

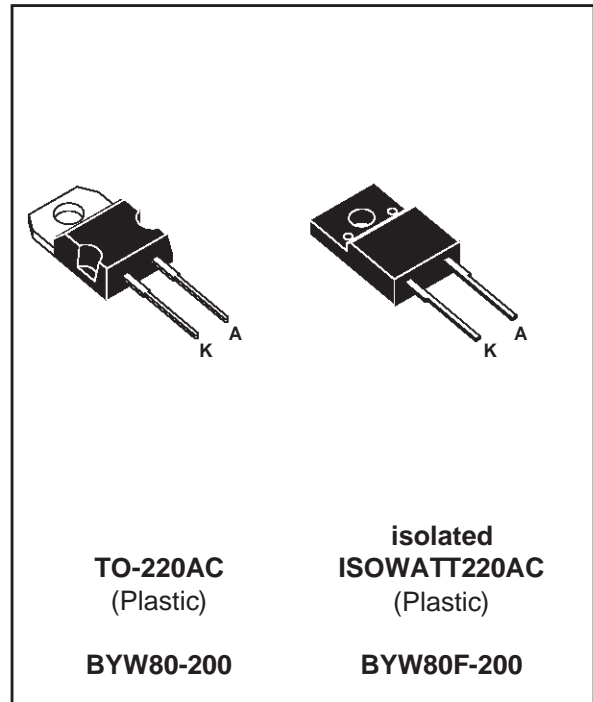
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC):
Insulating voltage = 2000 V DC
Capacitance = 12 pF

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO-220AC, or ISOWATT220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit	
$I_{F(RMS)}$	RMS forward current		20	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AC	$T_c=120^\circ\text{C}$	10	A
		ISOWATT220AC	$T_c=95^\circ\text{C}$	10	
I_{FSM}	Surge non repetitive forward current		$t_p=10\text{ms}$ sinusoidal	100	A
T_{stg} T_j	Storage and junction temperature range		- 65 to + 150 - 65 to + 150	$^\circ\text{C}$ $^\circ\text{C}$	

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	200	V

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THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	TO-220AC	2.5	°C/W
		ISOWATT220AC	4.7	

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			10	μA
	T _j = 100°C				1	mA
V _F **	T _j = 125°C	I _F = 7 A			0.85	V
	T _j = 125°C	I _F = 15 A			1.05	
	T _j = 25°C	I _F = 15 A			1.15	

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

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.027 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			35	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F		15		ns
V _{FP}	T _j = 25°C	I _F = 1A		2		V

Fig.1 : Average forward power dissipation versus average forward current.

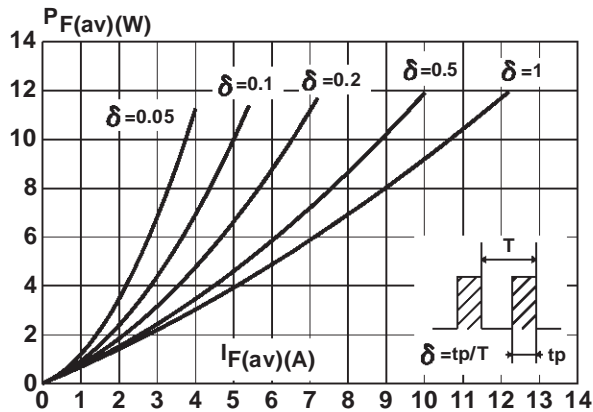


Fig.2 : Peak current versus form factor.

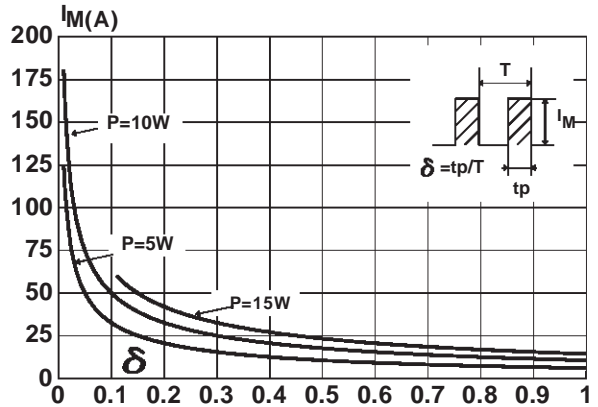


Fig.3 : Forward voltage drop versus forward current (maximum values).

