

## LOW VOLTAGE SCHOTTKY RECTIFIER

### Features

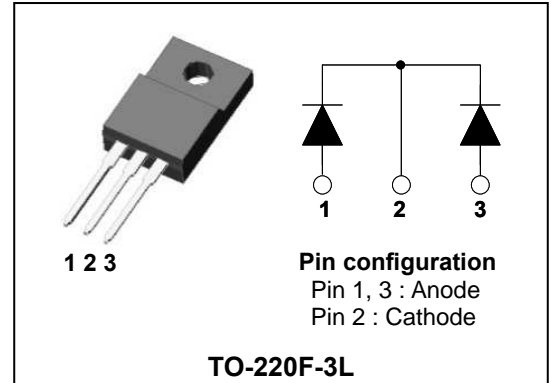
- Low forward voltage drop and leakage current
- Low power loss and High efficiency
- ESD capability
- Dual common cathode rectifier
- Full lead (Pb)-free and RoHS compliant device

### Applications

- Power supply - Output rectification
- High efficiency SMPS
- Free-wheeling diode
- Reverse battery protection
- DC to DC systems

### Description

The SDB2040PI has two schottky barriers arranged in a common cathode configuration. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection



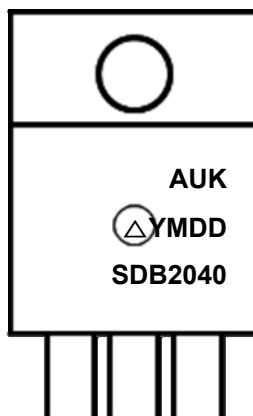
### Product Characteristics

$I_{F(AV)}$	2 X 10A
$V_{RRM}$	40V
$V_{FM}$ at 125°C	0.50V
$I_{FSM}$	120A

### Ordering Information

Device	Marking Code	Package	Packaging
SDB2040PI	SDB2040	TO-220F-3L	Tube

### Marking Information



AUK = Manufacture Logo

Δ = Control Code of Manufacture

YMDD = Date Code Marking

- Y = Year Code

- M = Monthly Code

- DD = Daily Code

SDB2040 = Specific Device Code

## Absolute Maximum Ratings (Limiting Values)

Characteristic	Symbol	Value	Unit
Maximum repetitive reverse voltage Maximum working peak reverse voltage Maximum DC blocking voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	40	V
Maximum average forward rectified current	per diode	10	A
	total device	20	
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	120	A
Storage temperature range	$T_{stg}$	-45°C to +150°C	°C
Maximum operating junction temperature	$T_J$	150	°C

## Thermal Characteristics

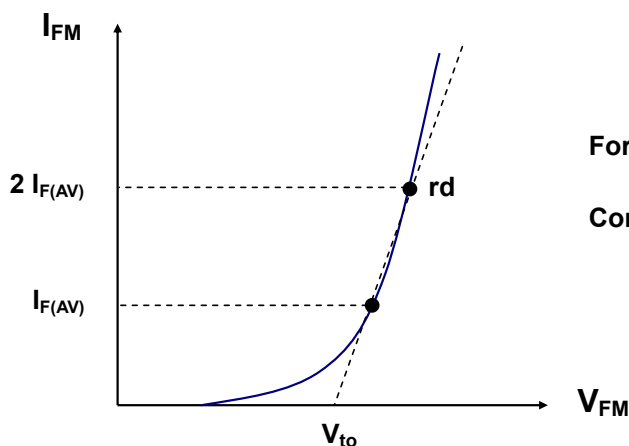
Characteristic	Symbol	Value	Unit
Maximum thermal resistance junction to case	per diode	4.0	°C/W
	total device	3.5	

## Electrical Characteristics (Per Diode)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Peak forward voltage drop	$V_{FM}^{(1)}$	$I_{FM} = 10A$	$T_J = 25^\circ C$	-	-	0.55	V
			$T_J = 125^\circ C$	-	-	0.50	V
Reverse leakage current	$I_{RM}^{(1)}$	$V_R = V_{RRM}$	$T_J = 25^\circ C$	-	-	1.5	mA
			$T_J = 125^\circ C$	-	-	150	mA
Junction capacitance	$C_j$	$V_R = 10V_{DC}, f=1MHz$	-	600	-	pF	

