MR4027

Automotive Transient Voltage Suppressor

20 V – 27 V

Designed for Automotive Applications (Alternator) requiring Reverse Avalanche Capability for use as Transient Voltage Suppressor. Developed to suppress transients in automotive systems, this device operates in the forward mode as Standard Rectifier or in Reverse as Transient Voltage Suppressor for Centralized Protection.

For further information referring to Mounting or Operating Conditions, contact your nearest ON Semiconductor Sales Representative.

Mechanical Characteristics

- Finish: 100% Tin Plated
  All External Surfaces are Corrosion Resistant
- Weight: 2.6 Grams (Approximately)

Packaging/Labeling

- Two Sealed Bags into a Cardboard Box
- Device Number Labeled on the Bag

Marking

- The Pieces are Laser Marked on the Epoxy of the Diode
- The part, divided into 4 quarters, has the following marking:
  – On the top quarter: 1 digit for the polarity (N or P), 1 digit for the voltage code (1 for the 20–27 V), 4 digits for the date code (YYMM)
  – On the left and right quarter: 1 digit for the polarity (N or P)
  – On the bottom quarter: 2 digits for the site code (NL for Czech Republic) and 3 digits for the assembly lot number

MAXIMUM RATING

Rating	Symbol	Value	Unit
DC Blocking Voltage	V_R	18	Volts
Average Forward Current (Single Phase, Resistive Load, T_C = 185°C)	I_O	40	Amps
Peak Repetitive Reverse Surge Current (Time Constant = 10 ms, T_C = 25°C) (Time Constant = 80 ms, T_C = 25°C)	I_{RSM} I_{RSM}	110 50	Amps
Non–Repetitive Peak Surge Current (Halfwave, Single Phase, 50 Hz)	I_{FSM}	500	Amps
Storage Temperature Range	T_{stg}	–40 to +200	°C
Maximum Operating Junction Temperature	T_J	200	°C

ON Semiconductor
Formerly a Division of Motorola
http://onsemi.com

N SUFFIX
(Anode to Cup)
P SUFFIX
(Cathode to Cup)
CASE 193A

ORDERING INFORMATION

Device	Package	Shipping
MR4027N	Button Can	5000/Box
MR4027P	Button Can	5000/Box

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.4	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
Instantaneous Forward Voltage(1) (I_F = 100 Amps, T_C = 25°C)	v_F	—	1.1	Volts
Reverse Current(1) (V_R = 16 Vdc, T_C = 25°C)	I_R	—	1.0	μA
Breakdown Voltage(1) (I_R = 100 mA, T_C = 25°C)	$V_{(BR)}$	20	27	Volts
Breakdown Voltage (I_R = 80 Amps, T_C = 25°C, PW = 80 μs) (I_R = 80 Amps, T_C = 85°C, PW = 80 μs)	$V_{(BR)}$	 — —	 35 37	Volts
Breakdown Voltage Temperature Coefficient	$V_{(BR)TC}$	0.095*		%/°C
Forward Voltage Temperature Coefficient (I_F = 10 mA)	V_{FTC}	–2*		mV/°C

(1) Pulse Test: Pulse Width < 300 μs, Duty Cycle < 2%.

