

# BYD77AA - BYD77GA

## ULTRA FAST LOW-LOSS CONTROLLED AVALANCHE RECTIFIERS

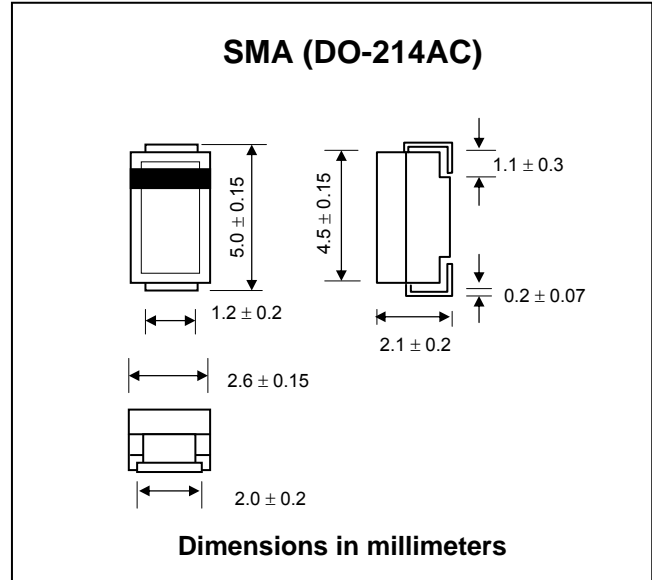
**PRV : 50 - 400 Volts**  
**I<sub>o</sub> : 2.0 Amperes**

### FEATURES :

- \* Glass passivated junction chip
- \* High maximum operating temperature
- \* Low leakage current
- \* Excellent stability
- \* Smallest surface mount rectifier outline
- \* **Pb / RoHS Free**

### MECHANICAL DATA :

- \* Case : SMA Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Polarity : Color band denotes cathode end
- \* Mounting position : Any
- \* Weight : 0.067 gram



### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

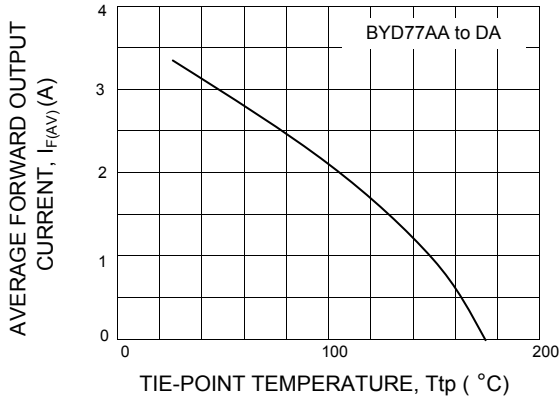
RATING	SYMBOL	BYD 77AA	BYD 77BA	BYD 77CA	BYD 77DA	BYD 77EA	BYD 77FA	BYD 77GA	UNIT
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	50	100	150	200	250	300	400	V
Maximum Continuous Reverse Voltage	$V_R$	50	100	150	200	250	300	400	V
Min. Reverse Avalanche Breakdown Voltage @ $I_R = 0.1$ mA	$V_{(BR)R-min}$	55	110	165	220	275	330	440	V
Maximum Average Forward Current	$I_{F(AV)}$	2.0 <sup>(1)</sup>				1.85 <sup>(1)</sup>			A
		0.85 <sup>(2)</sup>				0.80 <sup>(2)</sup>			
Maximum Non-Repetitive Peak Forward Surge Current (Note 3)	$I_{FSM}$	25							A
Maximum Repetitive Peak Forward Current at $T_{tp} = 105$ °C	$I_{FRM}$	15				13			A
Maximum Forward Voltage at $I_F = 1.0$ A ; $T_J = 25$ °C	$V_F$	0.98				1.05			V
Maximum Reverse Current at $V_R = V_{RRMmax}$ $T_J = 25$ °C $T_J = 165$ °C	$I_R$	1.0							$\mu$ A
	$I_{R(H)}$	100							$\mu$ A
Maximum Reverse Recovery Time (Note 4)	$T_{rr}$	25				50			ns
Thermal Resistance from Junction to Tie-Point	$R_{th j-tp}$	30							K / W
Thermal Resistance from Junction to Ambient (Note 5)	$R_{th j-a}$	150							K / W
Junction Temperature Range	$T_J$	- 65 to + 175							°C
Storage Temperature Range	$T_{STG}$	- 65 to + 175							°C

