STPS61L45C

Power Schottky rectifier

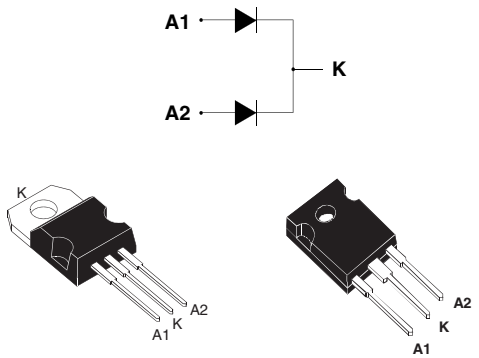
Features

- High current capability
- Avalanche rated
- Low forward voltage drop current
- High frequency operation

Description

Dual center tap schottky rectifier suited for high frequency switch mode power supplies.

Packaged in TO-247 and TO-220AB, this device provides desktop SMPS designers with a low forward voltage drop device, and reduced leakage current, with the objective of making the application compliant with environmental care standards, or suitable for 80+ requirements.



TO-220AB
STPS61L45CT

TO-247
STPS61L45CW

Table 1. Device summary

$I_{F(AV)}$	2 x 30 A
V_{RRM}	45 V
T_j (max)	150 °C
V_F(typ)	0.45 V

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
$I_{F(RMS)}$	RMS forward current			60	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	T_c = 120 °C T_c = 115 °C	Per diode Per device	30 60	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal		500	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs Tj = 25 °C		10000	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature (1)			150	°C

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

Table 3. Thermal resistances

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	1.3 0.75	°C/W
$R_{th(c)}$	Coupling		0.2	°C/W

When the diodes 1 and 2 are used simultaneously :
ΔTj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$.

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	$V_R = V_{RRM}$			1.5	mA
		T_j = 125 °C			190	400	
V_F(2)	Forward voltage drop	T_j = 25 °C	I_F = 5 A		0.35		V
		T_j = 125 °C			0.23		
		T_j = 25 °C	I_F = 15 A		0.43	0.50	
		T_j = 125 °C			0.34	0.40	
		T_j = 25 °C	I_F = 30 A		0.50	0.56	
		T_j = 125 °C			0.45	0.51	

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:
$P = 0.3 \times I_{F(AV)} + 0.007 \times I_F^2{}_{(RMS)}$

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

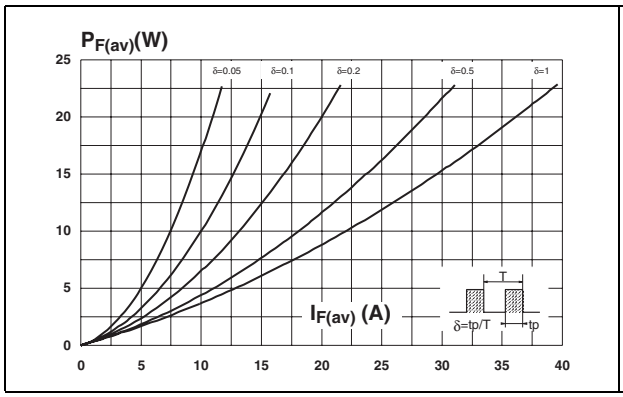


Figure 2. Average forward current versus ambient temperature (δ = 0.5), (per diode)

