

# BYD57DA - BYD57VA

## ULTRA-FAST SOFT-RECOVERY CONTROLLED AVALANCHE RECTIFIERS

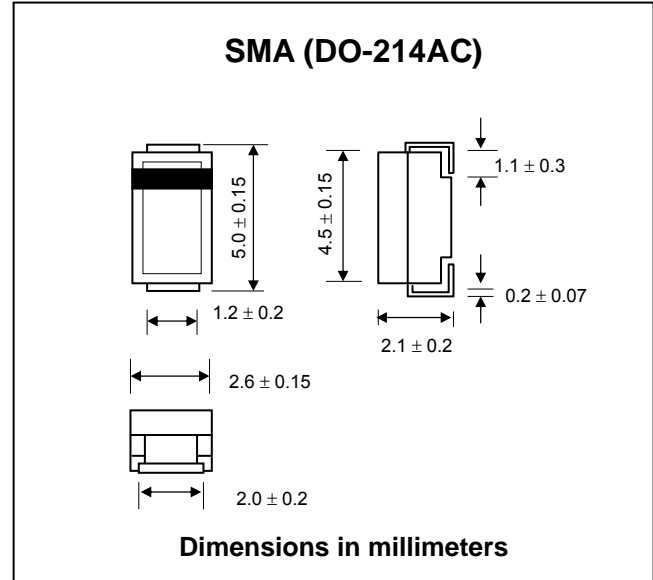
**PRV : 200 - 1400 Volts**  
**Io : 1.0 - 1.2 Amperes**

### 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

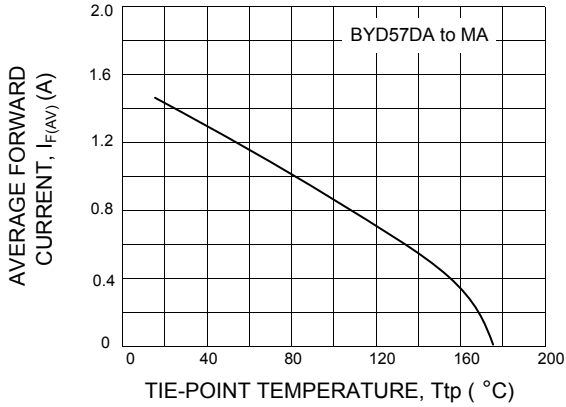
RATING	SYMBOL	BYD 57DA	BYD 57GA	BYD 57JA	BYD 57KA	BYD 57MA	BYD 57UA	BYD 57VA	UNIT
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	200	400	600	800	1000	1200	1400	V
Maximum Continuous Reverse Voltage	$V_R$	200	400	600	800	1000	1200	1400	V
Min. Reverse Avalanche Breakdown Voltage @ $I_R = 0.1$ mA	$V_{(BR)R-min}$	300	500	700	900	1100	1300	1500	V
Maximum Average Forward Current	$I_{F(AV)}$	1.0 <sup>(1)</sup>					1.2 <sup>(1)</sup>		A
Maximum Non-Repetitive Peak Forward Surge Current (Note 3)	$I_{FSM}$	0.4 <sup>(2)</sup>							A
Maximum Repetitive Peak Forward Current at $T_{tp} = 85$ °C	$I_{FRM}$	8.5					11		A
Non-repetitive Peak Reverse Avalanche energy (Note 4)	$E_{RSM}$	10							mJ
Maximum Forward Voltage at $I_F = 1.0$ A ; $T_J = 25$ °C	$V_F$	3.6					2.3		V
Maximum Reverse Current at $V_R = V_{RRMmax}$ $T_J = 25$ °C $T_J = 165$ °C	$I_R$	5.0							μA
	$I_{R(H)}$	100							μA
Maximum Reverse Recovery Time (Note 5)	$T_{rr}$	30			75		150		ns
Thermal Resistance from Junction to Tie-Point	$R_{th j-tp}$	30							K / W
Thermal Resistance from Junction to Ambient (Note 6)	$R_{th j-a}$	150							K / W
Junction Temperature Range	$T_J$	- 65 to + 175							°C
Storage Temperature Range	$T_{STG}$	- 65 to + 175							°C

