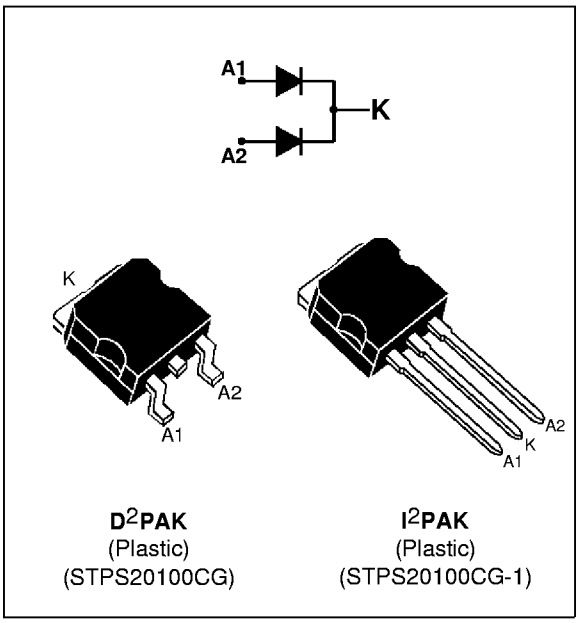
SGS-THOMSON MICROELECTRONICS

STPS20100CG
STPS20100CG-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIERS

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 10A
V_{RRM}	100V
V_F (typ)	0.60V



D^2PAK
(Plastic)
(STPS20100CG)

I^2PAK
(Plastic)
(STPS20100CG-1)

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW CAPACITANCE
- HIGH REVERSE AVALANCHE SURGE CAPABILITY
- SMD PACKAGE

DESCRIPTION

High voltage dual Schottky rectifiers suited for switchmode power supplies and other power converters.
Packaged in D^2PAK and I^2PAK, these devices are intended for use in medium voltage operation, and particulary, in high frequency circuitries where low switching losses and low noise are required.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current		Per diode	30	A
$I_{F(AV)}$	Average forward current	Tc=110°C V_R = 60V δ = 0.5	Per diode Per device	10 20	A A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	200	A
I_{RRM}	Repetitive peak reverse current	tp=2µs F=1KHz	Per diode	1	A
I_{RSM}	Non repetitive peak reverse current	tp=100µs	Per diode	1	A
Tstg	Storage temperature range			- 65 to + 150	°C
Tj	Max. Junction temperature			125	°C
dV/dt	Critical rate of rise of reverse voltage			1000	V/µs

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.6	°C/W
		Total	0.9	
Rth (c)	Coupling		0.15	°C/W

When the diodes 1 and 2 are used simultaneously :
Tj-Tc(diode 1)=P(diode1) x Rth(j-c)(Per diode) + P(diode 2) x Rth(c)

ELECTRICAL CHARACTERISTICS (Per diode)

STATIC CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	T_j = 25°C			150	µA
			T_j = 125°C			100	mA
V_F **	Forward voltage drop	I_F = 20 A	T_j = 125°C			0.85	V
		I_F = 10 A	T_j = 125°C		0.60	0.70	
		I_F = 20 A	T_j = 25°C			0.95	

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.55 \times I_{F(AV)} + 0.015 \times I_F{}^2{}_{(RMS)}$

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

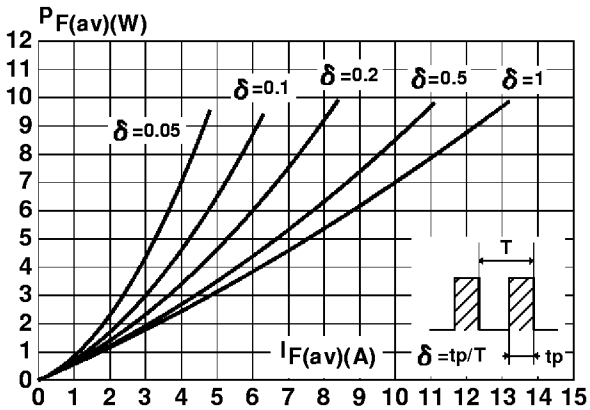


Fig. 2 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)

