



STPR1620CG

ULTRA FAST RECOVERY RECTIFIER DIODES

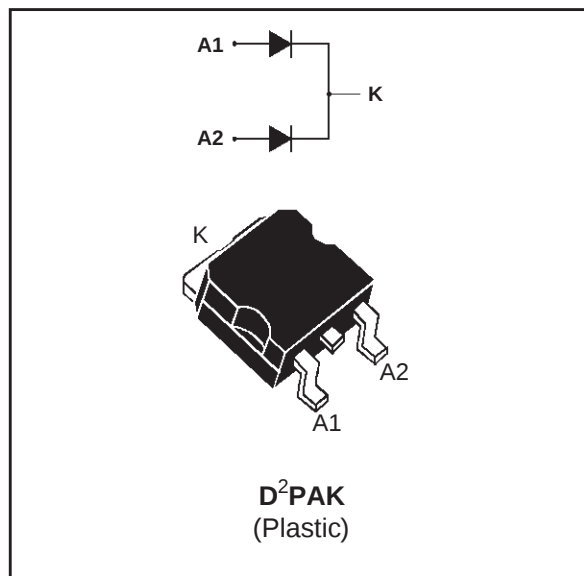
FEATURES

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

DESCRIPTION

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

Packaged in D²PAK this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM (limiting values)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			200	V
I _{F(RMS)}	RMS forward current	Per diode		20	A
I _{F(AV)}	Average forward current $\delta = 0.5$	T _c =120°C Per diode Per device		8 16	A
I _{FSM}	Surge non repetitive forward current	t _p =10ms sinusoidal Per diode		80	A
T _{stg} T _J	Storage temperature range Maximum junction temperature			- 65 to + 150 150	°C °C

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	3.0	$^{\circ}\text{C/W}$
		Total		
$R_{th(c)}$	Coupling			$^{\circ}\text{C/W}$

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^*	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			50	μA
	$T_j = 100^{\circ}\text{C}$				0.6	mA
V_F^{**}	$T_j = 125^{\circ}\text{C}$	$I_F = 8\text{ A}$			0.99	V
	$T_j = 125^{\circ}\text{C}$	$I_F = 16\text{ A}$			1.20	
	$T_j = 25^{\circ}\text{C}$	$I_F = 16\text{ A}$			1.25	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle $< 2\%$

** $t_p = 380\text{ }\mu\text{s}$, duty cycle $< 2\%$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^{\circ}\text{C}$	$I_F = 0.5\text{ A}$ $I_R = 1\text{ A}$ $I_{rr} = 0.25\text{ A}$			30	ns
tfr	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{ A}$ $V_{FR} = 1.1 \times V_F$ $t_r = 10\text{ ns}$		20		ns
V_{FP}	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{ A}$ $t_r = 10\text{ ns}$		3		V

To evaluate the conduction losses use the following equation :

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

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

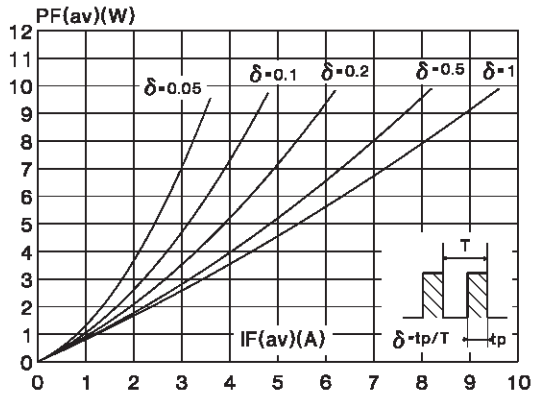


Fig.2 : Peak current versus form factor. (Per diode)

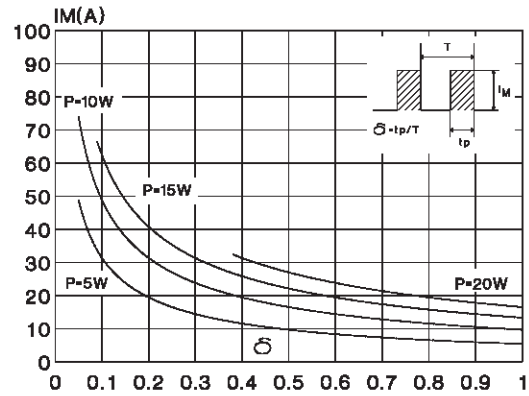


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)

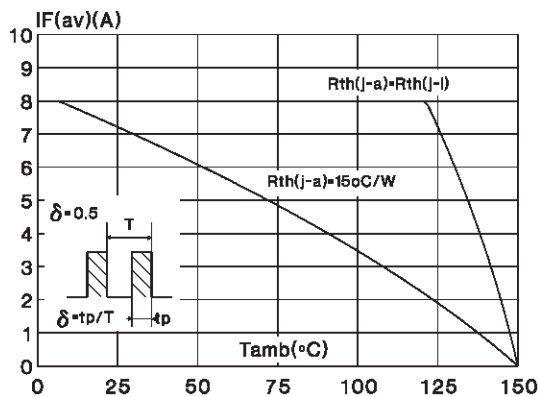


Fig.4 : Non repetitive surge peak forward current versus overload duration (Maximum values) (Per diode).