#### Notes :

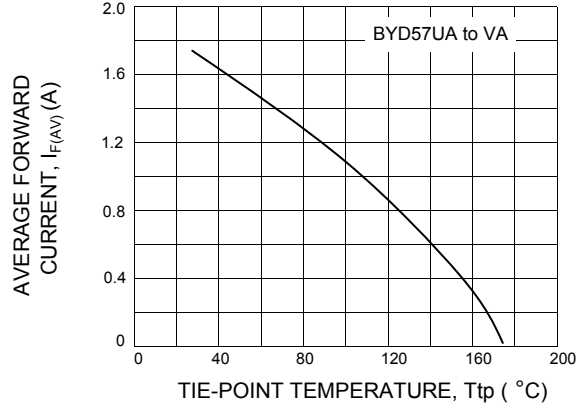
- (1)  $T_{tp} = 85$  °C; see Fig. 1 and 2; averaged over any 20 ms period; see also Fig.5 and 6.
- (2)  $T_{amb} = 60$  °C; PCB mounting; see Fig. 3 and 4; averaged over any 20 ms period; see also Fig.5 and 6.
- (3)  $t = 10$ ms half sine wave;  $T_J = T_{jmax}$  prior to surge;  $V_R = V_{RRMmax}$
- (4)  $L = 120$  mH ;  $T_J = T_{JMAX}$  prior to surge ; inductive load switched off.
- (5) Reverse Recovery Test Conditions :  $I_F = 0.5$  A,  $I_R = 1.0$  A,  $I_{rr} = 0.25$  A.
- (6) Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40$  μm.

## RATING AND CHARACTERISTIC CURVES ( BYD57DA - BYD57VA )

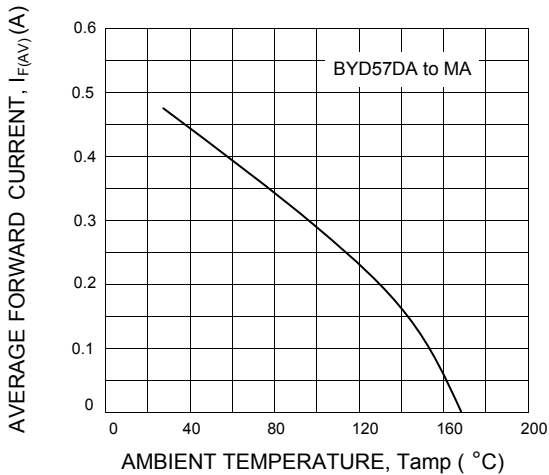
**FIG.1 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF TIE-POINT TEMPERATURE**



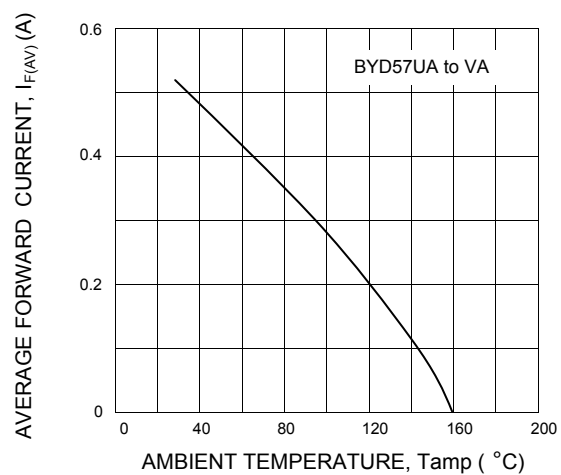
**FIG.2 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF TIE-POINT TEMPERATURE**



