Low Voltage Advance Barrier Rectifier ABR1045

General Description

Low voltage advance barrier rectifier is suited for switch mode power supplies and other power converters. This device is intended for use in low voltage operation, and particularly, in high frequency circuits where low switching losses and low noise are required.

The ABR1045 is available in PDFN-5×6-8 and TO-277 packages.

Features

- Ultra Low Forward Voltage
- High Surge Capacity
- High Operating Junction Temperature
- Pb-free Package is Available
- Low Thermal Resistance

Main Product Characteristics

$I_{F(AV)}$	10A
V_{RRM}	45V
$T_{J(max)}$	150°C
$V_{F\ (max)}$ (T_C=25°C)	0.47V

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0@ 0.125in.
- Weight (Approximately):
  0.09 Grams (PDFN-5×6-8 Package)
  0.0965 Grams (TO-277 Package)
- Finish: All External Surfaces Corrosion Resistant and Terminal
- Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C (Max) for 10 Seconds

Applications

- Power Supply Output Rectification
- Mobile Charger
- Adapter

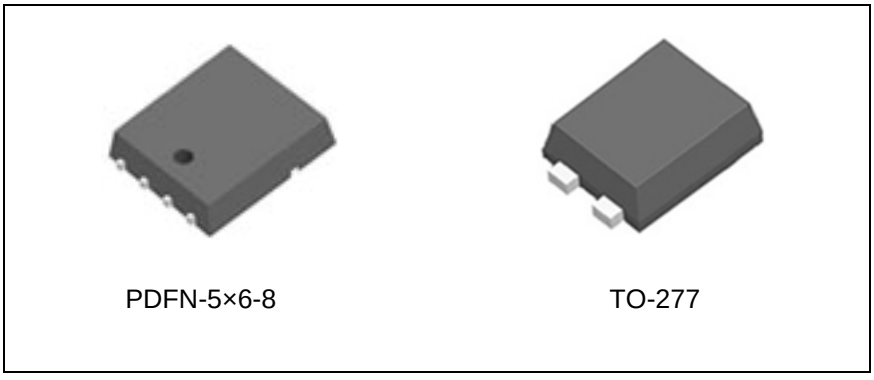
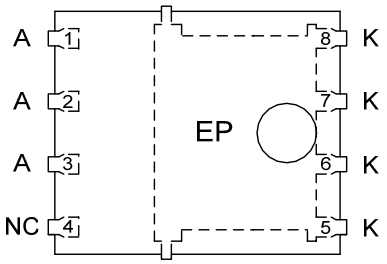


Figure 1. Package Types of ABR1045

Low Voltage Advance Barrier Rectifier ABR1045

Pin Configuration

DNP Package
(PDFN-5×6-8)



VB Package
(TO-277)

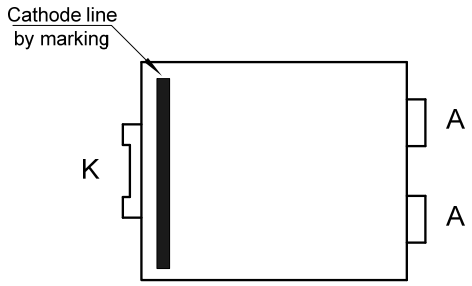
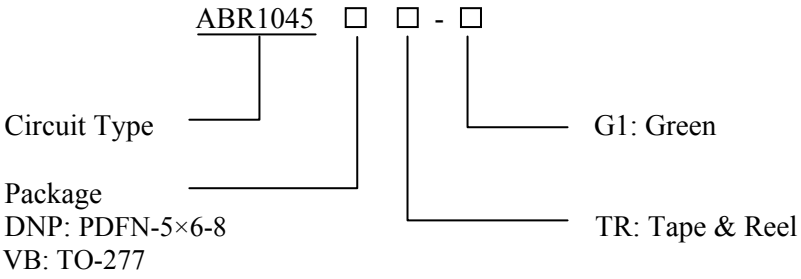


Figure 2. Pin Configuration of ABR1045 (Top View)

Ordering Information



Package	Part Number	Marking ID	Packing Type
PDFN-5×6-8	ABR1045DNPTR-G1	A1045DNP-G1	Tape & Reel
TO-277	ABR1045VBTR-G1	A1045VB-G1	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "G1" suffix in the part number, are RoHS compliant and green.

