



STPR1620CG/CT/CR

ULTRA-FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 8 A
V_{RRM}	200 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.99 V
$t_{rr}(\text{max})$	30 ns

FEATURES

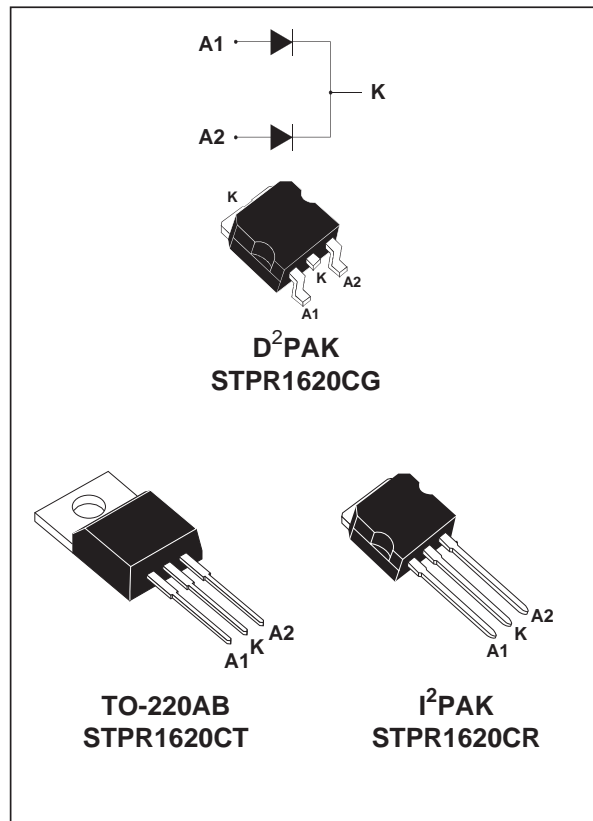
- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY

DESCRIPTION

Low cost dual center tap rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in D²PAK, I²PAK or TO-220AB, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(RMS)}$	RMS forward current		20	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 120^\circ\text{C}$ Per diode Per device	8 16	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	80	A
T_{stg}	Storage temperature range		- 65 to + 150	°C
T_j	Maximum operating junction temperature		150	°C



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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	Per diode	3.0	°C/W
		Total	1.8	°C/W
R _{th(c)}		Coupling	0.6	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_{J(\text{diode } 1)} = P(\text{diode } 1) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode } 2) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Test conditions		Min.	Typ.	Max.	Unit
I _R *	T _J = 25°C	V _R = V _{RRM}			50	μA
	T _J = 100°C			0.2	0.6	mA
V _F **	T _J = 125°C	I _F = 8 A		0.8	0.99	V
	T _J = 125°C	I _F = 16 A		0.95	1.20	
	T _J = 25°C	I _F = 16 A			1.25	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 μs, δ < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_{F(AV)} + 0.026 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test conditions		Min.	Typ.	Max.	Unit
trr	T _J = 25°C	I _F = 0.5A I _R = 1A			30	ns
tfr	T _J = 25°C	I _F = 3A V _{FR} = 1.1 x V _F max		20		ns
V _{FP}	T _J = 25°C	I _F = 3A		3		V

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

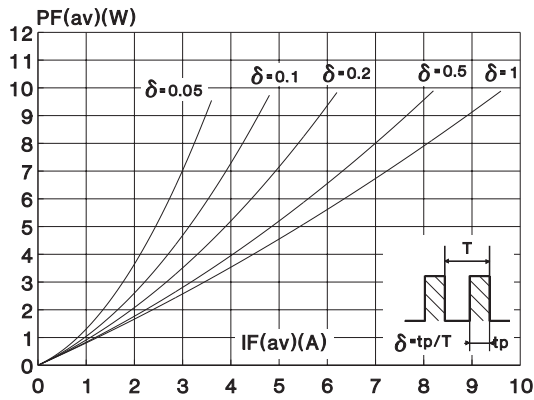


Fig. 2: Peak current versus form factor (per diode).