**Note :** (1) Pulse test :  $t_p \leq 380 \mu s$ , Duty cycle  $\leq 2\%$

To evaluate the conduction losses use the following equation (Fig 4.) :  $P_F = 0.35 \times I_{F(AV)} + 0.015 I_{F(RMS)}^2$

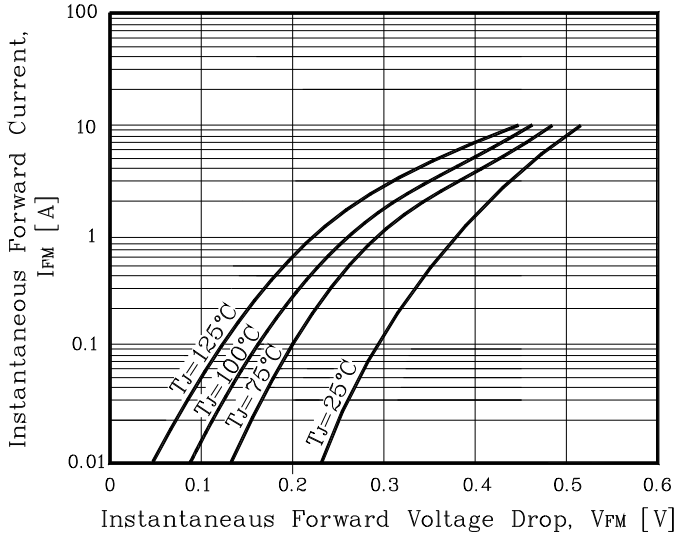


$$\text{Forward Voltage : } V_{FM} = V_{to} + rd I_{FM}$$

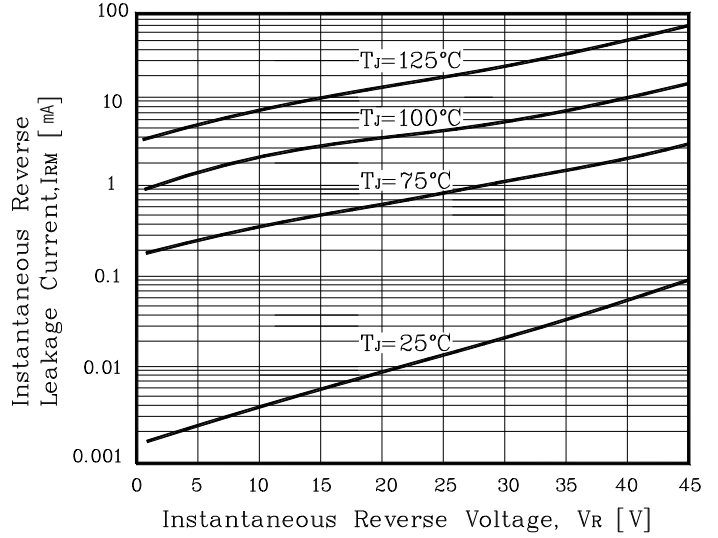
$$\text{Conduction Loss : } P_F = V_{to} I_{F(AV)} + rd I_{F(RMS)}^2$$

