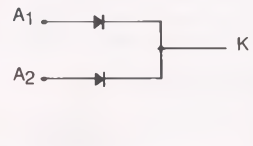
SGS-THOMSON MICROELECTRONICS

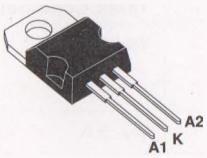
STPR1010CT/CF
STPR1020CT/CF

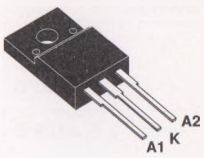
ULTRA FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY







TO220AB
(Plastic)

STPR1010CT
STPR1020CT

ISOWATT220AB
(Plastic)

STPR1010CF
STPR1020CF

DESCRIPTION

Low cost dual center tap rectifier suited for switch-mode power supply and high frequency DC to DC converters.

Packaged in TO220AB and ISOWATT220AB, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter				Value	Unit
$I_{F(RMS)}$	RMS Forward Current			Per diode	10	A
$I_{F(AV)}$	Average Forward Current $\delta = 0.5$	TO220AB	Tc = 125°C	Per diode	5	A
		ISOWATT220AB	Tc = 115°C	Per device	10	
I_{FSM}	Surge Non Repetitive Forward Current		Tp = 10 ms Sinusoidal	Per diode	50	A
Tstg Tj	Storage and Junction Temperature Range				- 65 to + 150 - 65 to + 150	°C

Symbol	Parameter	STPR		Unit
		1010CT 1010CF	1020CT 1020CF	
V_{RRM}	Repetitive Peak Reverse Voltage	100	200	V

THERMAL RESISTANCE

Symbol	Parameter			Value	Unit
Rth (j-c)	Junction-case	TO220AB	Per diode total	4.0	°C/W
		ISOWATT220AB	Per diode total	6.0	
Rth (c)	Coupling				°C/W

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

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Tj = 25°C	$V_R = V_{RRM}$			50	µA
	Tj = 100°C				0.5	mA
V_F **	Tj = 125°C	I_F = 5 A			0.99	V
	Tj = 125°C	I_F = 10 A			1.20	
	Tj = 25°C	I_F = 10 A			1.25	

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

RECOVERY CHARACTERISTICS

Symbol	Tests Conditions				Min.	Typ.	Max.	Unit
trr	Tj = 25°C	I_F = 0.5 A	I_R = 1A	Irr = 0.25 A			30	ns
tfr	Tj = 25°C	I_F = 1 A	tr = 10 ns	V_{FR} = 1.1 x V_F		20		ns
V_{FP}	Tj = 25°C	I_F = 1 A	tr = 10 ns			3		V

To evaluate the conduction losses use the following equation :
$P = 0.78 \times I_{F(AV)} + 0.042\ I_{F^2(RMS)}$

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

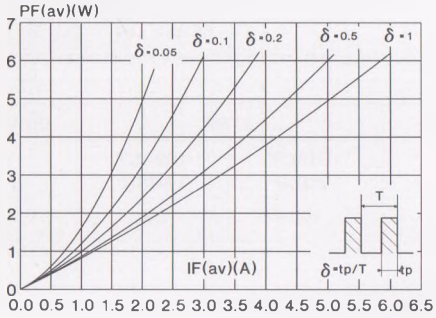


Fig.2 : Peak current versus form factor. (Per diode)

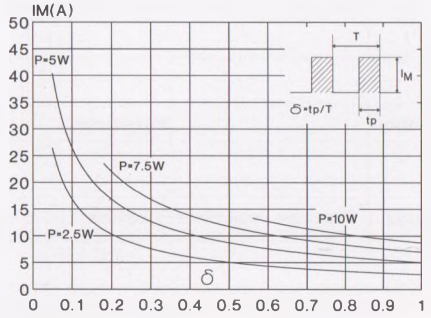


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5) (TO220AB)

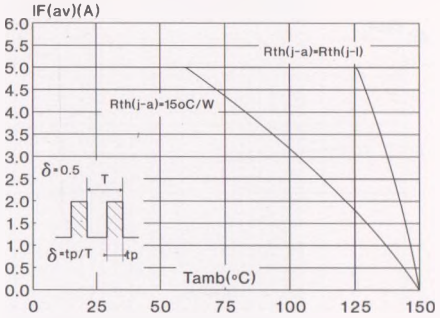


Fig.4 : Average current versus ambient temperature. (duty cycle : 0.5) (ISOWATT220AB)

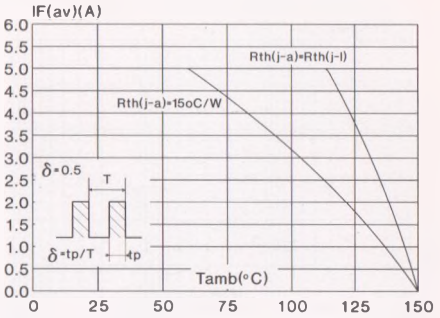


Fig.5 : Non repetitive surge peak forward current versus overload duration. (Maximum values) (TO220AB) (Per diode)