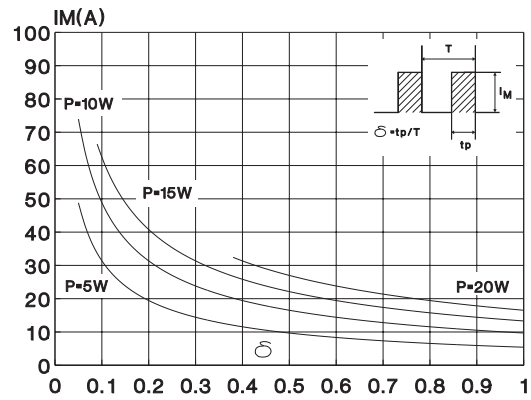


Fig. 3: Average current versus ambient temperature ($\delta : 0.5$, per diode).

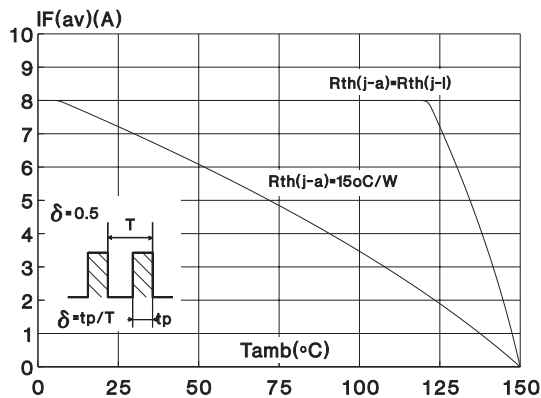


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

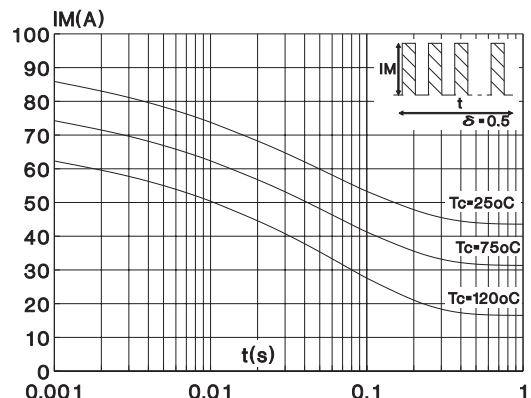


Fig. 5: Relative variation of thermal transient impedance junction to case versus pulse duration (per diode).

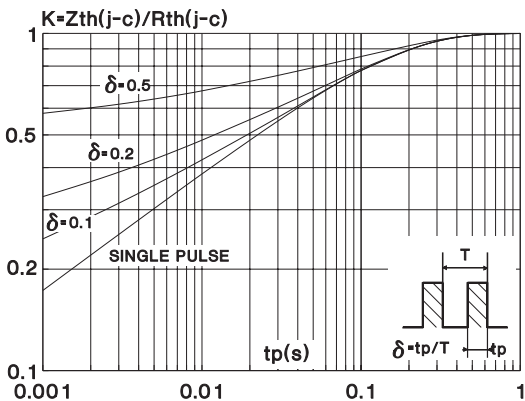
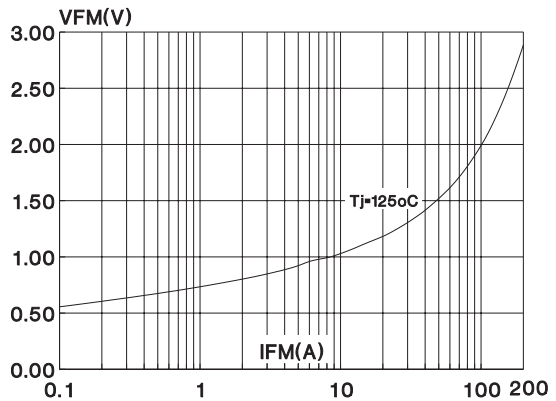


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode).



