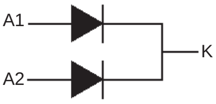
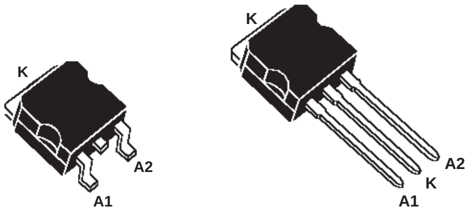
STPS10H100CT/CG/CG-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

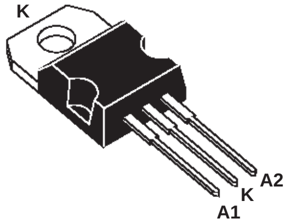
$I_{F(AV)}$	**2 x 5 A**
V_{RRM}	**100 V**
Tj	**175°C**
V_F (max)	**0.61 V**





D^2PAK
STPS10H100CG

I^2PAK
STPS10H100CG-1



TO-220AB
STPS10H100CT

FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY FOR CONVERTERS LOCATED IN CONFINED ENVIRONMENT.
- LOW LEAKAGE CURRENT AT HIGH TEMPERATURE.
- LOW STATIC AND DYNAMIC LOSSES AS A RESULT OF THE SCHOTTKY BARRIER.

DESCRIPTION

Schottky barrier rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC/DC converters. Packaged in TO220AB, D^2PAK and I^2PAK.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current			10	A
$I_{F(AV)}$	Average forward current	Tc = 165°C δ = 0.5	per diode per device	5 10	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		180	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs square F = 1kHz		1	A
T_{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	Per diode	2.2	°C/W
		Total	1.3	
$R_{th\ (c)}$		Coupling	0.3	°C/W

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			3.5	µA
		Tj = 125°C			1.3	4.5	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 5 A			0.73	V
		Tj = 125°C			0.57	0.61	
		Tj = 25°C	I_F = 10 A			0.85	
		Tj = 125°C			0.66	0.71	

Pulse test : * tp = 5 ms, $\delta < 2\%$
** tp = 380 µs, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :
$P = 0.51 \times I_{F(AV)} + 0.02 \times I_F^2{}_{(RMS)}$

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

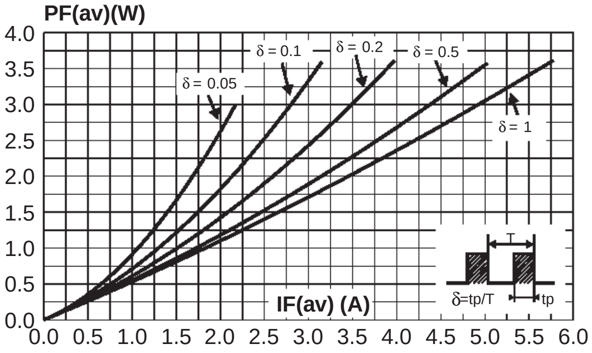


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

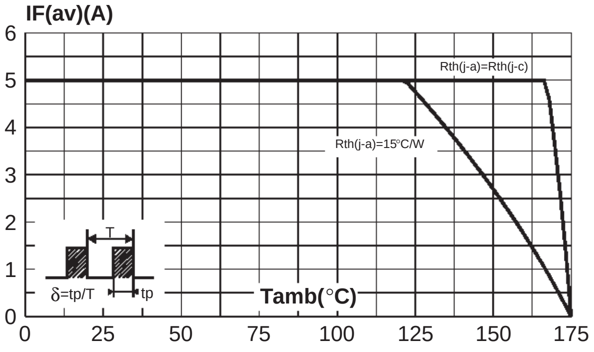


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

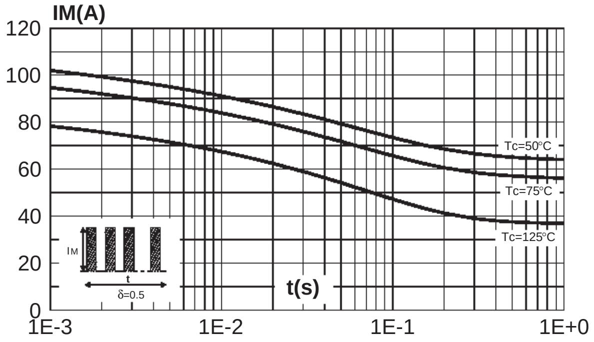


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

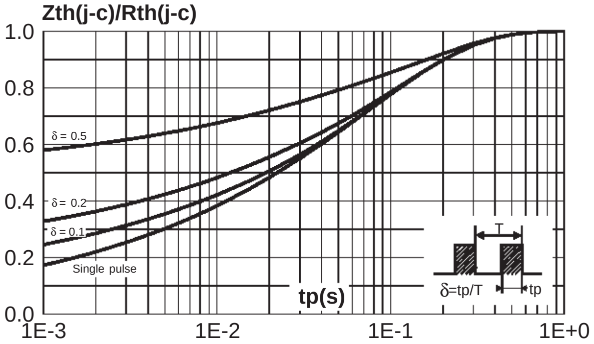


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values, per diode).