Low Voltage Advance Barrier Rectifier ABR1045

Absolute Maximum Ratings (Per Diode Leg) (Note 1)

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current (Rated V_R) T_C=TBD	$I_{F(AV)}$	10	A
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Half Wave, Single Phase, 60Hz)	I_{FSM}	200	A
Operating Junction Temperature Range (Note 2)	T_J	-65 to 150	°C
Storage Temperature Range	T_{STG}	-65 to 150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/μs
ESD (Machine Model=3C)		> 400	V
ESD (Human Body Model=3B)		> 8000	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.
Note 2: The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

Recommended Operating Conditions

Parameter	Symbol	Condition	Value		Unit
Maximum Thermal Resistance	θ_{JA}	Junction to Ambient	PDFN-5×6-8	70	°C/W
			TO-277		

Electrical Characteristics

Parameter	Symbol	Conditions	Value	Units
Maximum Instantaneous Forward Voltage Drop (Note 3)	V_F	I_F=10A, T_C=25°C	0.47	V
		I_F=10A, T_C=125°C	0.41	
Maximum Instantaneous Reverse Current (Note 3)	I_R	Rated DC Voltage, T_C=25°C	0.3	mA
		Rated DC Voltage, T_C=100°C	15	

Note 3: Pulse Test: Pulse Width=300μs, Duty Cycle ≤ 2.0%.