#### Notes :

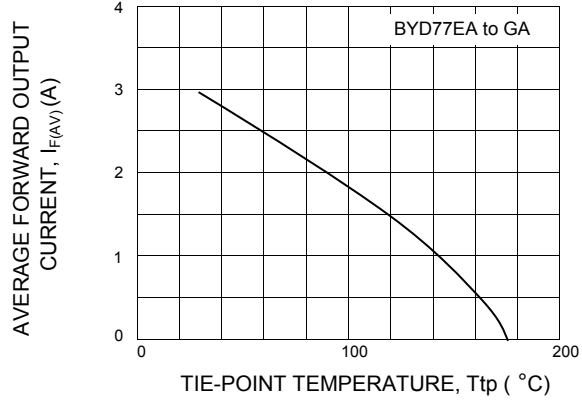
- (1)  $T_{tp} = 105$  °C; see Fig. 1 and 2; averaged over any 20 ms period; see also Fig.5 and 6
- (2)  $T_{amb} = 60$  °C; PCB mounting ; see Fig. 3 and 4; averaged over any 20 ms period; see also Fig.5 and 6
- (3)  $t = 10$ ms half sine wave;  $T_J = T_{jmax}$  prior to surge;  $V_R = V_{RRMmax}$
- (4) Reverse Recovery Test Conditions :  $I_F = 0.5$  A,  $I_R = 1.0$  A,  $I_{rr} = 0.25$  A.
- (5) Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\leq 40$   $\mu$ m.

## RATING AND CHARACTERISTIC CURVES ( BYD77AA - BYD77GA )

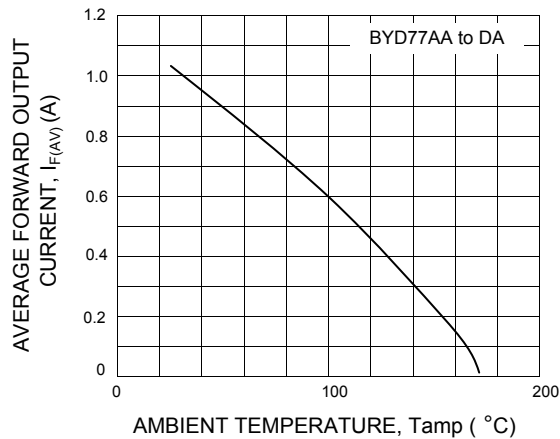
**FIG.1 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF TIE-POINT TEMPERATURE**



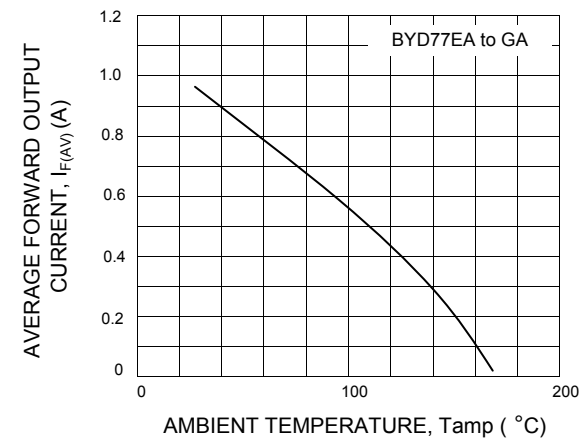
**FIG.2 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF TIE-POINT TEMPERATURE**