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Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

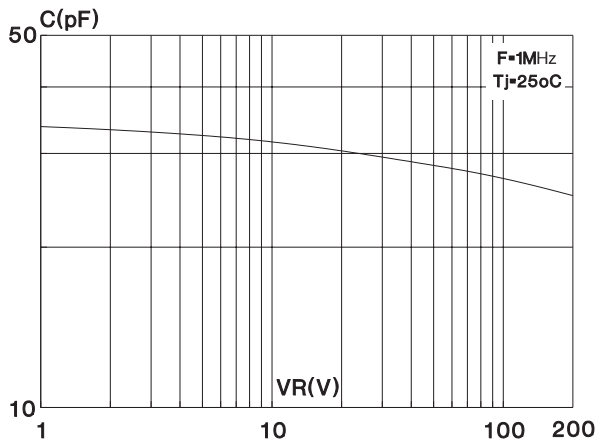


Fig. 8: Recovery charges versus dI_F/dt (per diode).

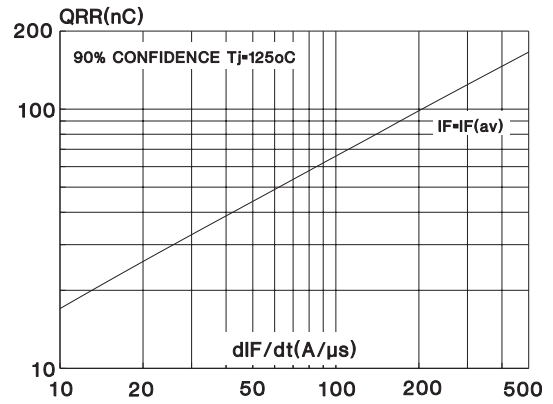


Fig. 9: Peak reverse current versus dI_F/dt (per diode).

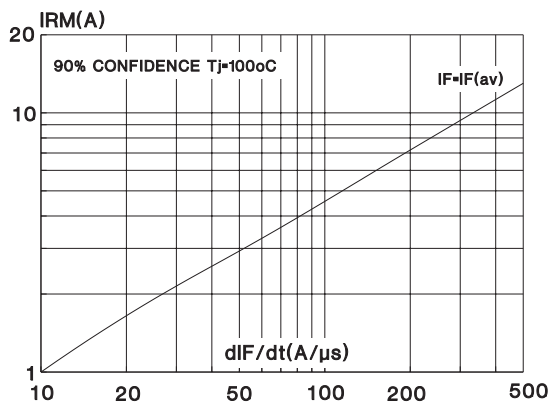


Fig. 10: Dynamic parameters versus junction temperature (per diode).

