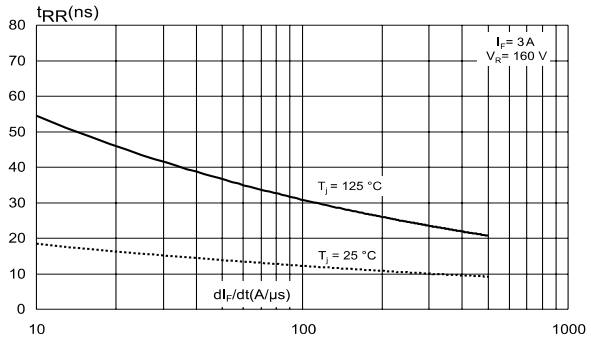


Figure 8: Reverse recovery current versus dI_F/dt (typical values, per diode)

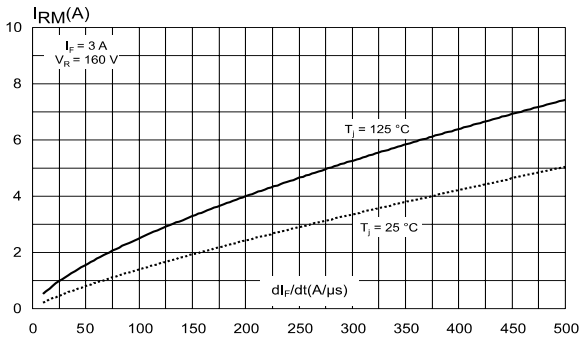


Figure 9: Dynamic parameters versus junction temperature

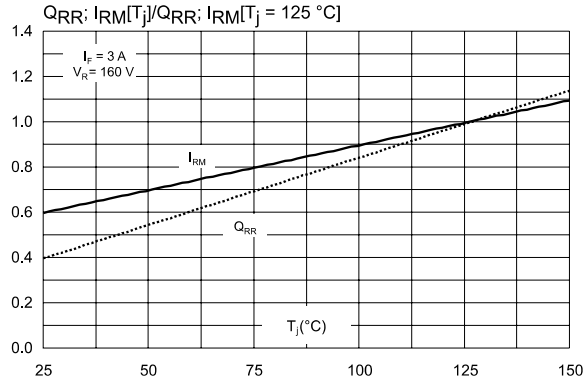
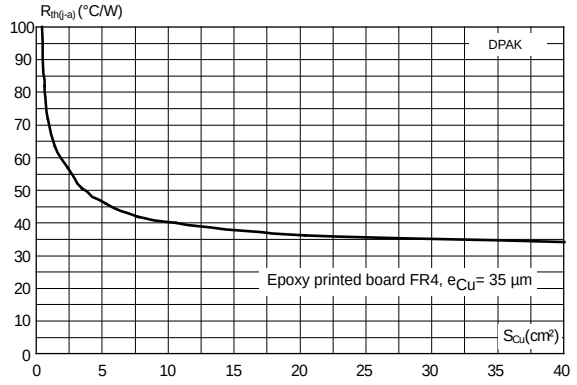


Figure 10: Thermal resistance junction to ambient versus copper surface under tab for DPAK package (typical values)



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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)