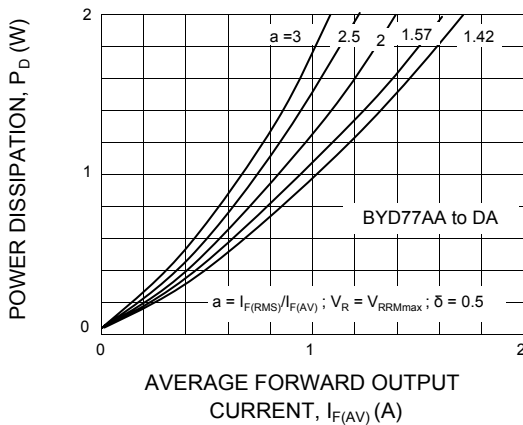
**FIG.3 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE**



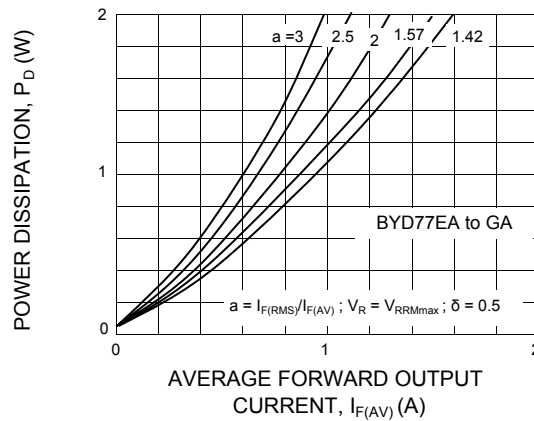
**FIG.4 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE**



**FIG.5 - MAXIMUM STEADY STATE POWER DISSIPATION AS A FUNCTION OF AVERAGE FORWARD CURRENT**

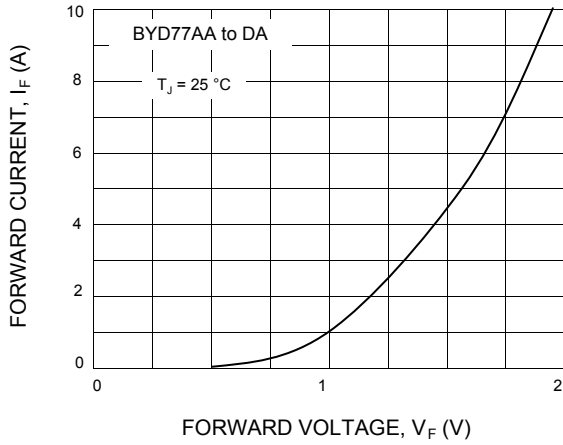


**FIG.6 - MAXIMUM STEADY STATE POWER DISSIPATION AS A FUNCTION OF AVERAGE FORWARD CURRENT**

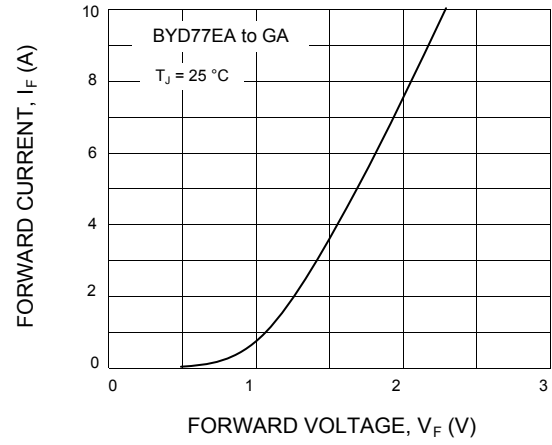


**RATING AND CHARACTERISTIC CURVES ( BYD77AA- BYD77GA )**

**FIG.7 - FORWARD CURRENT AS FUNCTION OF FORWARD VOLTAGE**



**FIG.8 - FORWARD CURRENT AS FUNCTION OF FORWARD VOLTAGE**



**FIG.9 - REVERSE CURRENT AS FUNCTION OF JUNCTION TEMPERATURE**