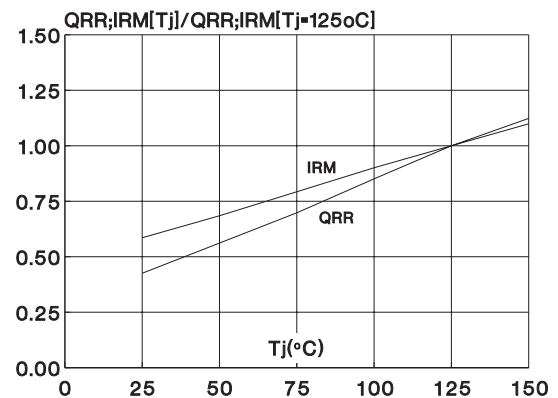
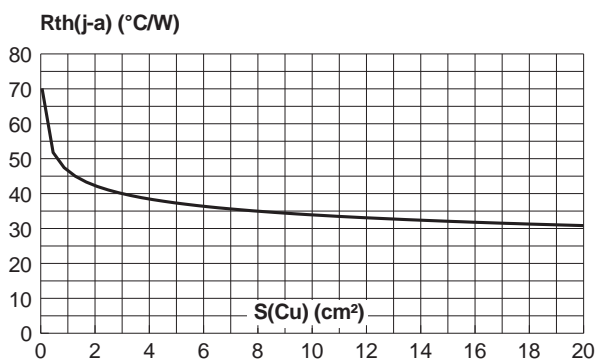
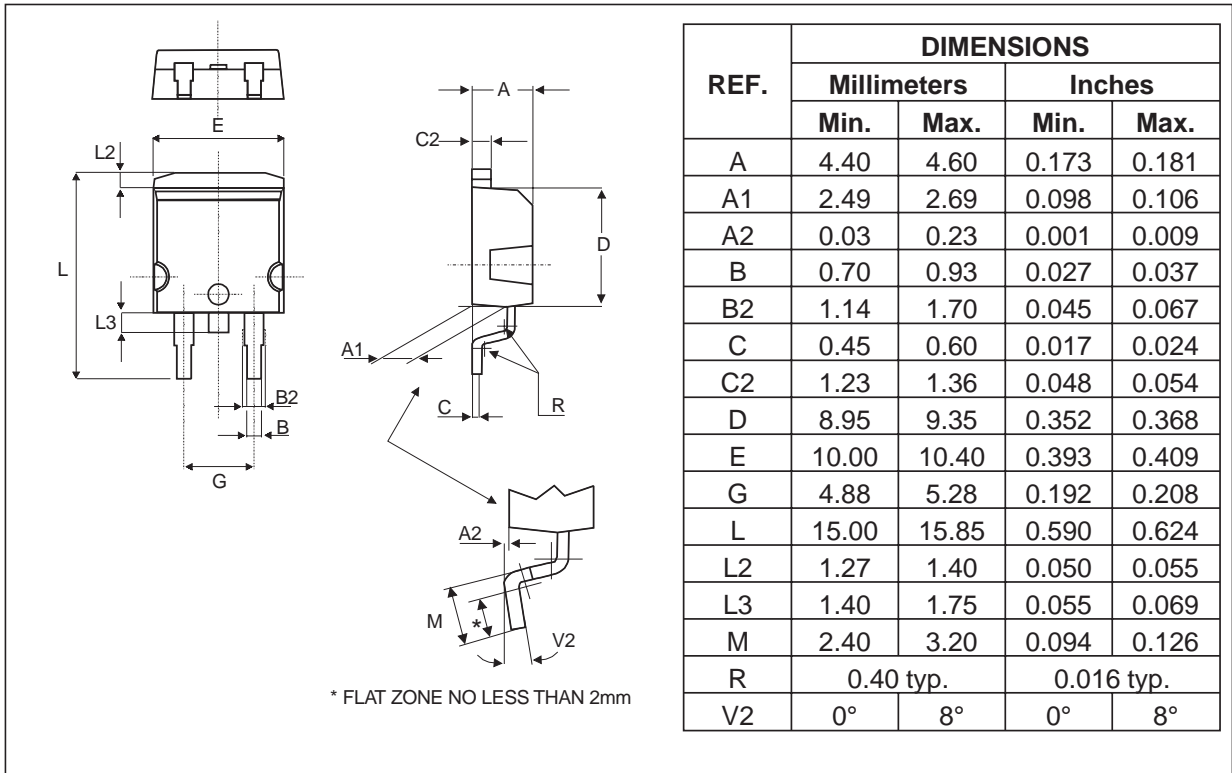


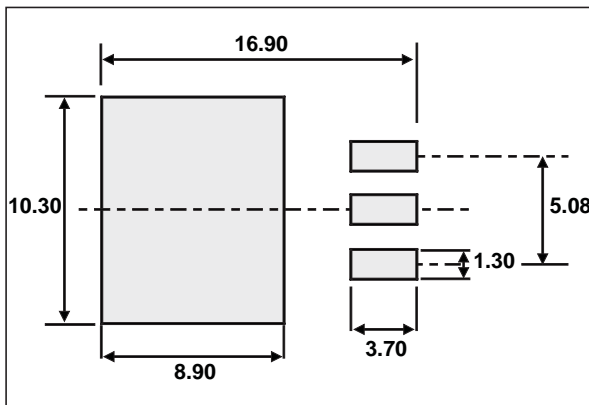
Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board, $C_U = 35\mu\text{s}$) (STPR1620CG only).



