

# MR4045

## Automotive Transient Voltage Suppressor

34 V – 45 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 Devices are Laser Marked on the Epoxy Surface

### MAXIMUM RATING

Rating	Symbol	Value	Unit
DC Blocking Voltage	$V_R$	30	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, $T_C = 25^\circ\text{C}$ )	$I_{RSM}$ $I_{RSM}$	55 25	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	$^\circ\text{C}$



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**N SUFFIX**  
(Anode to Cup)

**P SUFFIX**  
(Cathode to Cup)

**CASE 193A**

### MARKING DIAGRAM



NL = Location Code  
2N or 2P = Device Code and Polarity  
YY = Year  
WW = Work Week  
### = Assembly Lot Number

### ORDERING INFORMATION

Device	Package	Shipping
MR4045N	Button Can	5000 Units/Box
MR4045P	Button Can	5000 Units/Box

**THERMAL CHARACTERISTICS**

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

**ELECTRICAL CHARACTERISTICS**

Characteristic	Symbol	Min	Max	Unit
Instantaneous Forward Voltage (Note 1.) ( $I_F = 100$ Amps, $T_C = 25^{\circ}C$ )	$V_F$	-	1.1	Volts
Reverse Current (Note 1.) ( $V_R = 28$ Vdc, $T_C = 25^{\circ}C$ )	$I_R$	-	1.0	$\mu A$
Breakdown Voltage (Note 1.) ( $I_R = 100$ mA, $T_C = 25^{\circ}C$ )	$V_{(BR)}$	34	45	Volts
Breakdown Voltage ( $I_R = 80$ Amps, $T_C = 25^{\circ}C$ , $PW = 80 \mu s$ ) ( $I_R = 80$ Amps, $T_C = 85^{\circ}C$ , $PW = 80 \mu s$ )	$V_{(BR)}$	-	53 55	Volts
Breakdown Voltage Temperature Coefficient	$V_{(BR)TC}$	0.095*		$\%/^{\circ}C$
Forward Voltage Temperature Coefficient ( $I_F = 10$ mA)	$V_{FTC}$	-2*		$mV/^{\circ}C$