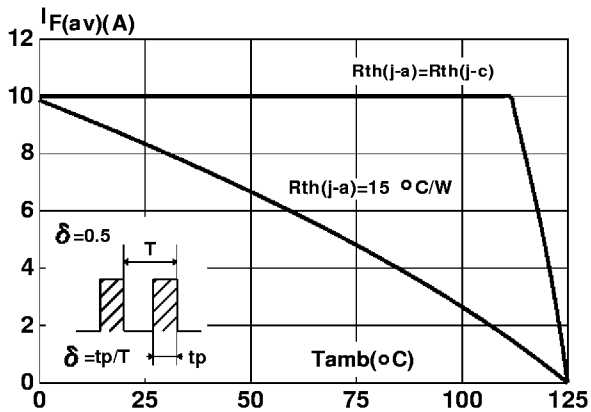


Fig. 3 : Non repetitive surge peak forward current versus overload duration.
(Maximum values) (Per diode)

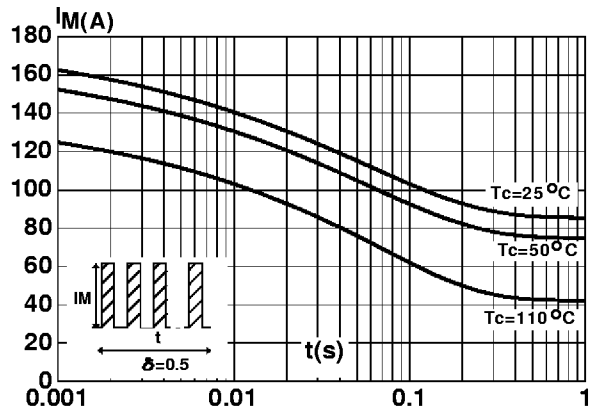


Fig. 4 : Relative variation of thermal transient impedance junction to case versus pulse duration.

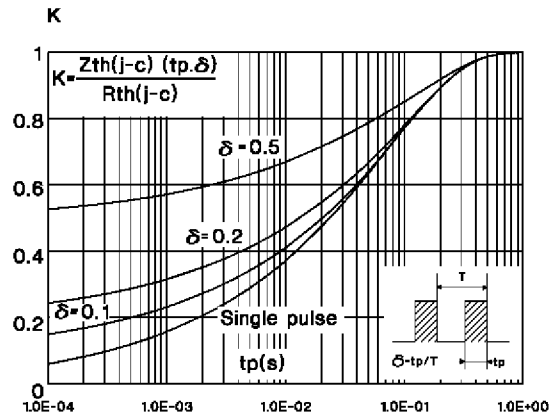


Fig. 5 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

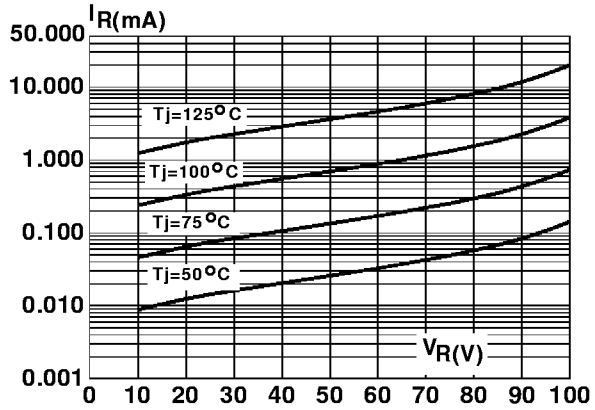


Fig. 6 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

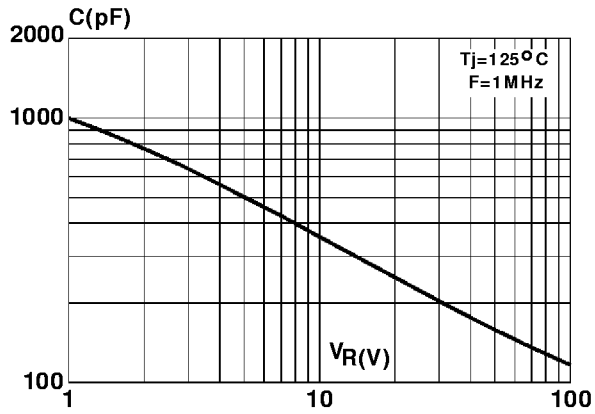


Fig. 7 : Forward voltage drop versus forward current. (Maximum values) (Per diode)

