

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, $T_C = 185^\circ\text{C}$)	I_O	40	Amps
Peak Repetitive Reverse Surge Current (Time Constant = 10 ms, $T_C = 25^\circ\text{C}$) (Time Constant = 80 ms, $T_C = 25^\circ\text{C}$)	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	$^\circ\text{C}$
Maximum Operating Junction Temperature	T_J	200	$^\circ\text{C}$



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	$^{\circ}\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS

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

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

*Typical

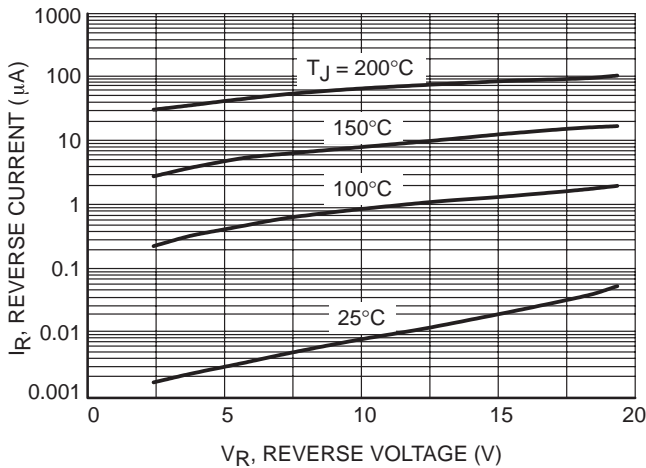


Figure 1. Typical Reverse Current

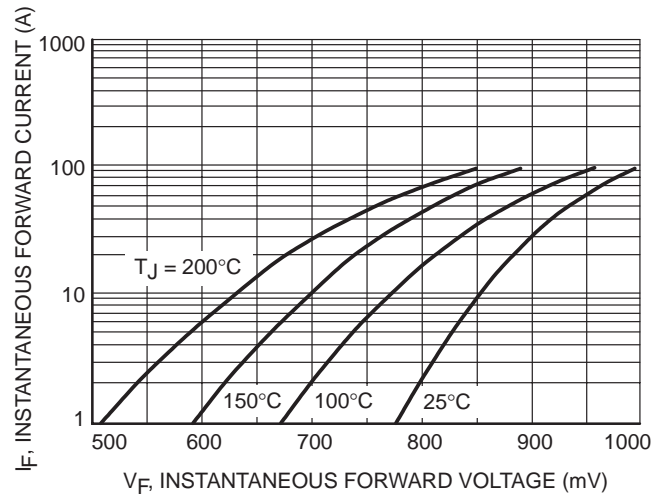


Figure 2. Typical Forward Voltage