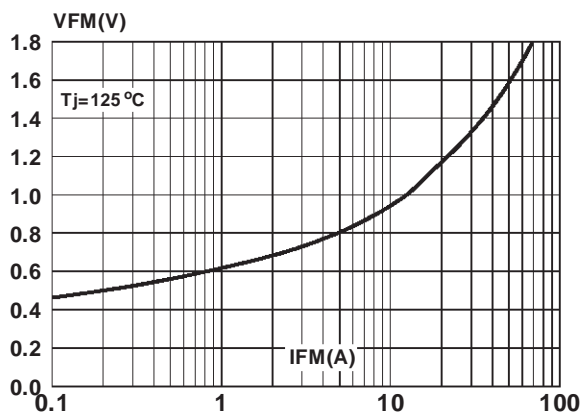


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration. (TO-220AC)

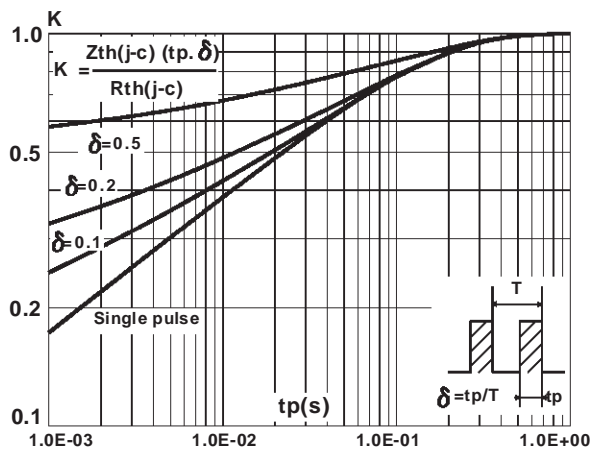
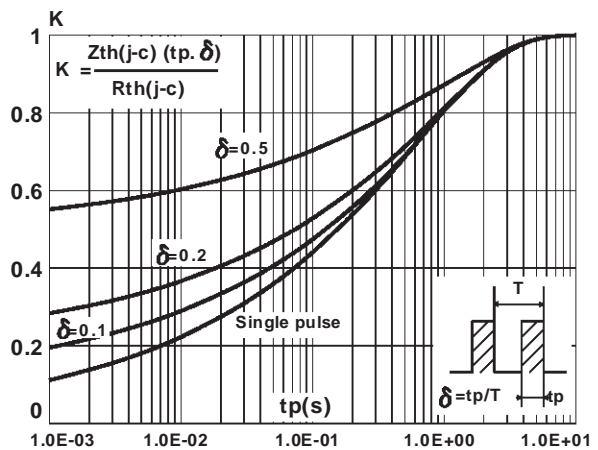


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AC)



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Fig.6 : Non repetitive surge peak forward current versus overload duration. (TO-220AC)

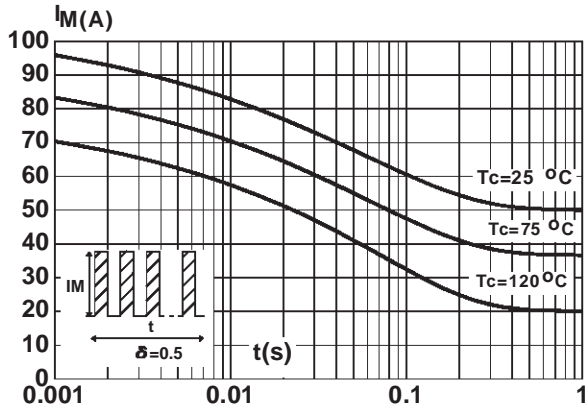


Fig.7 : Non repetitive surge peak forward current versus overload duration. (ISOWATT220AC)