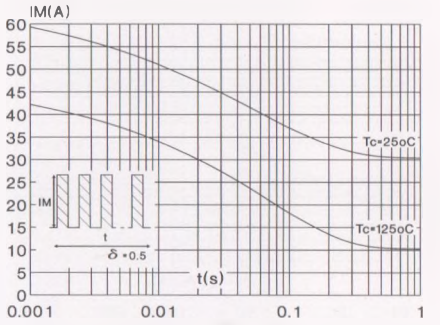


Fig.6 : Non repetitive surge peak forward current versus overload duration. (Maximum values) (ISOWATT220AB) (Per diode)

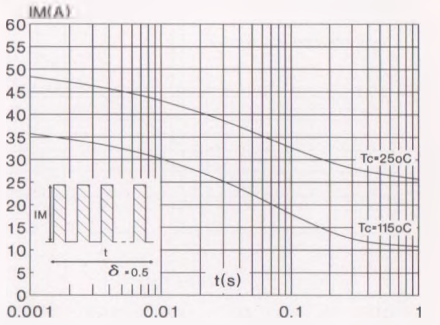


Fig.7 : Relative variation of thermal transient impedance junction to case versus pulse duration. (TO220AB) (Per diode)

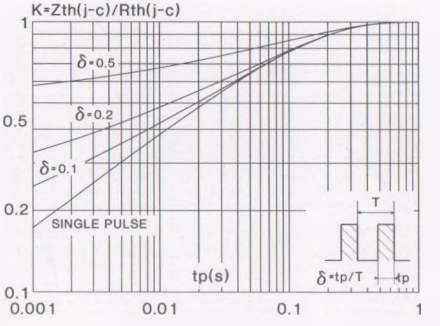


Fig.8 : Relative variation of thermal transient impedance junction to case versus pulse duration. (ISOWATT220AB) (Per diode)

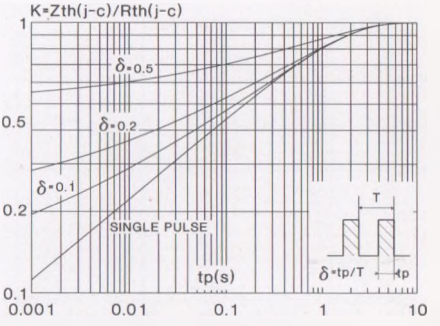


Fig.9 : Forward voltage drop versus forward current. (Maximum values) (Per diode)

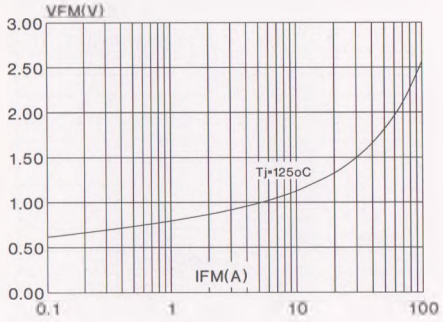


Fig.10 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

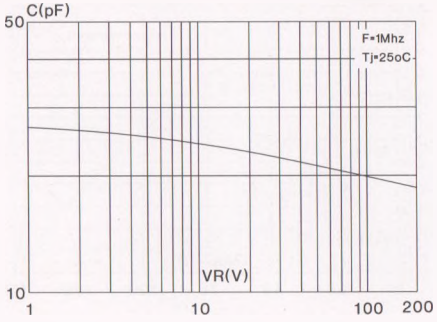


Fig.11 : Recovery charge versus dIF/dt. (Per diode)

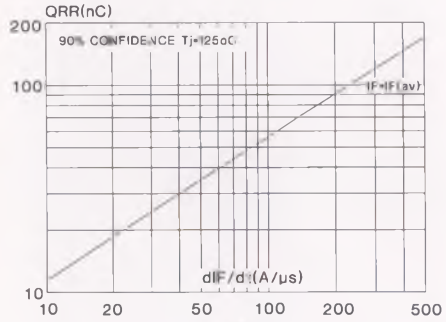


Fig.12 : Peak reverse current versus dIF/dt. (Per diode)

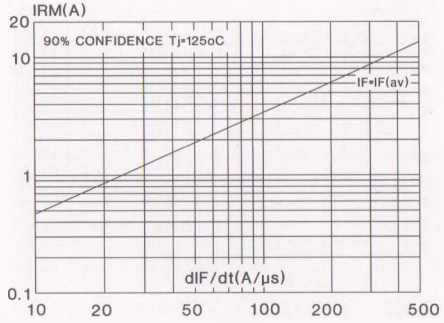


Fig.13 : Dynamic parameters versus junction temperature. (Per diode)