*Typical

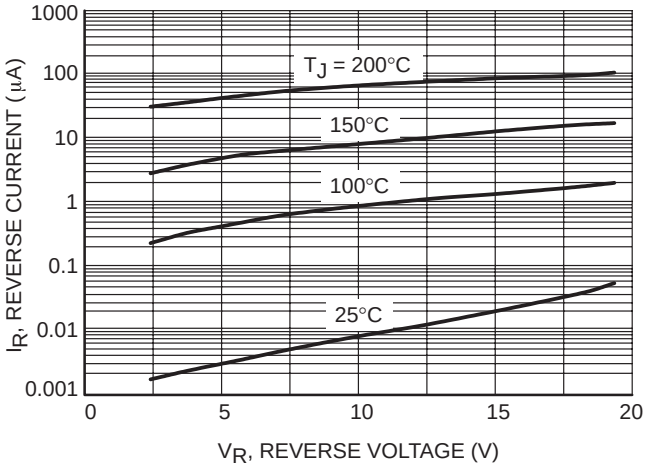


Figure 1. Typical Reverse Current

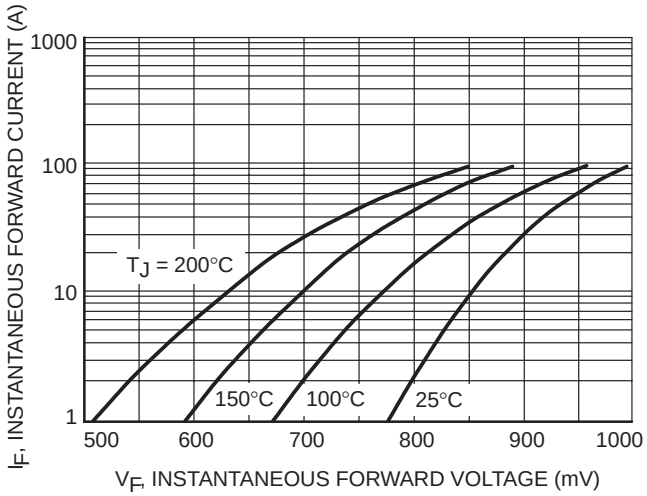


Figure 2. Typical Forward Voltage

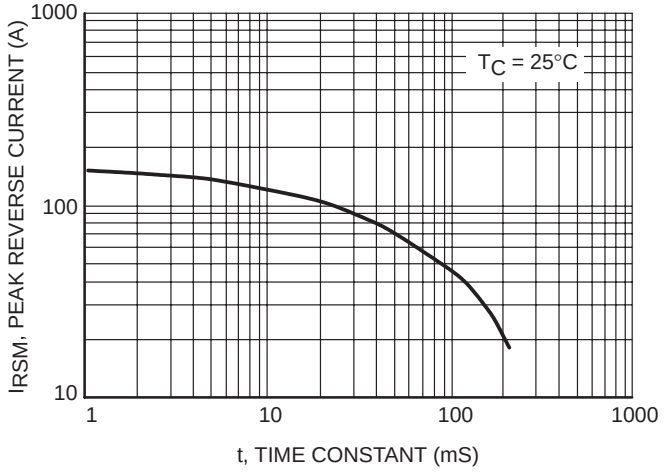


Figure 3. Maximum Peak Reverse Current

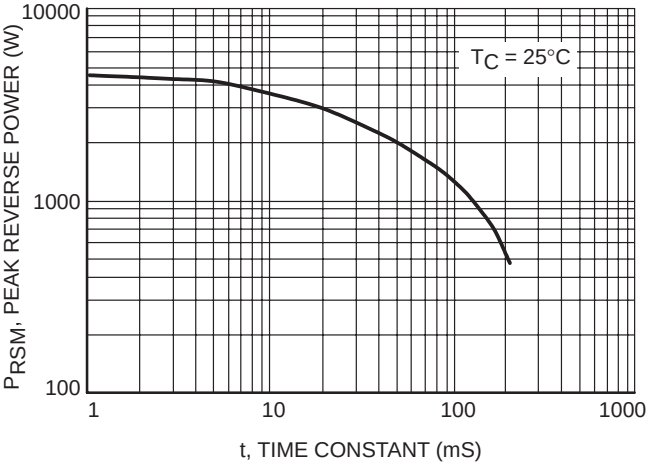


Figure 4. Maximum Peak Reverse Power

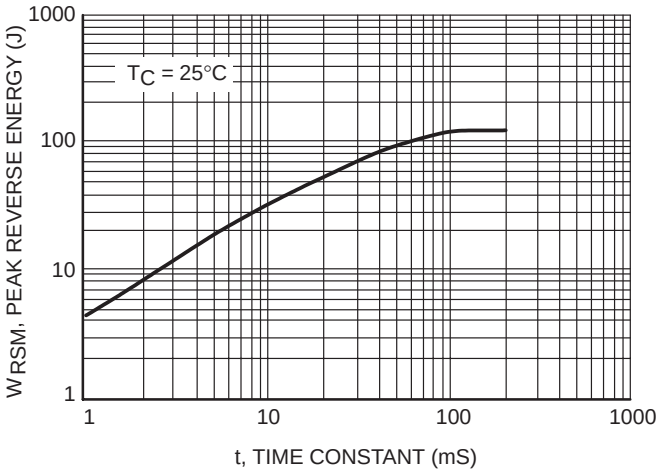


Figure 5. Maximum Reverse Energy

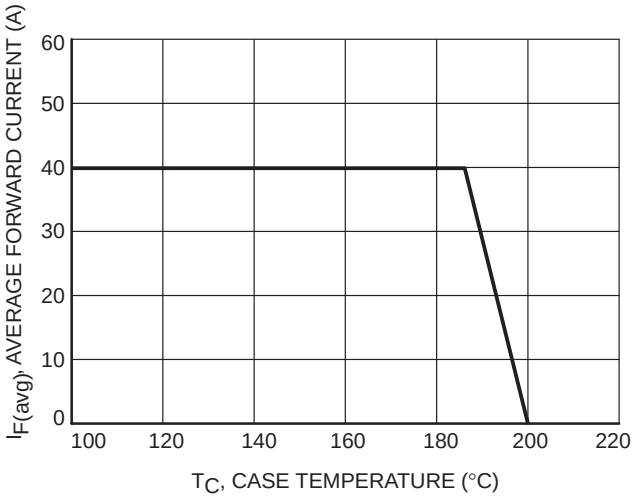


Figure 6. Maximum Current Rating

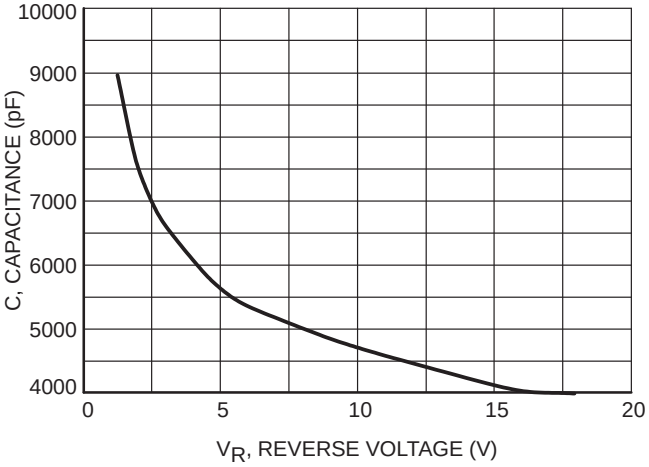


Figure 7. Typical Capacitance

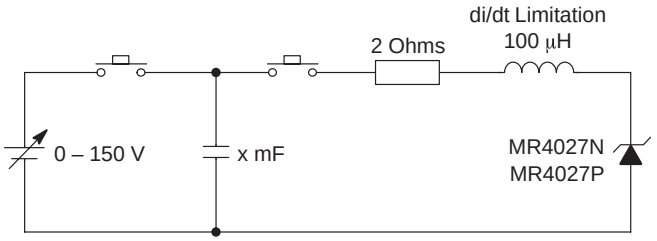


Figure 8. Load Dump Test Circuit

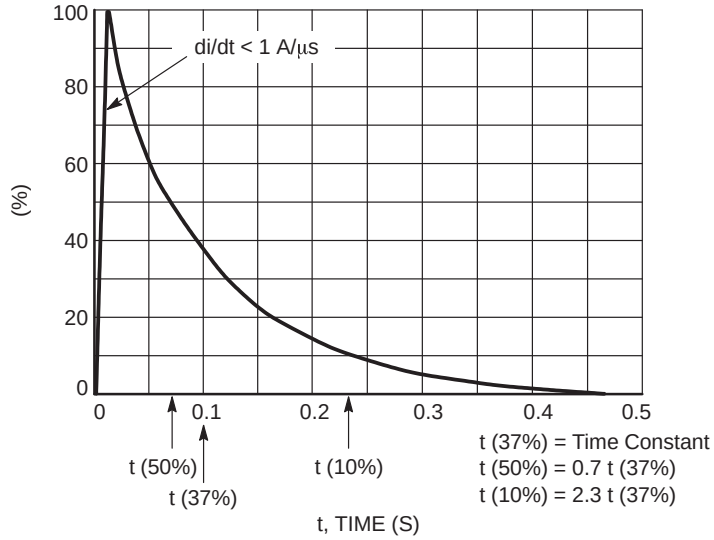
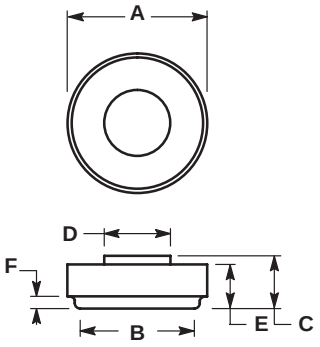


Figure 9. Load Dump Pulse Current

PACKAGE DIMENSIONS

N SUFFIX
(Anode to Cup)
P SUFFIX
(Cathode to Cup)
CASE 193A–02
ISSUE A



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	11.4	11.6	0.449	0.457
B	9.3	9.7	0.366	0.382
C	4.3	4.9	0.169	0.193
D	5.4	5.6	0.213	0.220
E	3.6	4.2	0.142	0.165
F	1.0	2.0	0.039	0.079

PUBLICATION ORDERING INFORMATION

USA/EUROPE Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303–675–2175 or 800–344–3860 Toll Free USA/Canada
Fax: 303–675–2176 or 800–344–3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com

Fax Response Line*: 303–675–2167
800–344–3810 Toll Free USA/Canada
*To receive a Fax of our publications

N. America Technical Support: 800–282–9855 Toll Free USA/Canada

ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support
Phone: 303–675–2121 (Tue–Fri 9:00am to 1:00pm, Hong Kong Time)
Email: ONlit–asia@hibbertco.com

JAPAN: ON Semiconductor, Japan Customer Focus Center
4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan 141–8549
Phone: 81–3–5487–8345
Email: r14153@onsemi.com

ON Semiconductor Website: http://onsemi.com

For additional information, please contact your local Sales Representative.