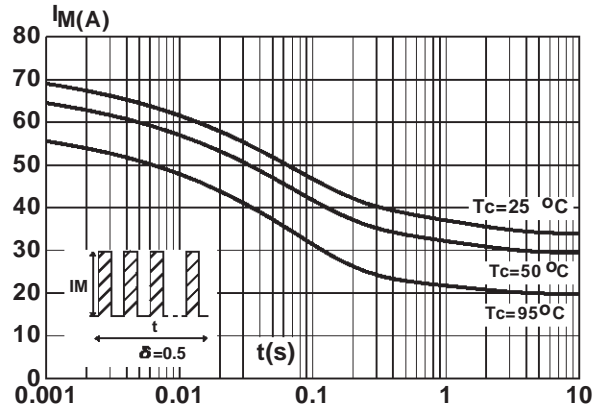


Fig.8 : Average current versus ambient temperature. (duty cycle : 0.5) (TO-220AC)

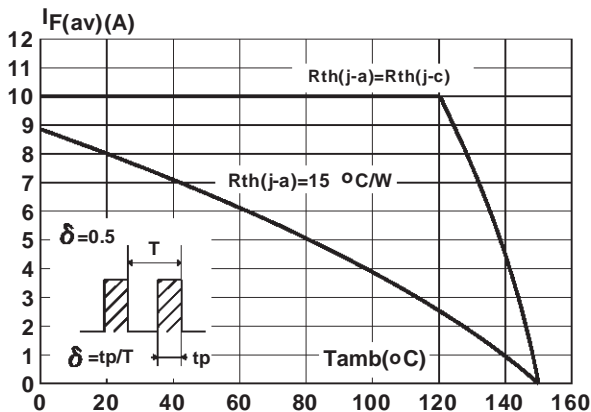


Fig.9 : Average current versus ambient temperature. (duty cycle : 0.5) (ISOWATT220AC)

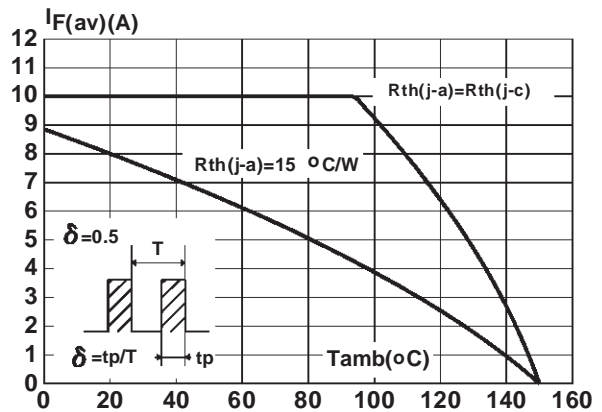


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

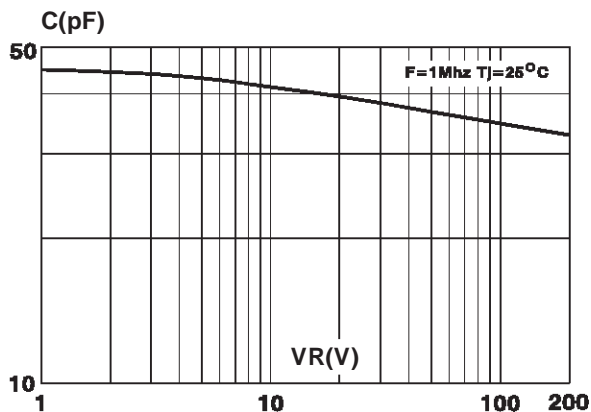


Fig.11 : Recovery charges versus dI_F/dt .

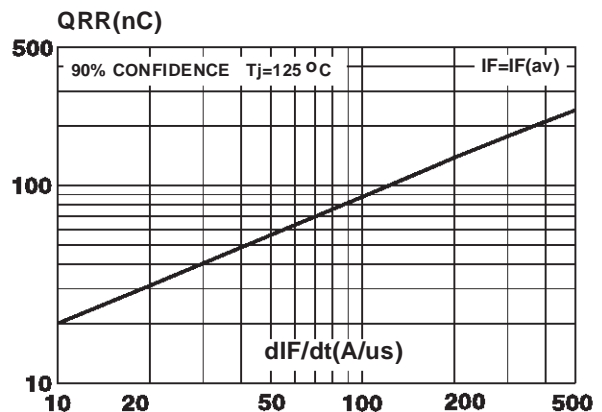


Fig.12 : Peak reverse current versus dIF/dt.