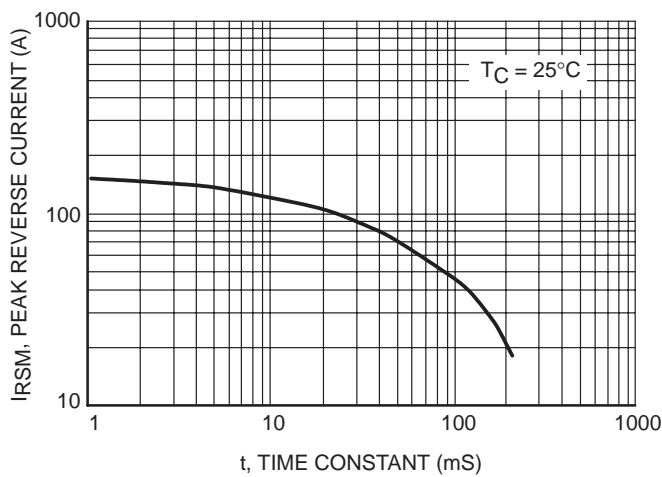


Figure 3. Maximum Peak Reverse Current

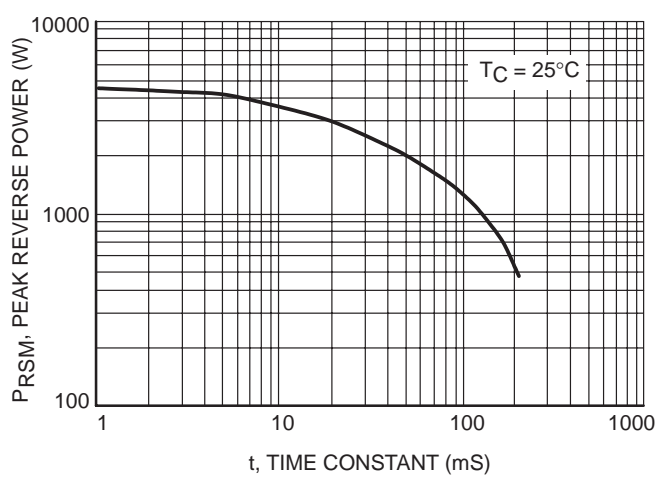


Figure 4. Maximum Peak Reverse Power

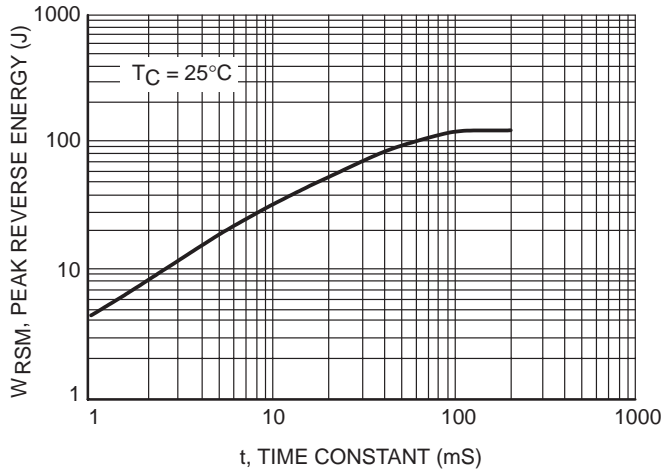


Figure 5. Maximum Reverse Energy

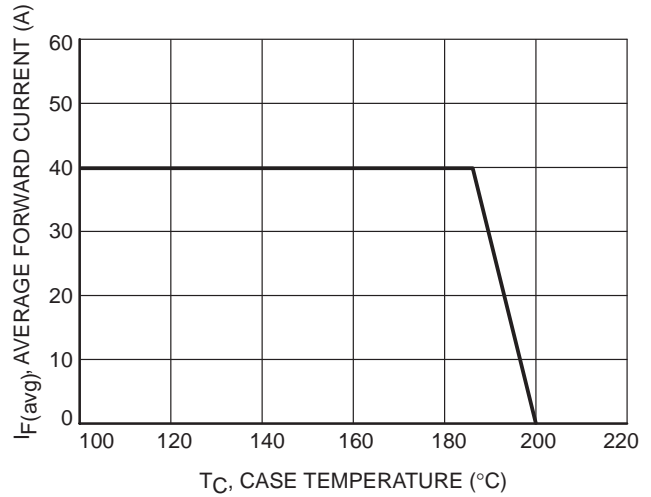


Figure 6. Maximum Current Rating

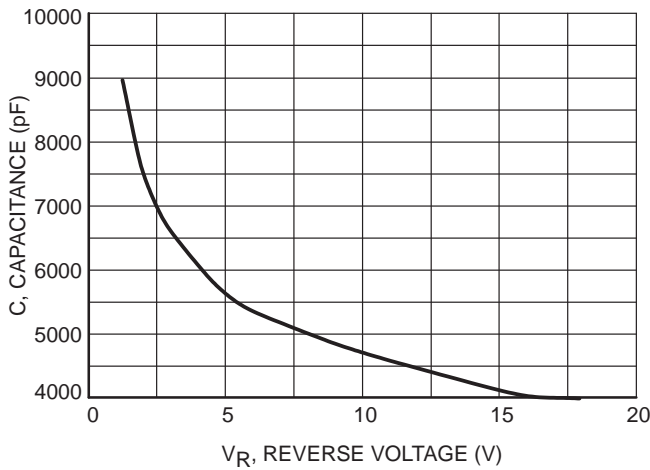


Figure 7. Typical Capacitance

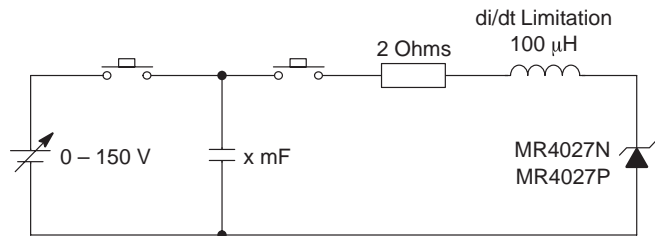


Figure 8. Load Dump Test Circuit

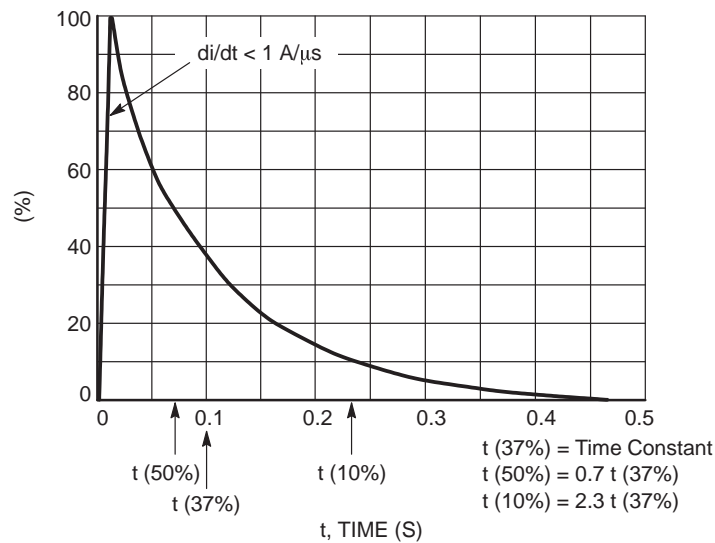


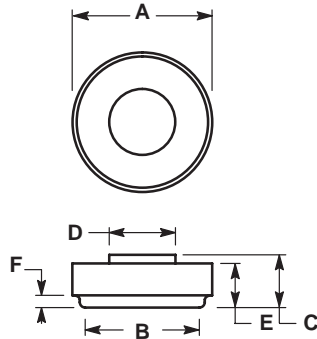
Figure 9. Load Dump Pulse Current

MR4027

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.

DIM	MILLIMETERS		INCHES	
	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

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