Typical Performance Characteristics

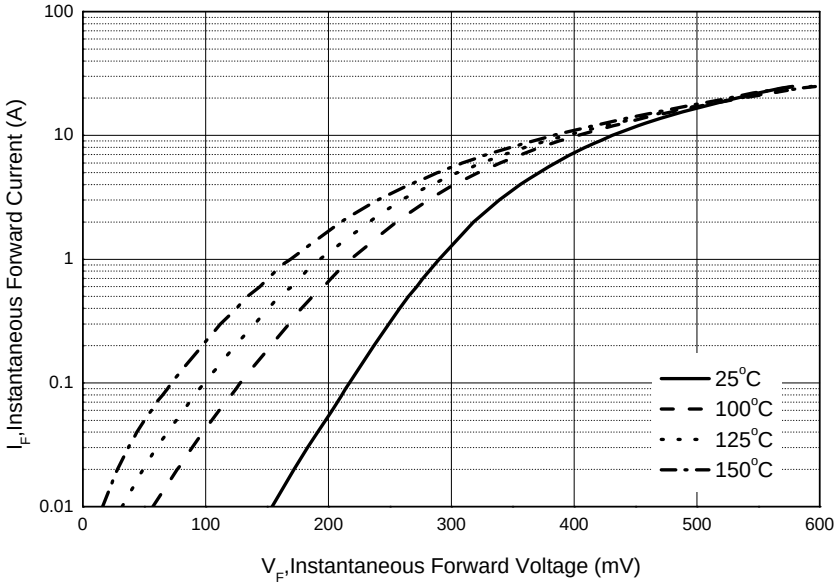


Figure 3. Typical Forward Characteristics

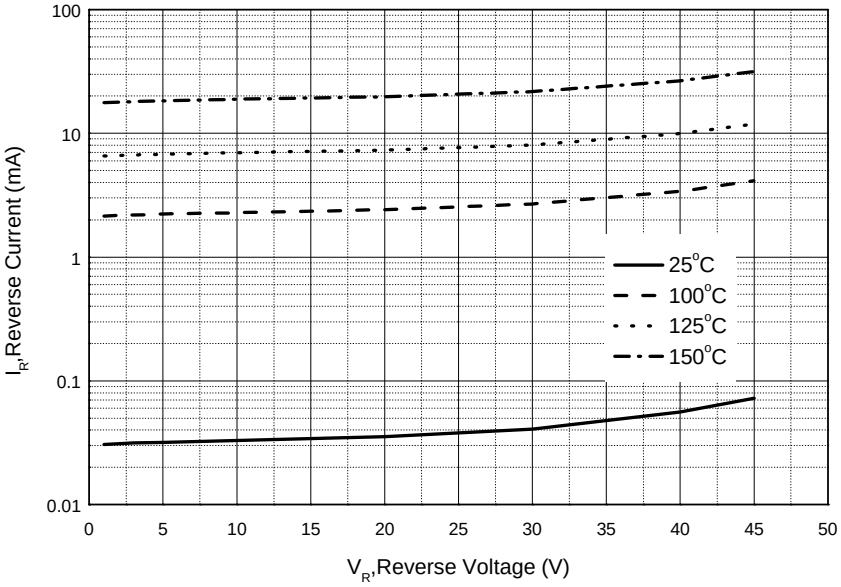


Figure 4. Typical Reverse Characteristics

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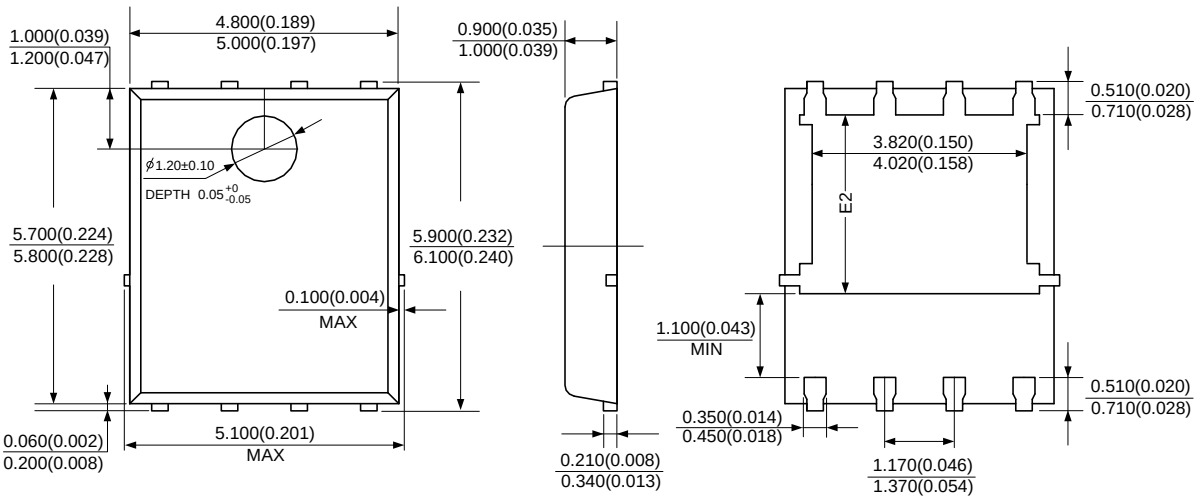
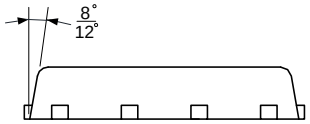
Mechanical Dimensions

PDFN-5×6-8 **Unit: mm(inch)**





Symbol	E2			
	min(mm)	max(mm)	min(inch)	max(inch)
Option 1	3.340	3.540	0.131	0.139
Option 2	3.180	3.380	0.125	0.133

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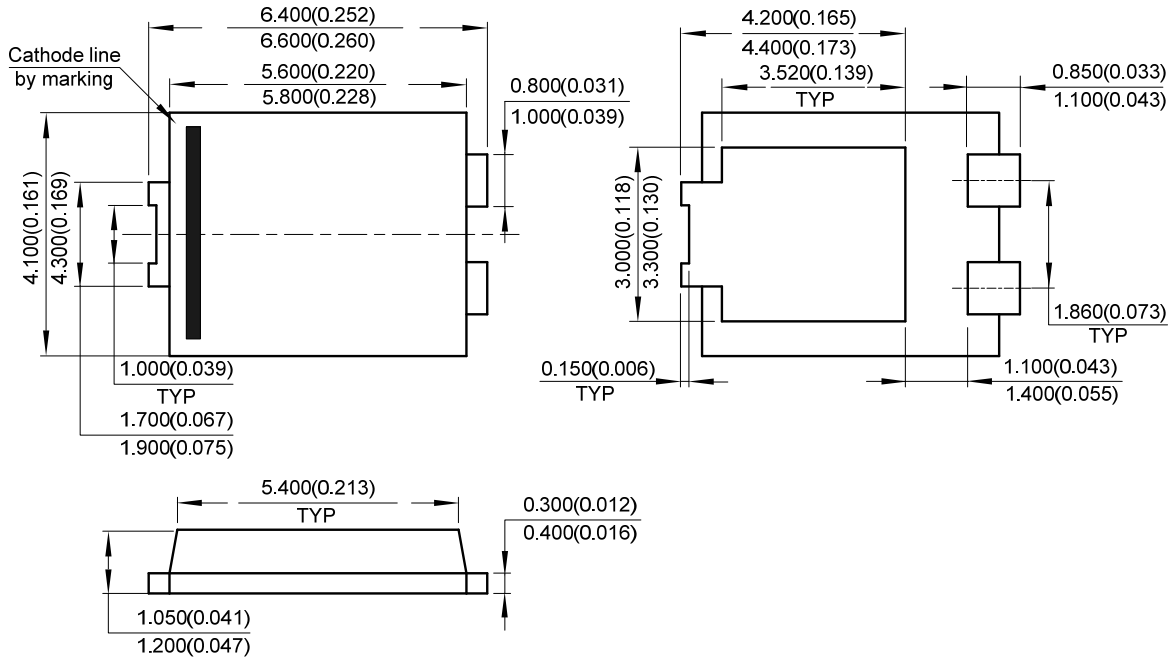
Mechanical Dimensions (Continued)

TO-277 **Unit: mm(inch)**



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