PACKAGE MECHANICAL DATA
D²PAK (Plastic)

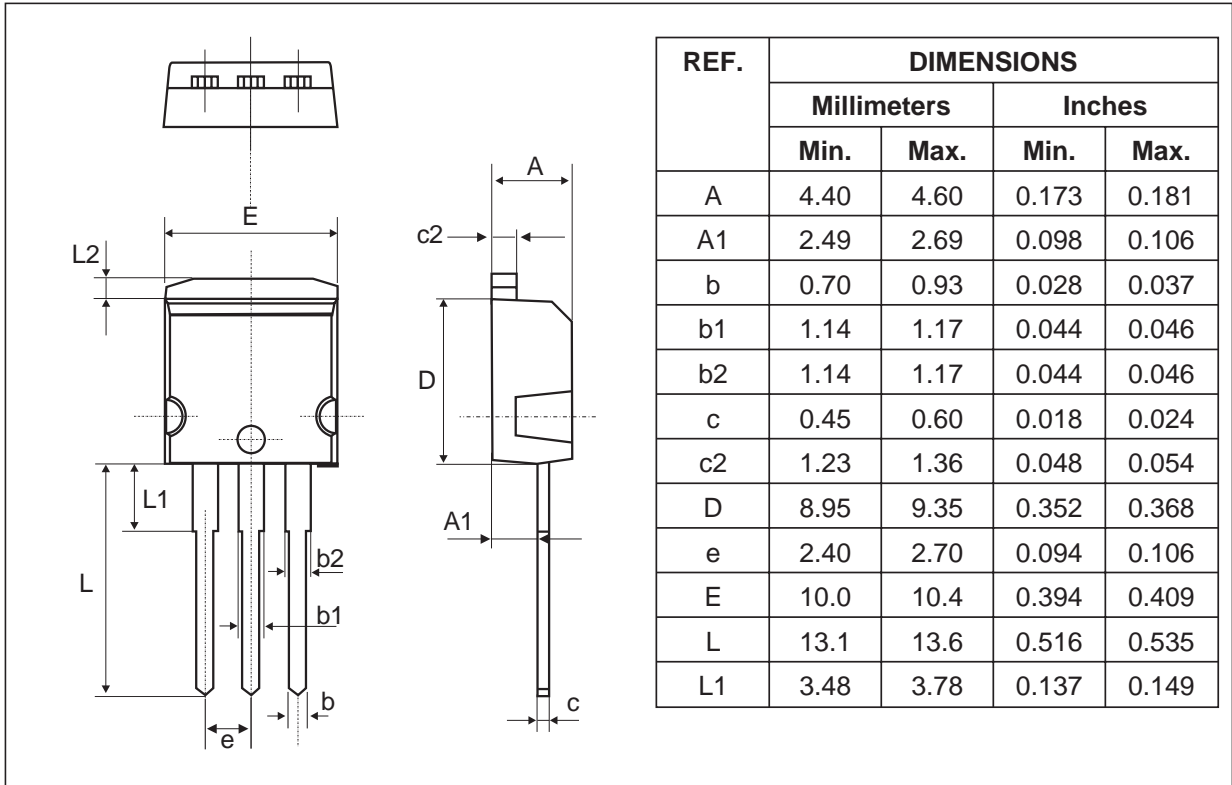


FOOT PRINT (in millimeters)