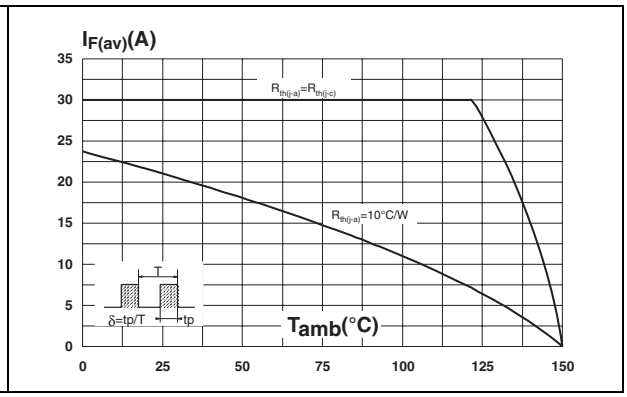


Figure 3. Normalized avalanche power derating versus pulse duration

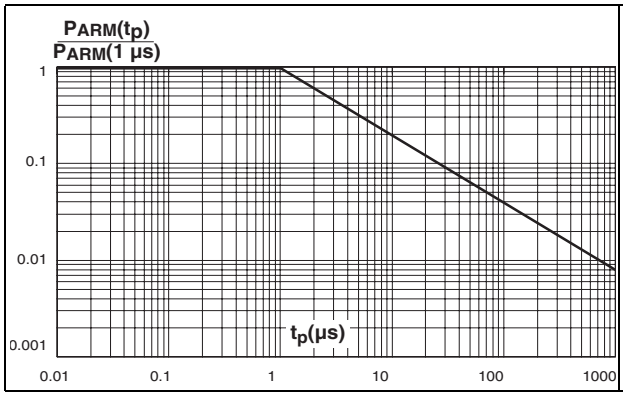


Figure 4. Normalized avalanche power derating versus junction temperature

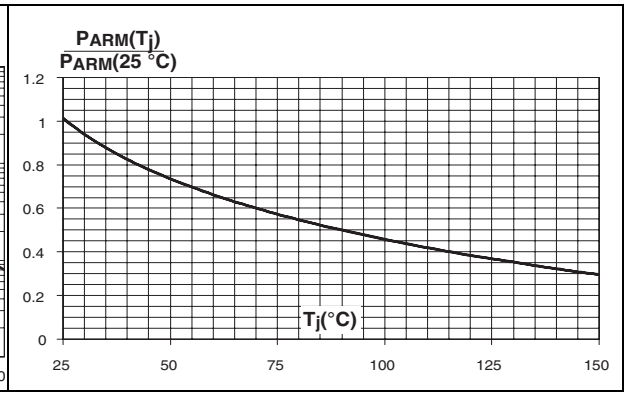


Figure 5. Non repetitive surge peak forward current versus overload duration (per diode)

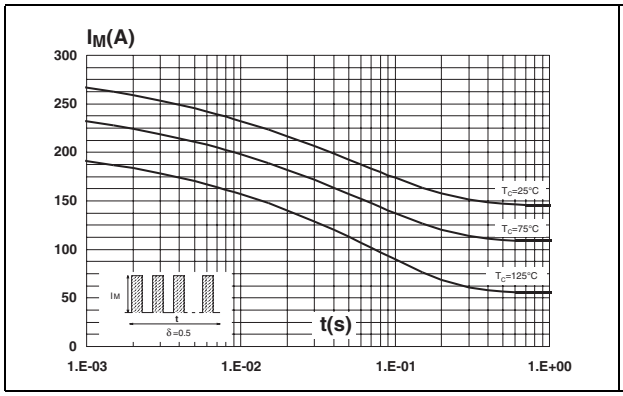
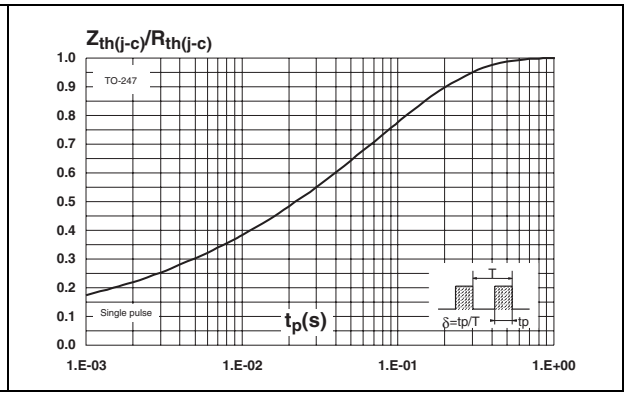


Figure 6. Relative variation of thermal impedance junction to case versus pulse duration



3 Ordering information

Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS61L45CW	STPS61L45CW	TO-247	4.4 g	30	Tube
STPS61L45CT	STPS61L45CT	TO-220AB	2.2 g	50	Tube