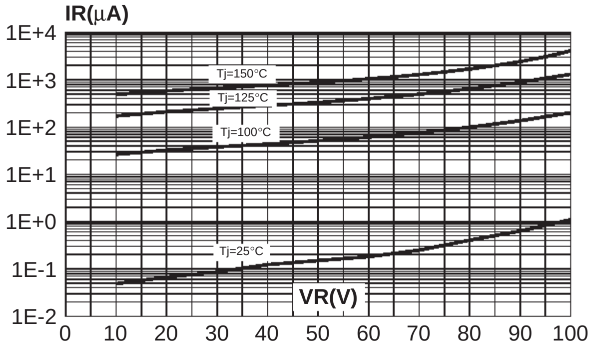


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode).

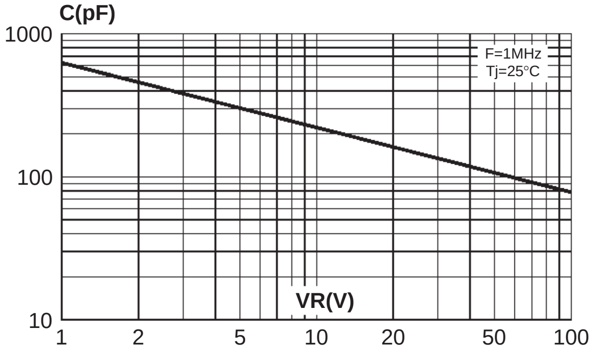


Fig. 7: Forward voltage drop versus forward current (maximum values, per diode).

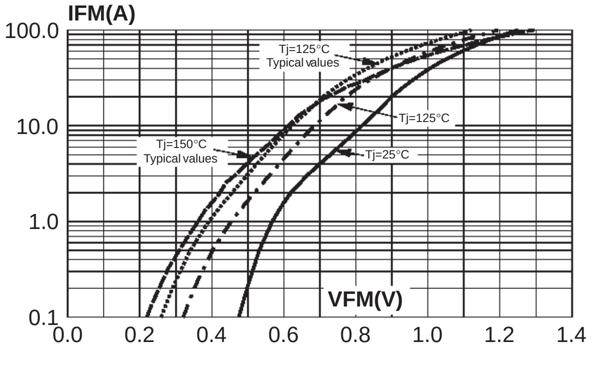
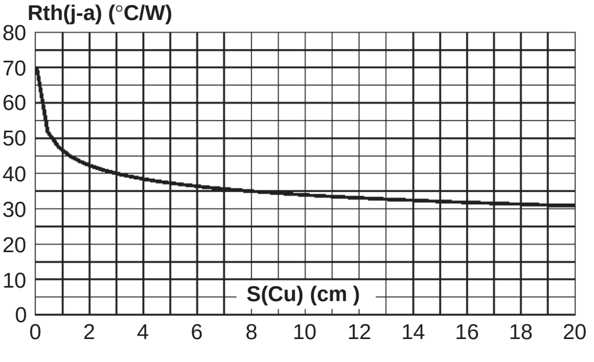
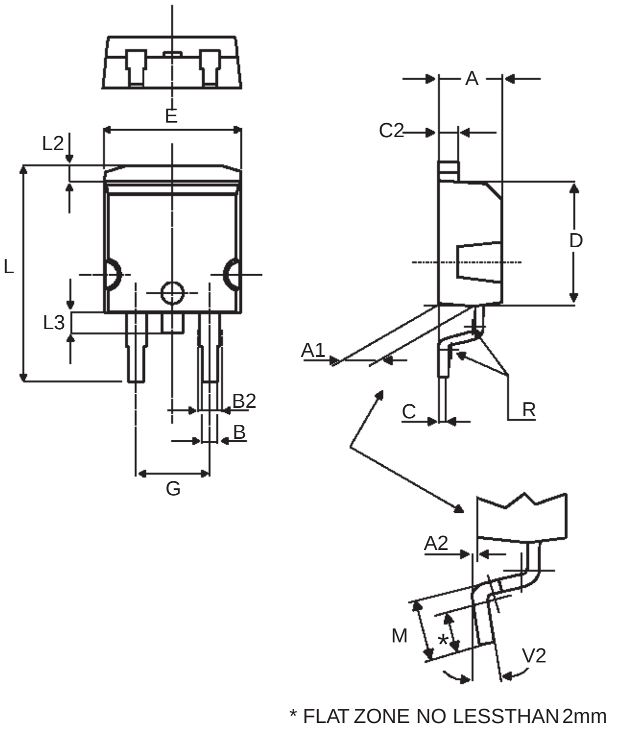


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm) (D^2PAK).