1. Pulse Test: Pulse Width < 300  $\mu s$ , Duty Cycle < 2%.

\*\*Typical

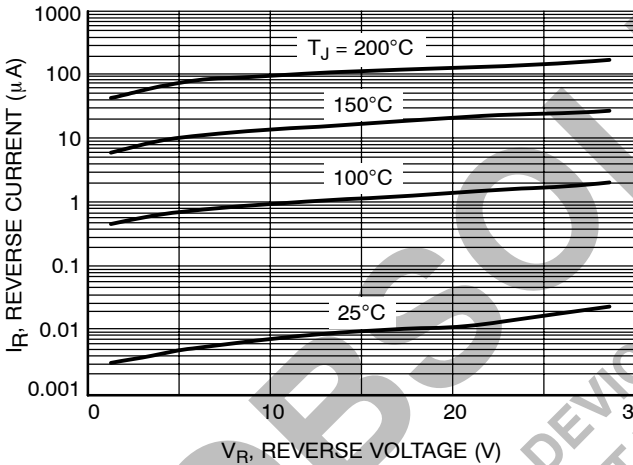


Figure 1. Typical Reverse Current

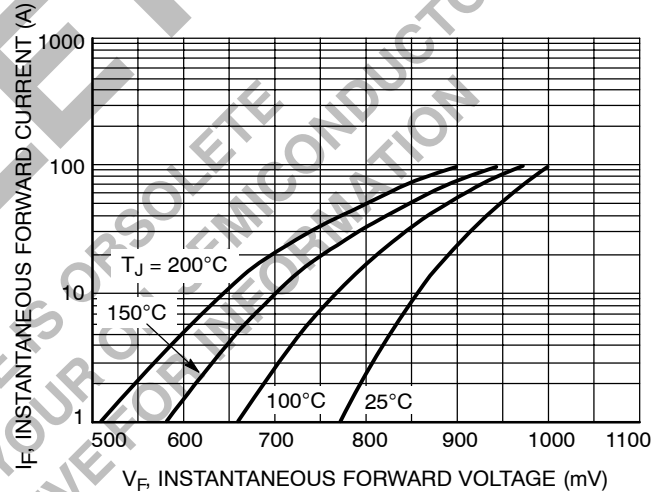


Figure 2. Typical Forward Voltage

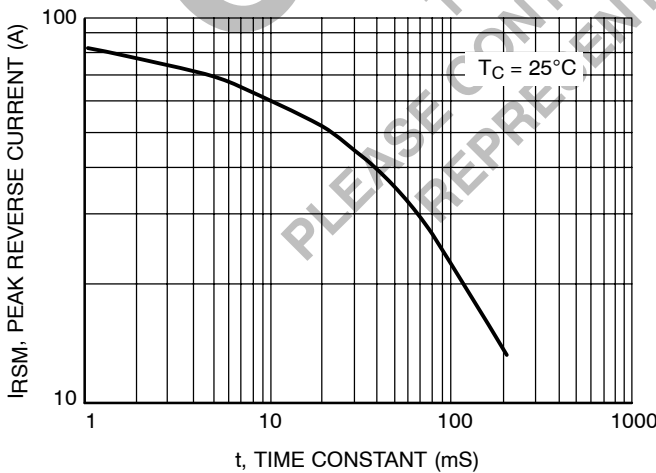


Figure 3. Maximum Peak Reverse Current

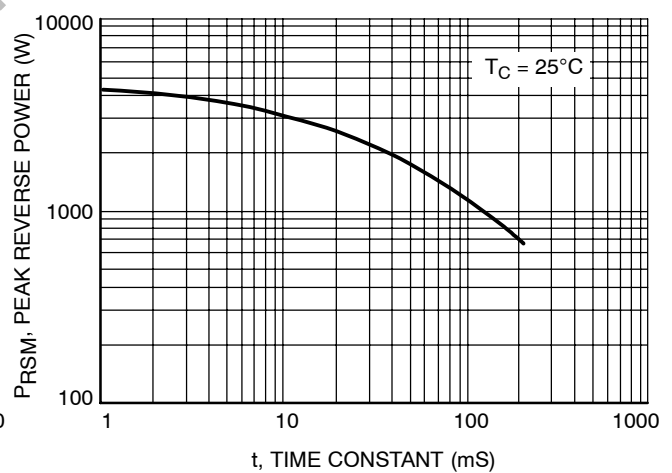


Figure 4. Maximum Peak Reverse Power

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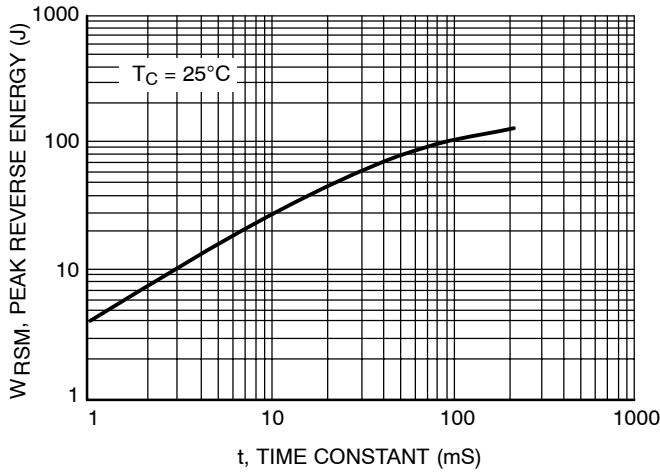


