

Silicon Dual Diode

BYQ40EW-200

200V/40A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

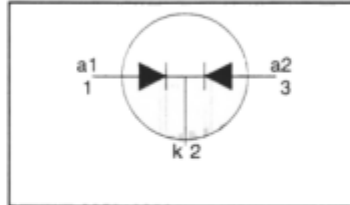
Rectifier diodes ultrafast, rugged

BYQ40EW series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$V_R = 150 \text{ V} / 200 \text{ V}$
$V_F \leq 0.85 \text{ V}$
$I_{O(AV)} = 40 \text{ A}$
$I_{RRM} \leq 0.2 \text{ A}$
$t_r \leq 40 \text{ ns}$

GENERAL DESCRIPTION

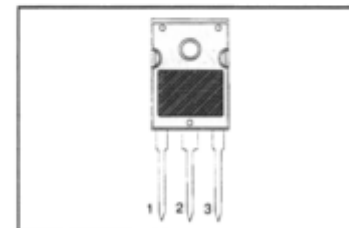
Dual, common cathode, ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYQ40EW series is supplied in the conventional leaded SOT429 (TO247) package.

PINNING

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
tab	cathode

SOT429 (TO247)



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
				BYQ40EW		
V_{RRM}	Peak repetitive reverse voltage		-	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	150	200	V
V_R	Continuous reverse voltage		-	150	200	V
$I_{O(AV)}$	Average rectified output current (both diodes conducting)	square wave $\delta = 0.5$; $T_{mb} \leq 117 \text{ }^\circ\text{C}$	-	40		A
I_{FRM}	Repetitive peak forward current per diode	$t = 25 \text{ } \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 117 \text{ }^\circ\text{C}$	-	40		A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10 \text{ ms}$	-	180		A
		$t = 8.3 \text{ ms}$ sinusoidal; with reapplied	-	200		A
I_{RRM}	Repetitive peak reverse current per diode	$V_{RWM(max)}$ $t_p = 2 \text{ } \mu\text{s}$; $\delta = 0.001$	-	0.2		A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100 \text{ } \mu\text{s}$	-	0.2		A
T_{stg}	Storage temperature		-40	150		$^\circ\text{C}$
T_j	Operating junction temperature		-	150		$^\circ\text{C}$

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

Rectifier diodes
ultrafast, rugged

BYQ40EW series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode both diodes conducting	-	-	1	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air	-	45	0.85	K/W

ELECTRICAL CHARACTERISTICS

characteristics are per diode at $T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$; $T_j = 150\text{ °C}$	-	0.8	0.85	V
		$I_F = 20\text{ A}$	-	0.95	1.05	V
		$I_F = 40\text{ A}$	-	1.00	1.20	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100\text{ °C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	10	21	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	35	40	ns
V_{rr}	Forward recovery voltage	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V