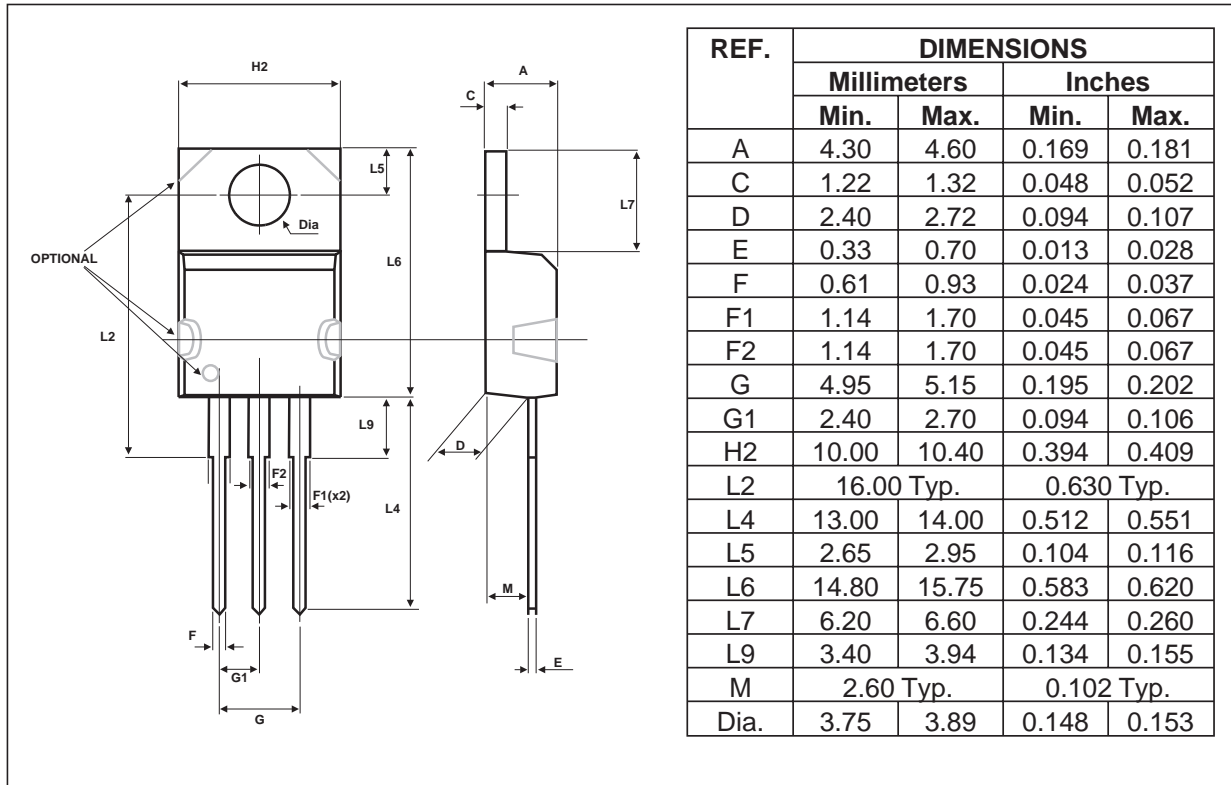


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PACKAGE MECHANICAL DATA
*I*²PAK



PACKAGE MECHANICAL DATA
TO-220AB (JEDEC outline)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPR1620CT	STPR1620CT	TO-220AB	2.23 g	50	Tube
STPR1620CG	STPR1620CG	D ² PAK	1.48 g	50	Tube
STPR1620CG-TR	STPR1620CG	D ² PAK	1.48 g	1000	Tape & reel
STPR1620CR	STPR1620	I ² PAK	1.49 g	50	Tube

- Cooling method : by conduction (C)
- Recommended torque value : 0.55N.m.
- Maximum torque value : 0.7N.m.
- Epoxy meets UL94,V0

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