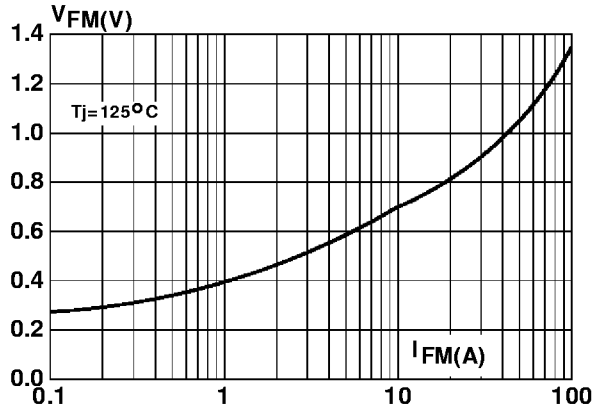
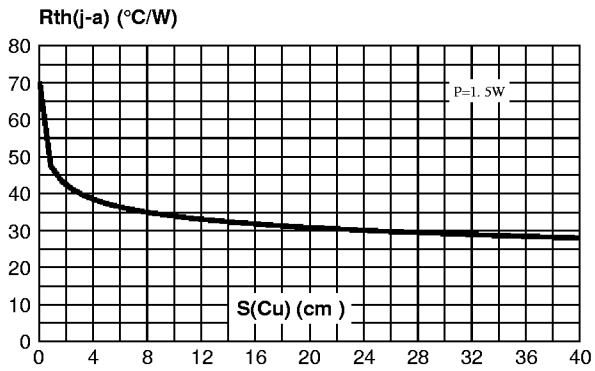
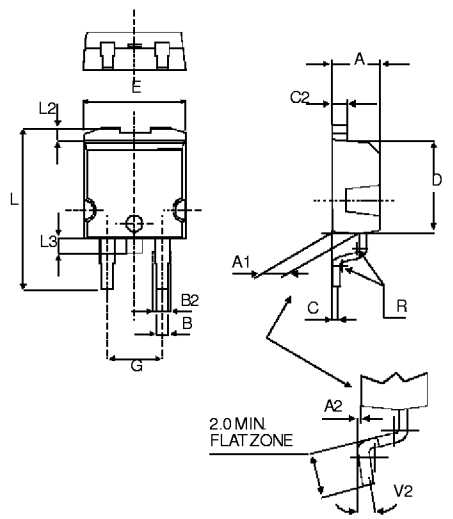


Fig. 8 : Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35mm) (Per diode)



PACKAGE MECHANICAL DATA

D^2PAK (Plastic)

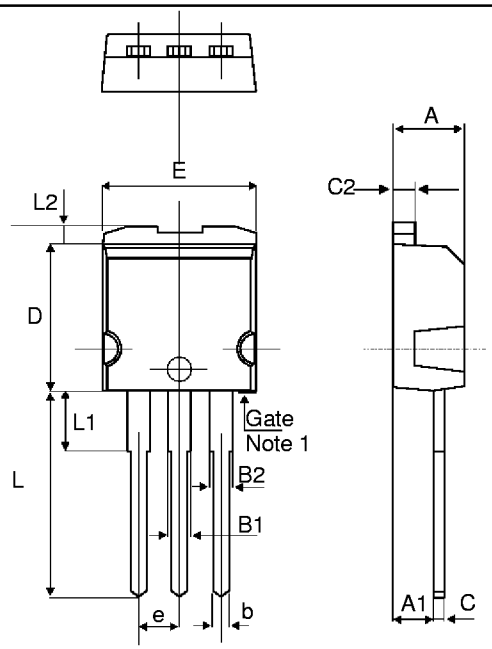


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25		1.40	0.049		0.055
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	9.00		9.35	0.354		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.37	0.050		0.054
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

Cooling method : by conduction (methode C)
Marking : Type number
Weigth : 1.8 g

PACKAGE MECHANICAL DATA

I^2PAK (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
b	0.70		0.93	0.028		0.037
b1	1.20		1.38	0.047		0.054
b2	1.25		1.40	0.049		0.055
c	0.45		0.60	0.018		0.024
c2	1.21		1.36	0.048		0.054
D	8.95		9.35	0.352		0.093
e	2.44		2.64	0.096		0.104
E	10.00		10.28	0.394		0.405
L	13.10		13.60	0.516		0.535
L1	3.48		3.78	0.137		0.149
L2	1.27		1.40	0.050		0.055

Note 1 : max. resign gate protrusion: 0.50 mm