## Rating and Characteristic Curves

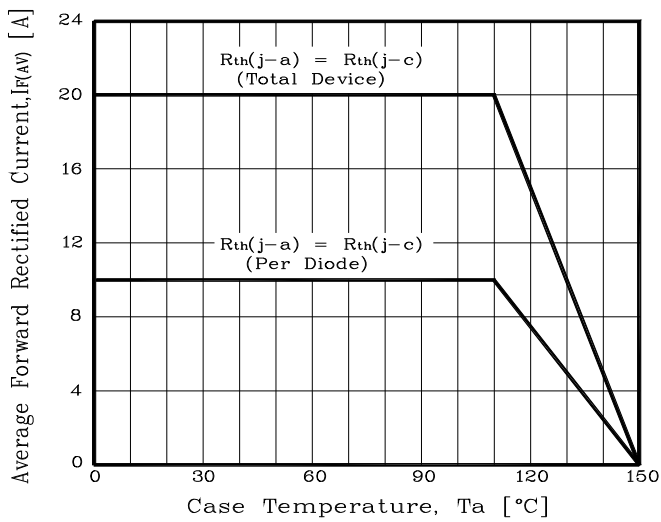
**Fig. 1) Typical Forward Characteristics (Per diode)**



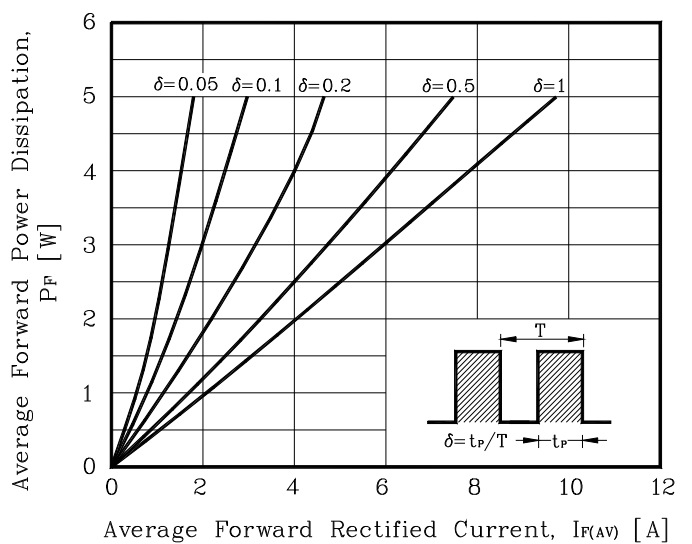
**Fig. 2) Typical Reverse Characteristics (Per diode)**



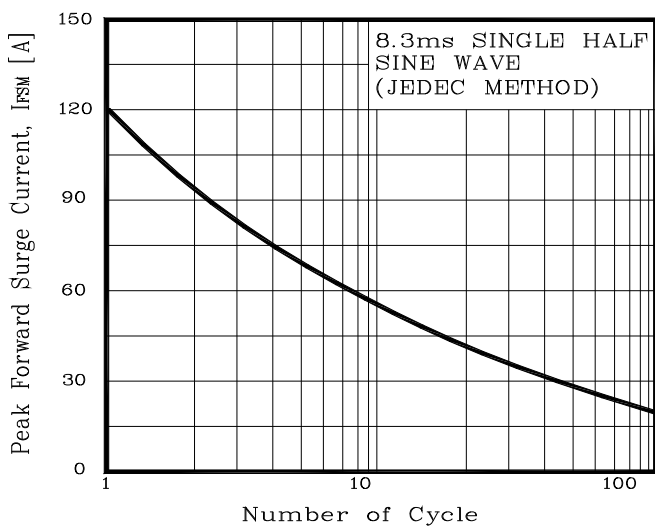
**Fig. 3) Maximum Forward Derivative Curve**



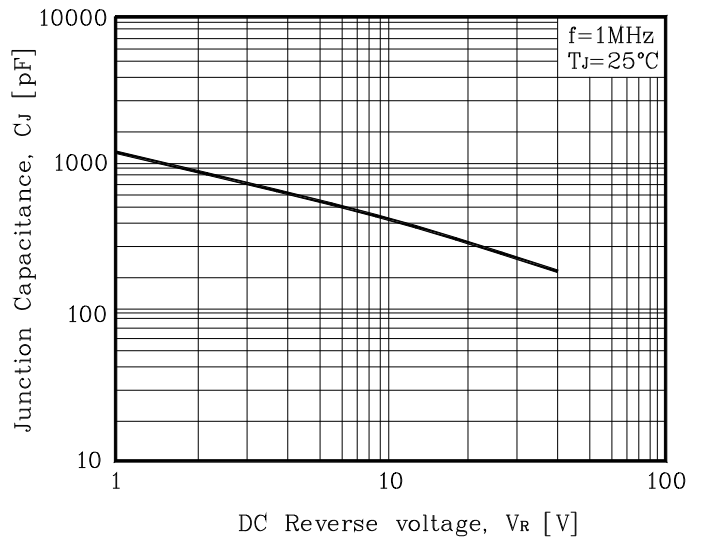
**Fig. 4) Forward Power Dissipation (Per diode)**