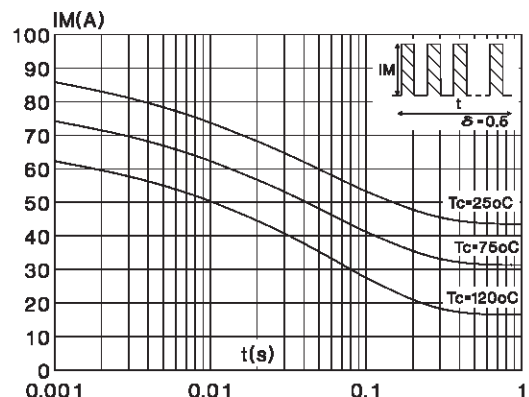


Fig.5 : Relative variation of thermal transient impedance junction to case versus pulse duration (Per diode).

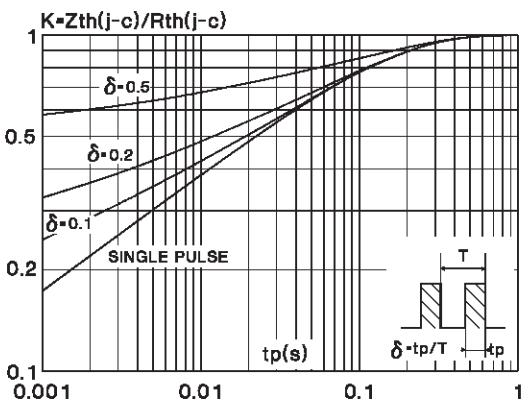


Fig.6 : Forward voltage drop versus forward current. (maximum values) (Per diode).

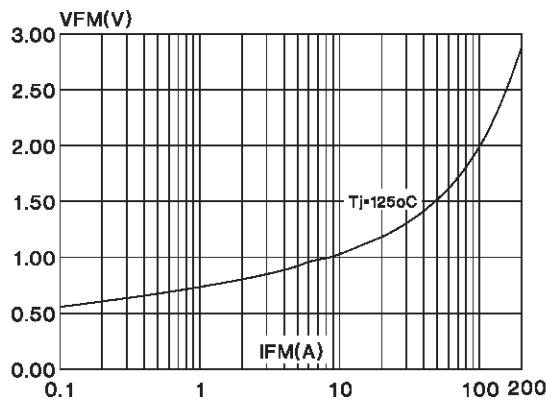


Fig.7 : Junction capacitance versus reverse voltage applied (Typical values) (Per diode).

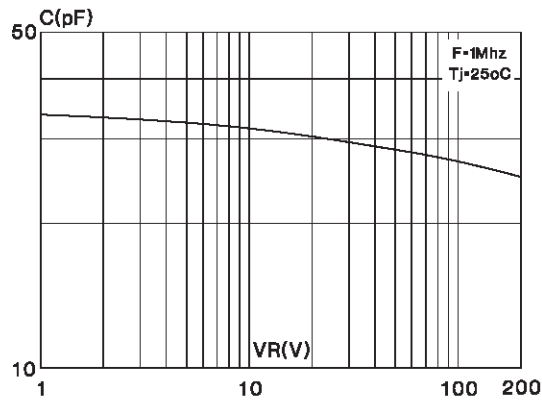


Fig.8 : Recovery charges versus dI_F/dt (Per diode).

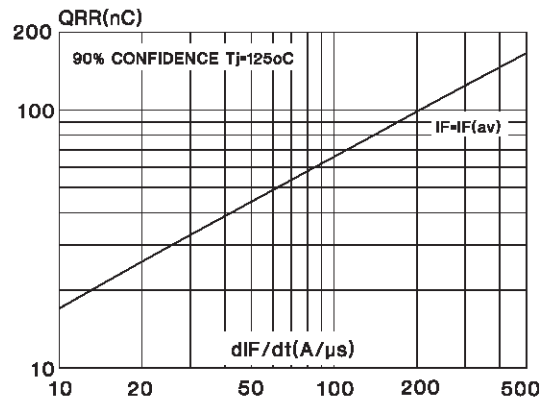


Fig.9 : Peak reverse current versus dI_F/dt (Per diode).