Figure 5. Maximum Reverse Energy

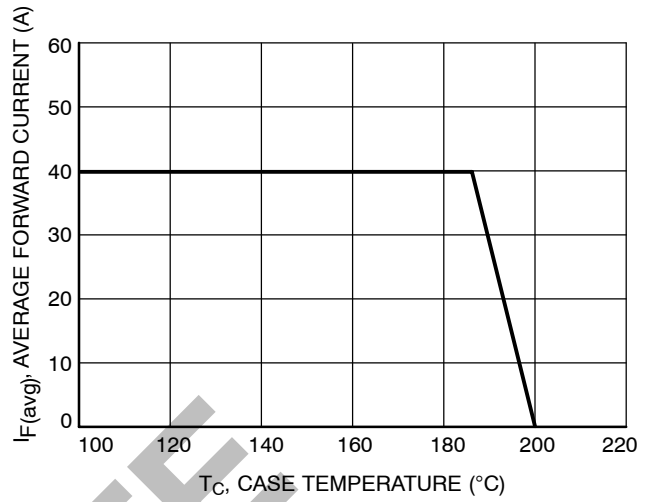


Figure 6. Maximum Current Rating

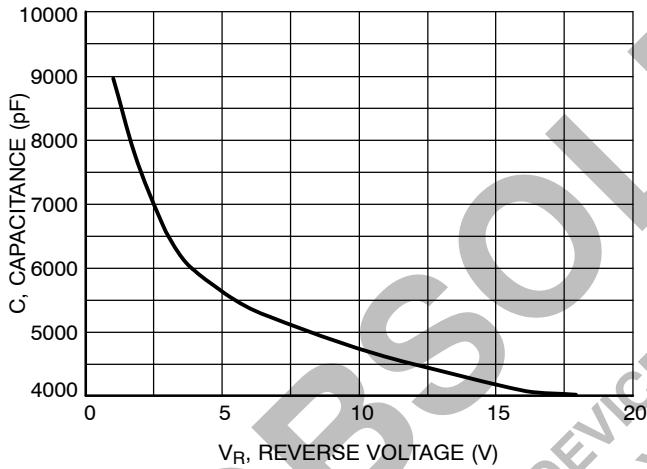


Figure 7. Typical Capacitance

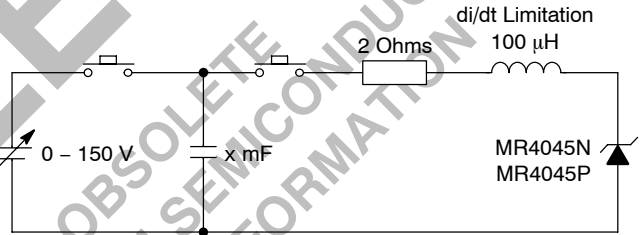


Figure 8. Load Dump Test Circuit

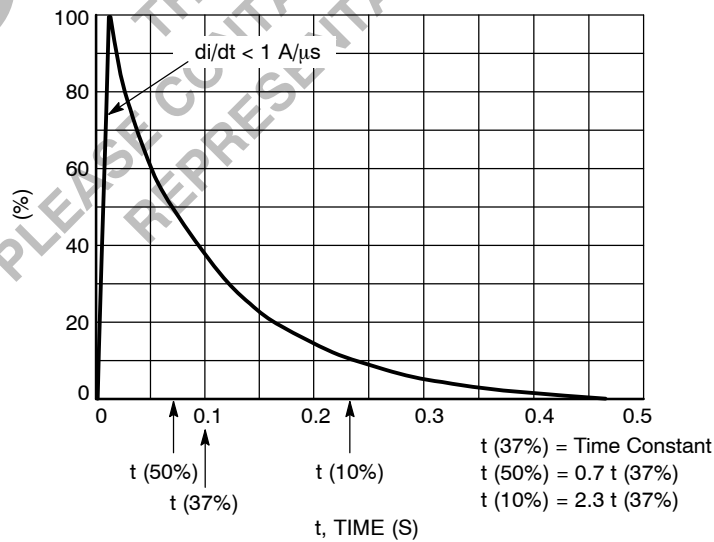
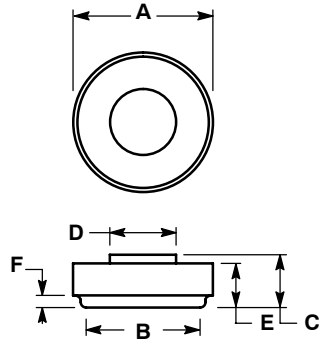


Figure 9. Load Dump Pulse Current

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## 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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