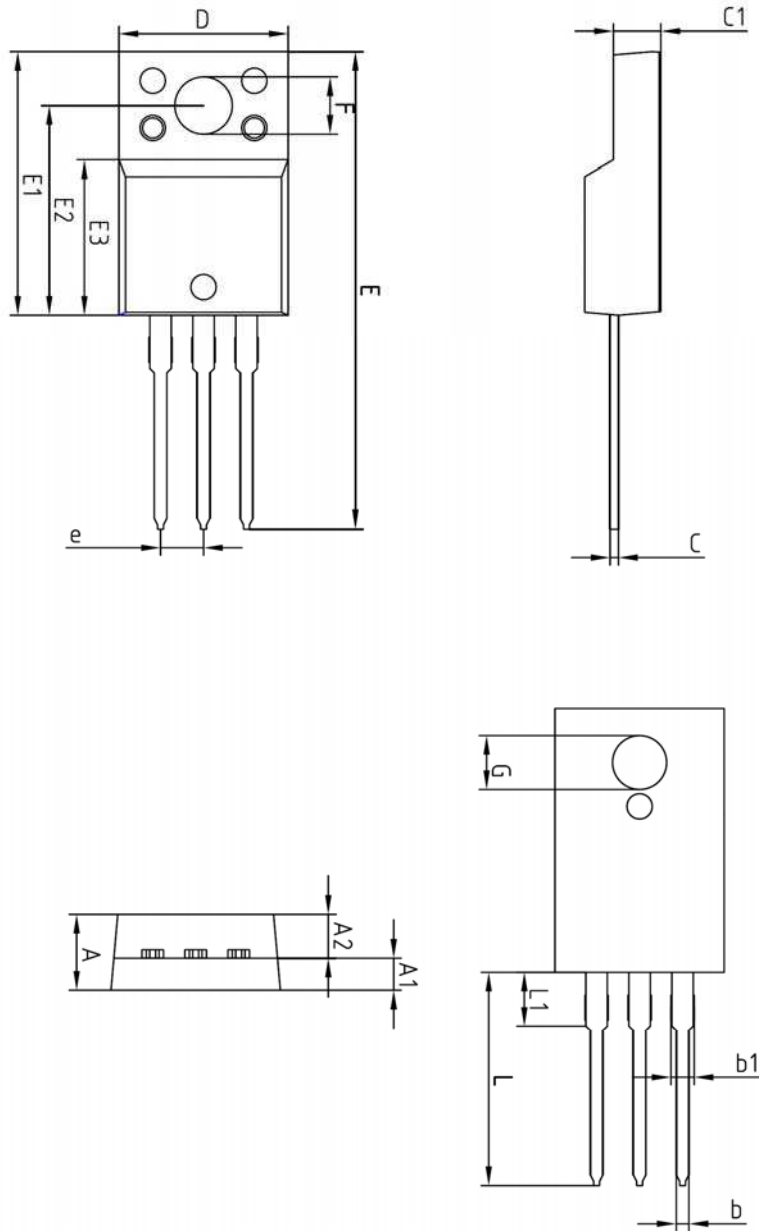
**Fig. 5) Maximum Non-Repetitive Peak Forward Surge Current (Per diode)**



**Fig. 6) Typical Junction Capacitance (Per diode)**



## Package Outline Dimension



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	-	-	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	28.00	-	28.60	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	2.54 BSC			
L	12.40	-	13.00	
L1	3.46 BSC			

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