2.1 DPAK package information

Figure 11: DPAK package outline

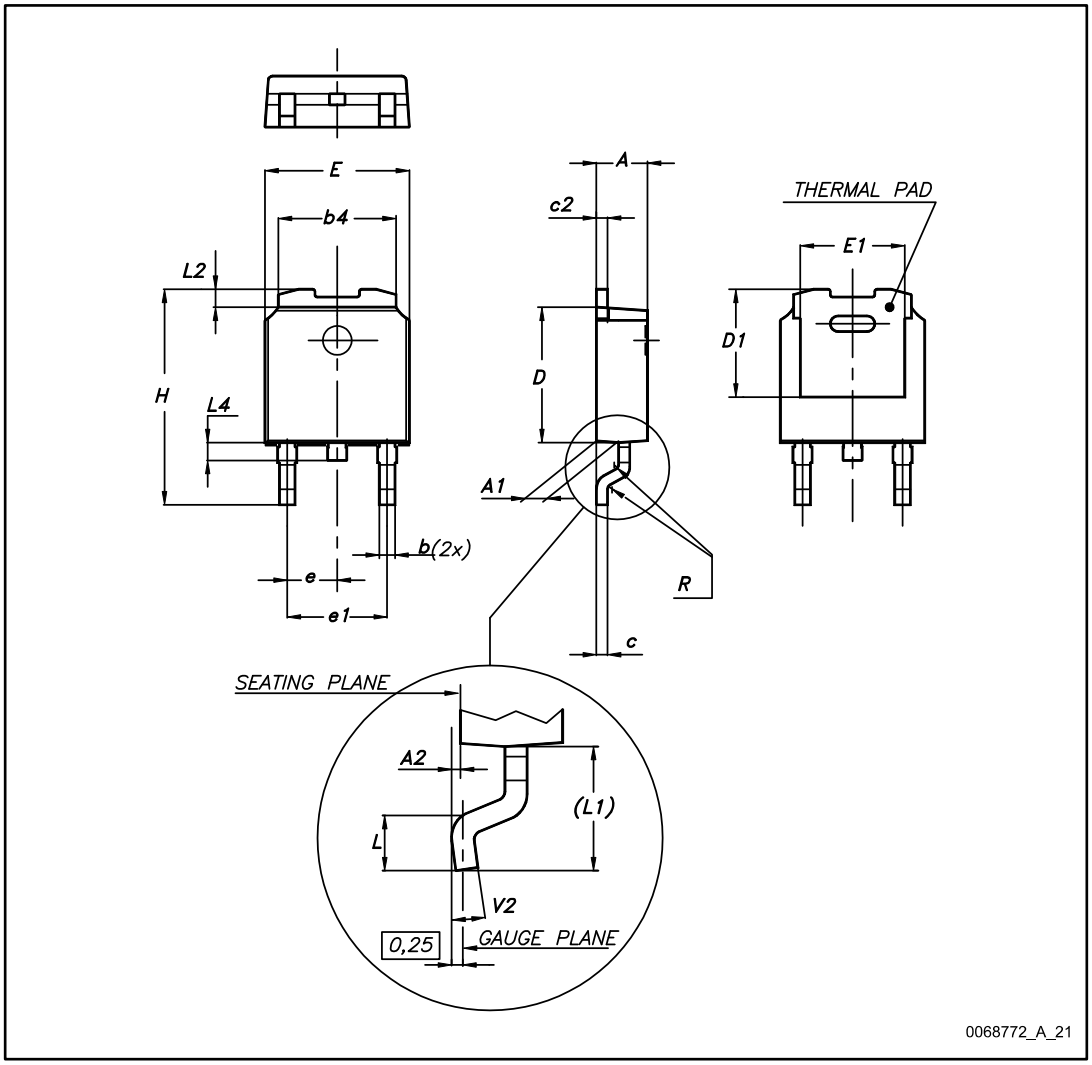

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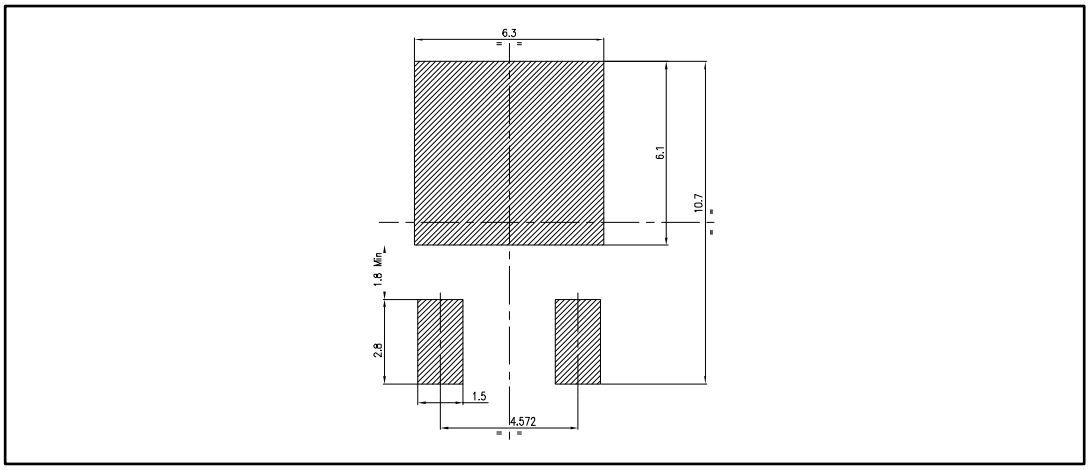
Table 6: DPAK mechanical data

Dim.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
b	0.64		0.90	0.025		0.035
b4	5.20		5.40	0.205		0.213
c	0.45		0.60	0.018		0.024
c2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
D1	4.95	5.10	5.25	0.195	0.201	0.207
E	6.40		6.60	0.252		0.260
E1	5.10	5.20	5.30	0.201	0.205	0.209
e	2.16	2.28	2.40	0.085	0.090	0.094
e1	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L	1.00		1.50	0.039		0.059
(L1)	2.60	2.80	3.00	0.102	0.110	0.118
L2	0.65	0.80	0.95	0.026	0.031	0.037
L4	0.60		1.00	0.024		0.039
R		0.20			0.008	
V2	0°		8°	0°		8°

Figure 12: DPAK recommended footprint (dimensions are in mm)



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3 Ordering information

Table 7: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STTH602CBY-TR	STTH6 02CBY	DPAK	0.30 g	2500	Tape and reel

4 Revision history

Table 8: Document revision history

Date	Revision	Changes
24-Oct-2012	1	First issue.
16-Mar-2017	2	Updated *Table 3: "Thermal parameters"*. Minor text changes.

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