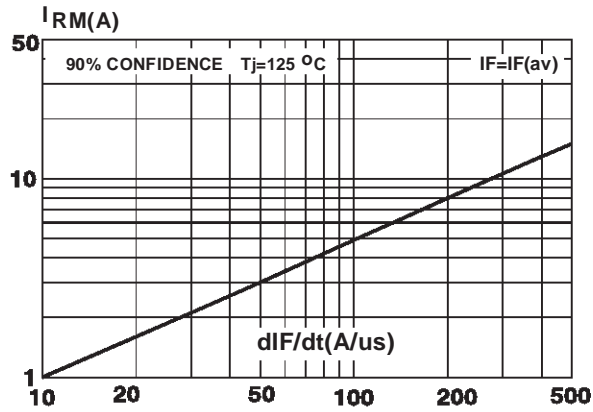
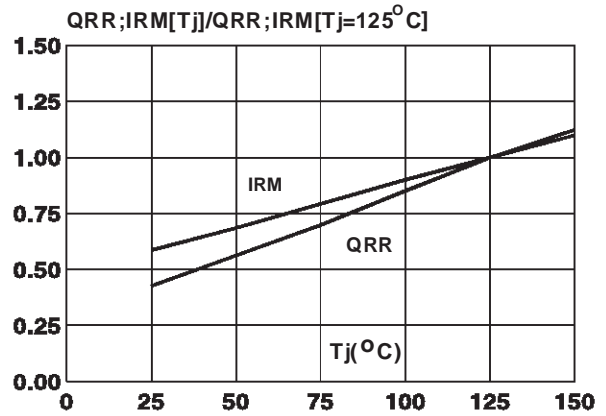
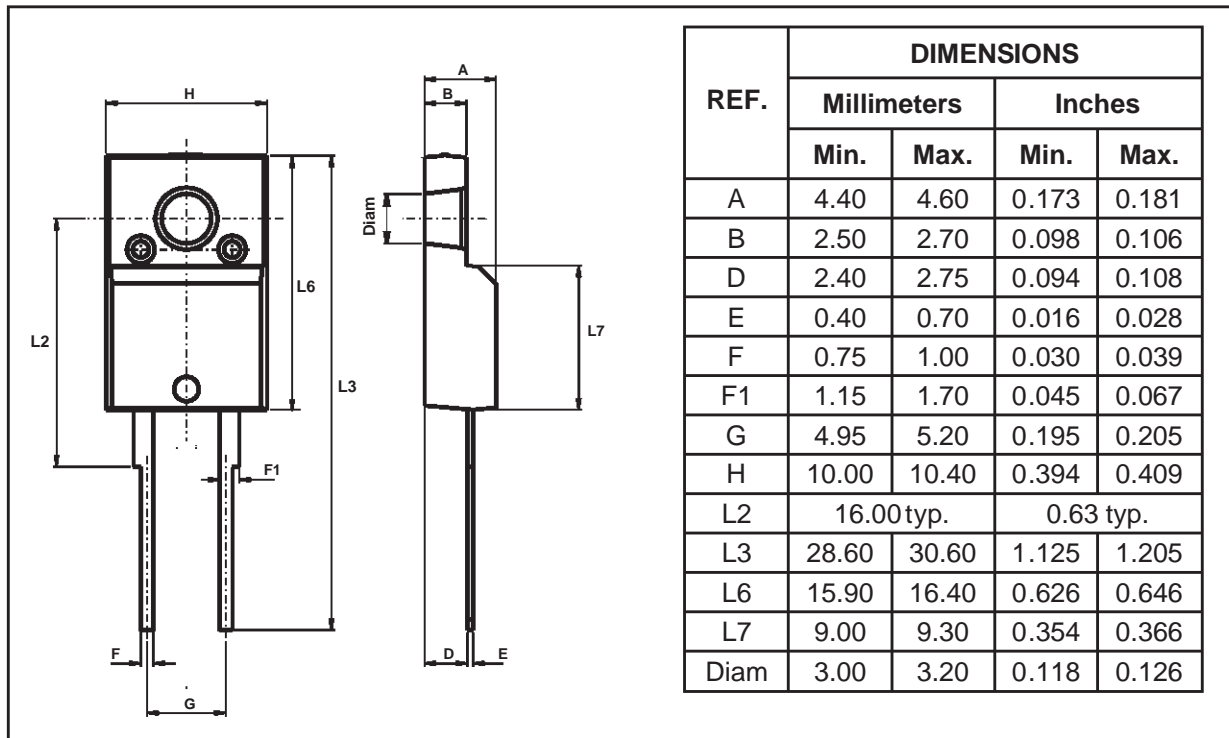


