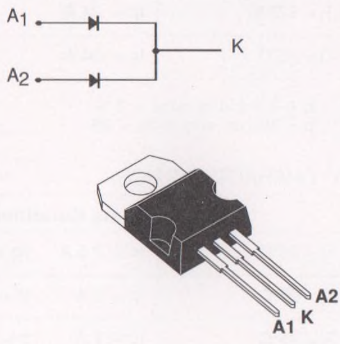
SGS-THOMSON MICROELECTRONICS

STPR2410CT
STPR2420CT

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)

DESCRIPTION

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

Packaged in TO220AB, 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	30	A
$I_{F(AV)}$	Average Forward Current	Tc = 115°C δ = 0.5	Per diode Per device	12 24	A
I_{FSM}	Surge Non Repetitive Forward Current	Tp = 10 ms Sinusoidal	Per diode	120	A
Tstg Tj	Storage and Junction Temperature Range			- 65 to + 150 - 65 to + 150	°C

Symbol	Parameter	STPR		Unit
		2410CT	2420CT	
V_{RRM}	Repetitive Peak Reverse Voltage	100	200	V

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction-case	Per diode total	2.5 1.4	°C/W
Rth (c)	Coupling		0.23	°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				0.8	mA
V_F **	Tj = 125°C	I_F = 12 A			0.99	V
	Tj = 125°C	I_F = 24 A			1.20	
	Tj = 25°C	I_F = 24 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 $V_{FR} = 1.1 \times V_F$		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 :
$P = 0.78 \times I_{F(AV)} + 0.0175\ I_F^2{}_{(RMS)}$

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

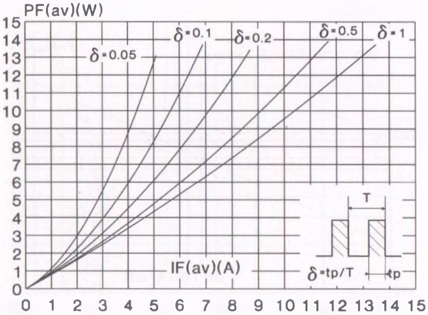


Fig.2 : Peak current versus form factor. (Per diode)

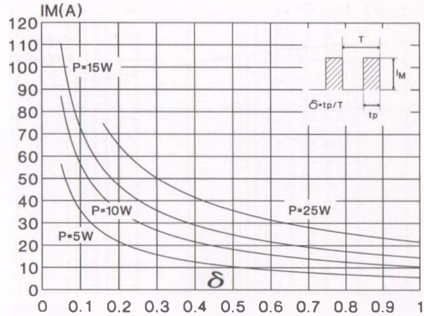


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)

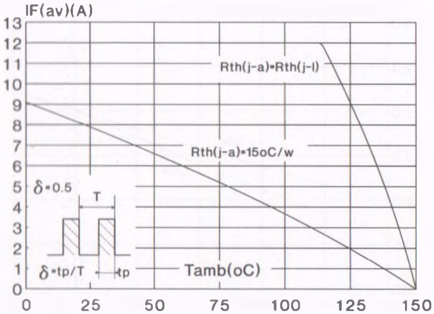


Fig.4 : Non repetitive surge peak forward current versus overload duration. (Maximum values)

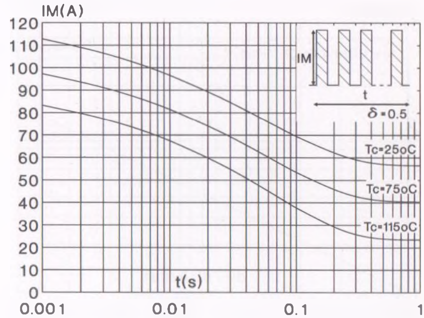


Fig.5 : Relative variation of thermal transient impedance junction to case versus pulse duration. (Per diode)

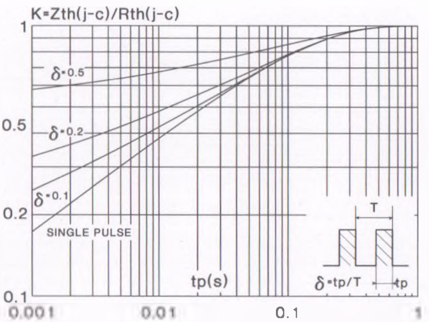


Fig.6 : Forward voltage drop versus forward current. (Maximum values) (Per diode)

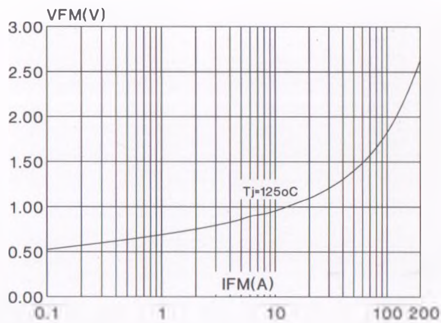


Fig.7 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

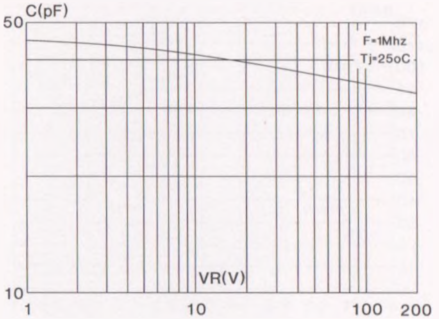


Fig.8 : Recovery charge versus dIF/dt. (Per diode)

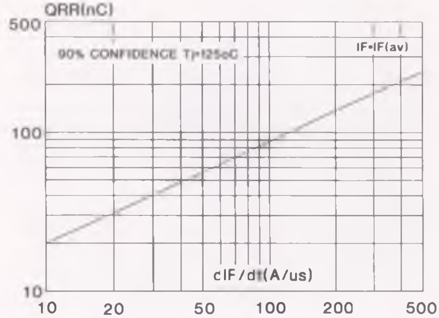


Fig.9 : Peak reverse current versus dIF/dt. (Per diode)

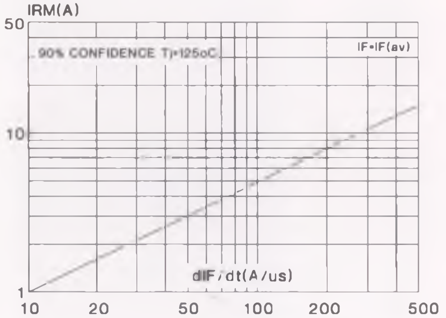


Fig.10 : Dynamic parameters versus junction temperature. (Per diode)