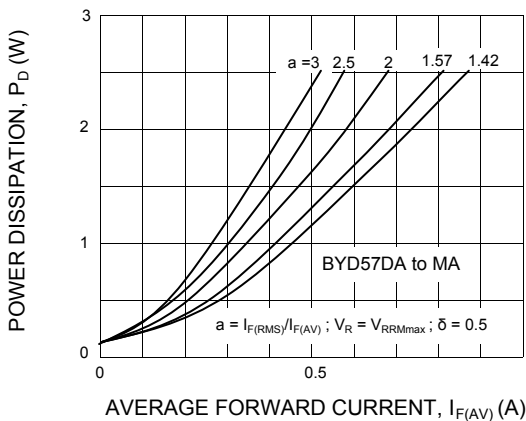
**FIG.3 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE**



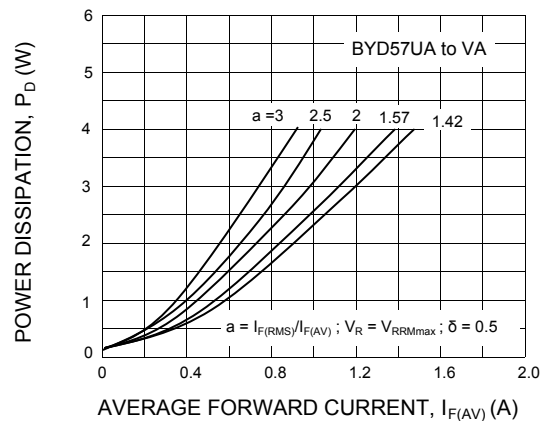
**FIG.4 - MAXIMUM PERMISSIBLE AVERAGE FORWARD CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE**



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

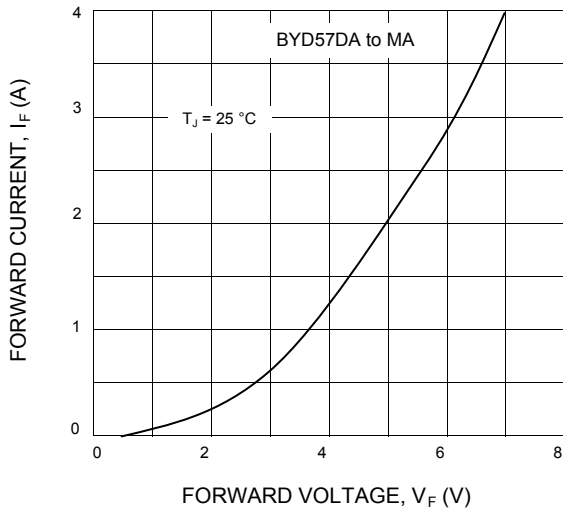


**FIG.6 - MAXIMUM STEADY STATE POWER DISSIPATION AS A FUNCTION OF AVERAGE FORWARD CURRENT**

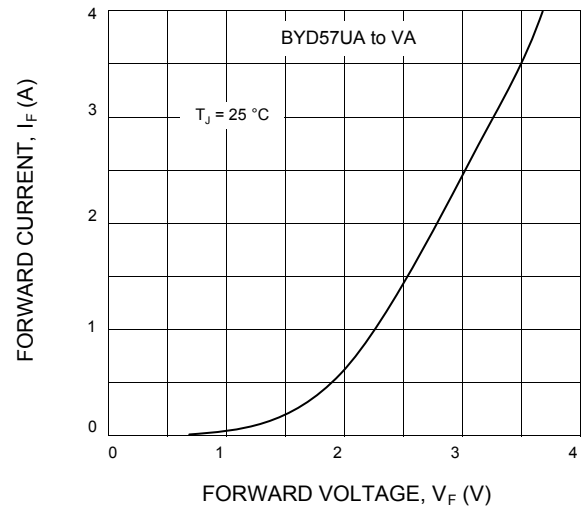


**RATING AND CHARACTERISTIC CURVES ( BYD57DA - BYD57VA )**

**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**