Fig.13 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

ISOWATT220AC (JEDEC outline)



Cooling method : C

Marking : Type number

Weight : 2 g

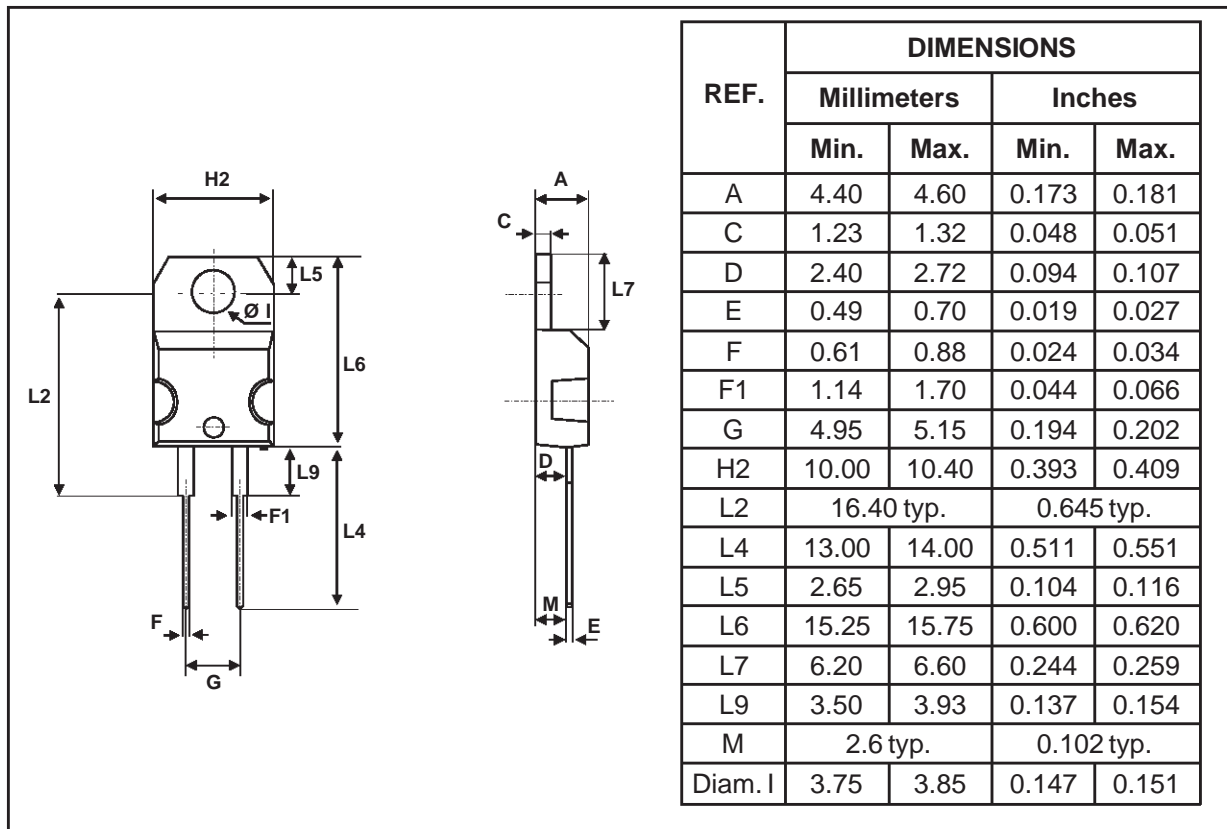
Recommended torque value : 0.55m.N

Maximum torque value : 0.70m.N

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PACKAGE MECHANICAL DATA

TO-220AC (JEDEC outline)



Cooling method : C

Marking : Type number

Weight : 1.86 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

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