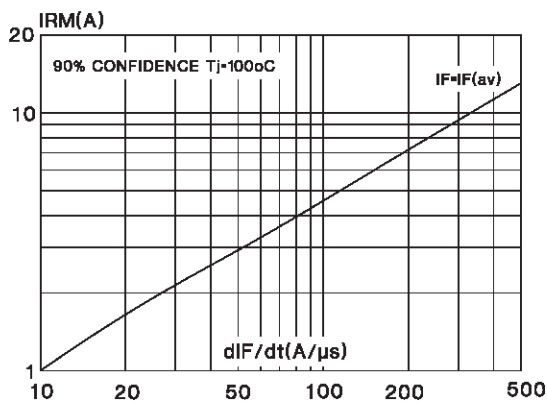
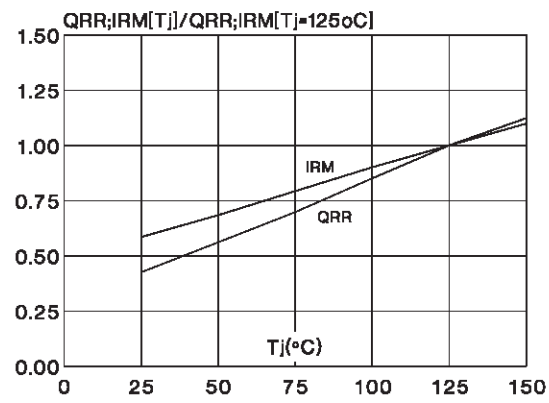
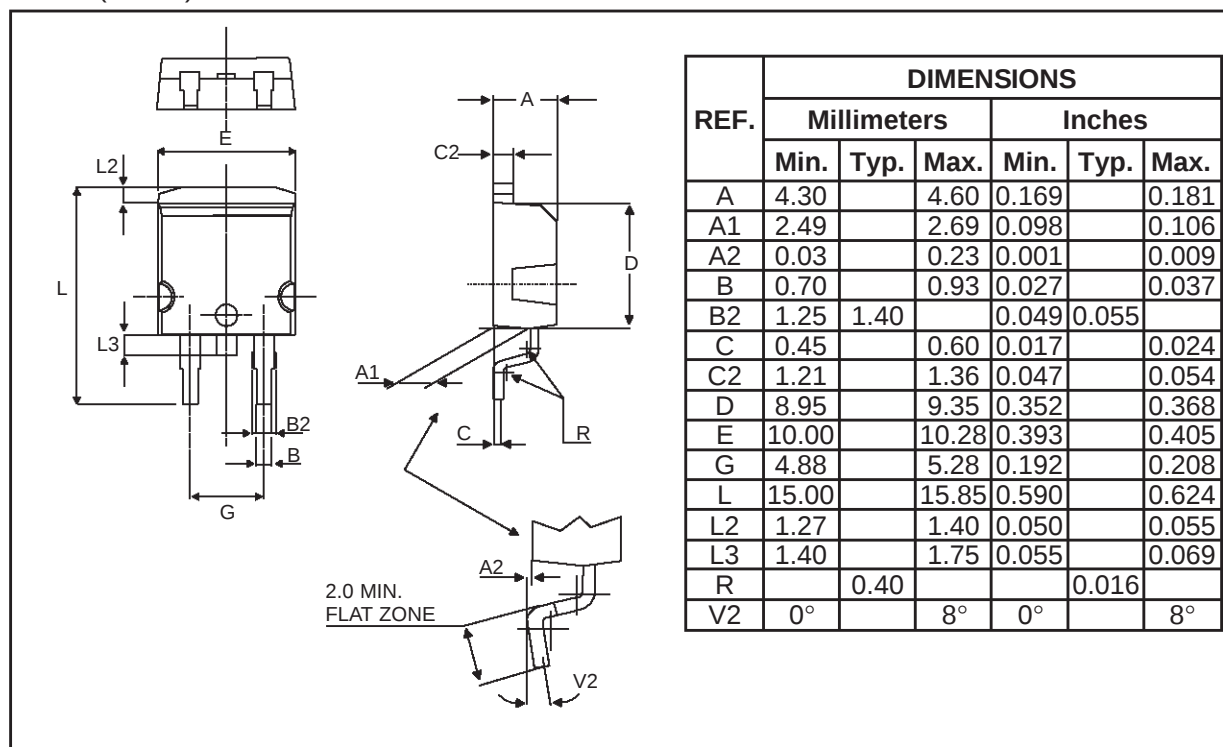


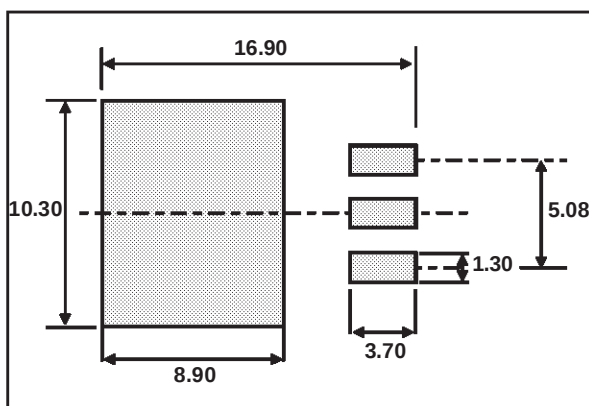
Fig.10 : Dynamic parameters versus junction temperature (Per diode).



PACKAGE MECHANICAL DATA **D²PAK (Plastic)**



FOOT PRINT (in millimeters)



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 1.8 g

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