PACKAGE MECHANICAL DATA

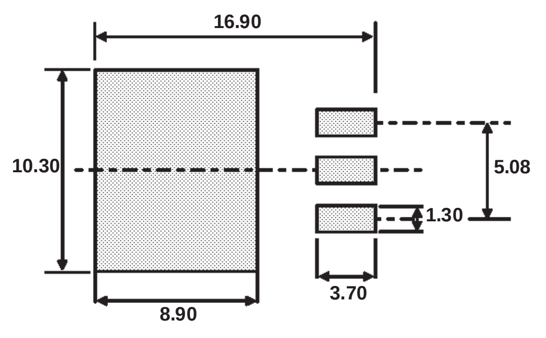
D^{2}PAK



* FLAT ZONE NO LESSTHAN 2mm

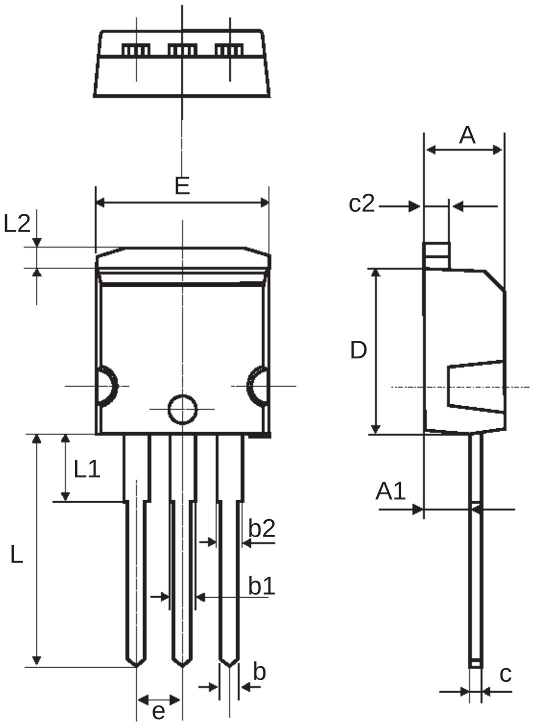
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOT PRINT in millimeters



PACKAGE MECHANICAL DATA

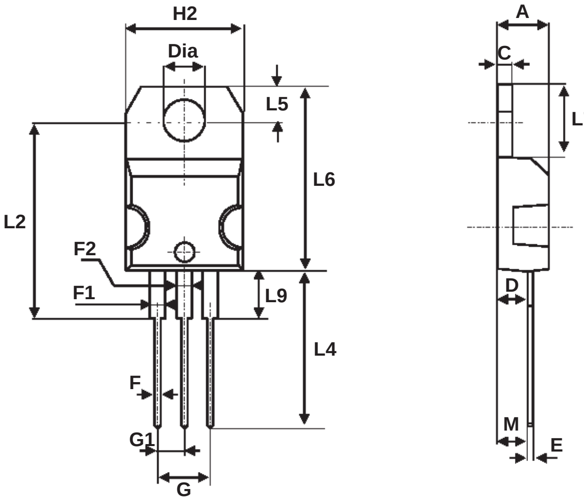
I^2PAK



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
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
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

PACKAGE MECHANICAL DATA

TO-220AB



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	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.		0.645 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
M	2.6 typ.		0.102 typ.	
Diam.	3.75	3.85	0.147	0.151

- Cooling method: C.
- Recommended torque value: 0.55 m.N
- Maximum torque value 0.70 m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10H100CT	STPS10H100CT	TO-220AB	2.20g	50	Tube
STPS10H100CG	STPS10H100CG	D^{2}PAK	1.48g	50	Tube
STPS10H100CG-TR	STPS10H100CG	D^{2}PAK	1.48g	1000	Tape and reel
STPS10H100CG-1	STPS10H100CG	I^{2}PAK	1.49g	50	Tube

- Epoxy meets UL94,V0

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