

STPS2060C

High voltage power Schottky rectifier

Main product characteristics

I _{F(AV)}	2 x 10 A
V _{RRM}	60 V
T _j (max)	150° C
V _F (max)	0.7 V

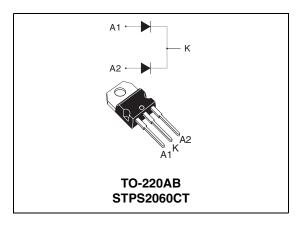
Description

High voltage dual Schottky rectifier suited for switch mode power supplies and other power converters.

Packaged in TO-220, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

Order code

Part Number	Marking	
STPS2060CT	STPS2060CT	



Features and benefits

- Negligible switching losses
- Low forward voltage drop
- Low capacitance
- High reverse avalanche surge capability
- Avalanche rated

Table 1. Absolute ratings (limiting values, per diode at 25° C, unless otherwise specified)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			60	V
I _{F(RMS)}	RMS forward current P		Per diode	20	Α
1=	$I_{F(AV)}$ Average forward current $\delta = 0.5$ $T_c = 135^{\circ}$ C		Per diode	10	Α
'F(AV)			Per device	20	^
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal	Per diode	200	Α
P _{ARM}	Repetitive peak avalanche power		Per device	10800	W
T _{stg}	Storage temperature range			-65 to + 150	°C
T _j	Maximum operating junction temperature (1)			150	°C

^{1.} $\frac{dPtot}{dTi} < \frac{1}{Rth(i-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

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Table 2. Thermal resistance

Symbol	Parameter	Value	Unit	
В	Junction to case	Per diode	1.6	
R _{th(j-c)}		Total	0.9	°C/W
R _{th(c)}		Coupling	0.15	

When the diodes 1 and 2 are used simultaneously:

$$\Delta \; T_{j}(\text{diode 1}) = P(\text{diode1}) \; x \; R_{th(j\text{-}c)}(\text{Per diode}) + P(\text{diode 2}) \; x \; R_{th(c)}$$

Table 3. Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I _R ⁽¹⁾	Reverse leakage current	T _j = 25° C	V _R = V _{RRM}			150	μΑ
'R`	Theverse leakage current	T _j = 125° C				100	mA
	Forward voltage drop	T _j = 25° C	I _F = 10 A			0.80	
V _F ⁽²⁾		T _j = 125° C	I _F = 10 A		0.60	0.70	V
VF`		T _j = 25° C	I _F = 20 A			0.94	V
		T _j = 125° C	I _F = 20 A		0.75	0.85	

^{1.} Pulse test: tp = 5 ms, δ < 2%

To evaluate the conduction losses use the following equation:

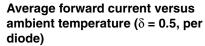
$$P = 0.55 \text{ x } I_{F(AV)} + 0.015 I_{F}^{2}_{(RMS)}$$

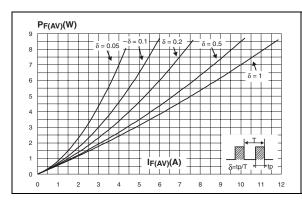
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^{2.} Pulse test: tp = 380 μ s, δ < 2%

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Figure 1. Conduction losses versus average Figure 2. Average current (per diode)





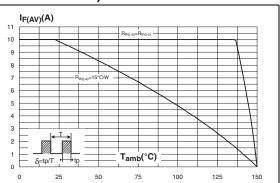
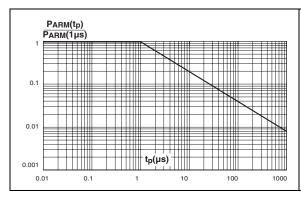


Figure 3. Normalized avalanche power derating versus pulse duration

Figure 4. Normalized avalanche power derating versus junction temperature



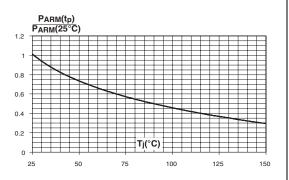
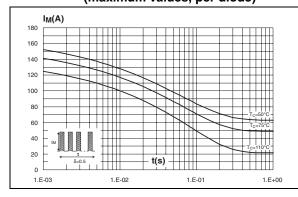
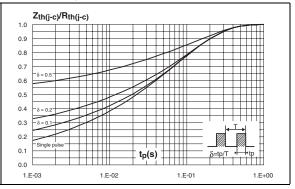


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

Figure 6. Relative variation of thermal impedance junction to case versus pulse duration

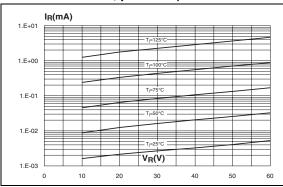




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Figure 7. Reverse leakage current versus reverse voltage applied (typical values, per diode)

Figure 8. Junction capacitance versus reverse voltage applied (typical values, per diode)



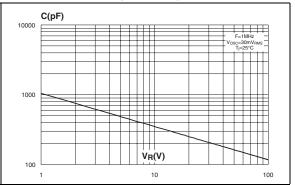
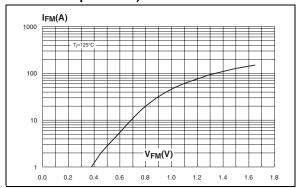


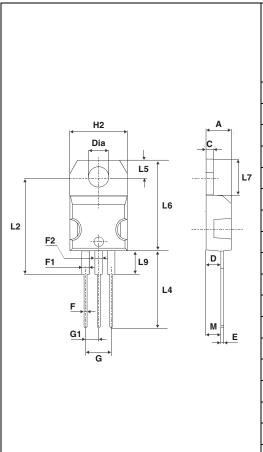
Figure 9. Forward voltage drop versus forward current (maximum values, per diode)



2 Package information

Epoxy meets UL94,V0

Table 4. TO-220AB dimensions



	Dimensions			
Ref.	Millimeters		Inc	hes
	Min.	Max.	Min.	Max.
Α	4.40	4.60	0.173	0.181
С	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
Е	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4	typ.	0.64	5 typ.
L4	13	14	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
М	2.6 typ.		0.10	2 typ.
Diam.	3.75	3.85	0.147	0.151

Cooling Method: C

Recommended torque value: 0.55 Nm

Maximum torque value: 0.70 Nm

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

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Ordering information STPS2060C

3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS2060CT	STPS2060CT	TO-220AB	2.2 g	50	Tube

4 Revision History

Date	Revision	Changes
25-Jul-2006	1	First issue.

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