



Micro Commercial Components



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# US1AE THRU US1ME

## Features

- Ultra Fast Switching For High Efficiency
- For Surface Mounted Applications
- Low Forward Voltage Drop And High Current Capability
- Low Reverse Leakage Current
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

## Maximum Ratings

- Lead Free Finish/RoHS Compliant(NOTE 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Operating Temperature: -50°C to +150°C
- Storage Temperature: -50°C to +150°C
- Maximum Thermal Resistance; 30°C/W Junction To Lead

| MCC Catalog Number | Device Marking | Maximum Recurrent Peak Reverse Voltage | Maximum RMS Voltage | Maximum DC Blocking Voltage |
|--------------------|----------------|--|---------------------|-----------------------------|
| US1AE              | US1A           | 50V                                    | 35V                 | 50V                         |
| US1BE              | US1B           | 100V                                   | 70V                 | 100V                        |
| US1CE              | US1C           | 150V                                   | 105V                | 150V                        |
| US1DE              | US1D           | 200V                                   | 140V                | 200V                        |
| US1GE              | US1G           | 400V                                   | 280V                | 400V                        |
| US1JE              | US1J           | 600V                                   | 420V                | 600V                        |
| US1KE              | US1K           | 800V                                   | 560V                | 800V                        |
| US1ME              | US1M           | 1000V                                  | 700V                | 1000V                       |

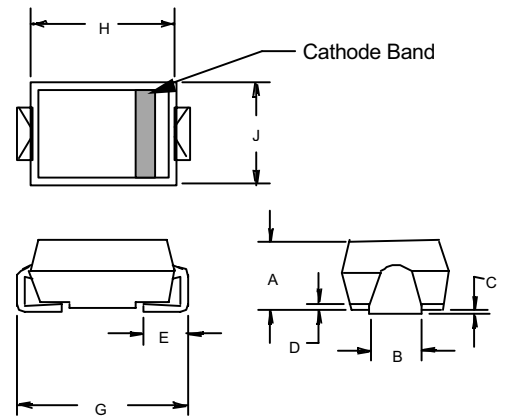
## Electrical Characteristics @ 25°C Unless Otherwise Specified

|  |             |                      |  |
|--|-------------|----------------------|--|
| Average Forward Current  | $I_{F(AV)}$ | 1.0A                 | $T_L = 75^\circ\text{C}$                                     |
| Peak Forward Surge Current   | $I_{FSM}$   | 30A                  | 8.3ms, half sine   |
| Maximum Instantaneous Forward Voltage<br>US1AE-1DE<br>US1GE<br>US1JE-1ME | $V_F$       | 1.0V<br>1.4V<br>1.7V | $I_{FM} = 1.0\text{A};$<br>$T_J = 25^\circ\text{C}$          |
| Maximum DC Reverse Current At Rated DC Blocking Voltage                  | $I_R$       | 10uA<br>100uA        | $T_A = 25^\circ\text{C}$<br>$T_A = 100^\circ\text{C}$        |
| Maximum Reverse Recovery Time<br>US1AE-1GE<br>US1JE-1ME                  | $T_{rr}$    | 50ns<br>75ns         | $I_F=0.5\text{A}, I_R=1.0\text{A},$<br>$I_{rr}=0.25\text{A}$ |
| Typical Junction Capacitance<br>US1AE-1GE<br>US1JE-1ME                   | $C_J$       | 20pF<br>17pF         | Measured at 1.0MHz, $V_R=4.0\text{V}$                        |

Notes: 1. High Temperature Solder Exemption Applied, see EU Directive Annex Notes 7

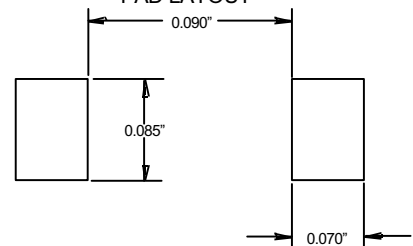
## 1 Amp Ultra Fast Rectifier 50 to 1000 Volts

(SMAE)



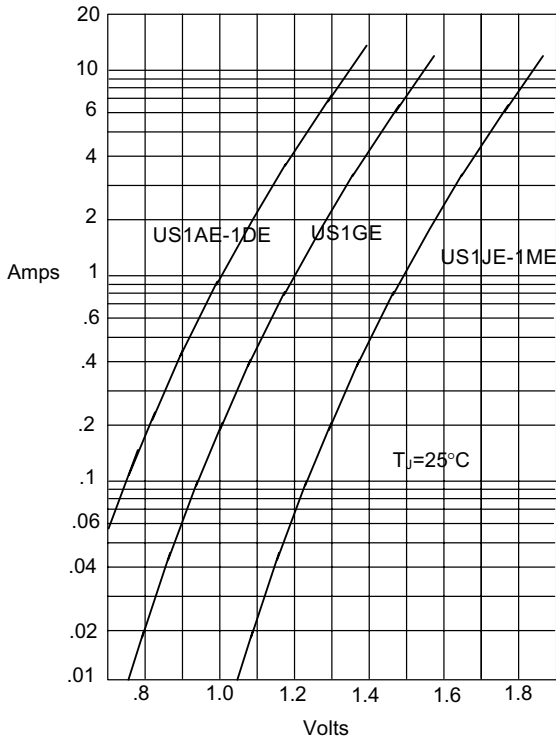
| DIM | INCHES |      | MM   |      | NOTE |
|-----|--------|------|------|------|------|
|     | MIN    | MAX  | MIN  | MAX  |      |
| A   | .079   | .096 | 2.01 | 2.44 |      |
| B   | .050   | .075 | 1.27 | 1.90 |      |
| C   | .002   | .008 | .05  | .20  |      |
| D   | ---    | .02  | ---  | .51  |      |
| E   | .030   | .060 | .76  | 1.52 |      |
| G   | .189   | .208 | 4.80 | 5.30 |      |
| H   | .157   | .180 | 4.00 | 4.57 |      |
| J   | .090   | .115 | 2.29 | 2.92 |      |

SUGGESTED SOLDER PAD LAYOUT



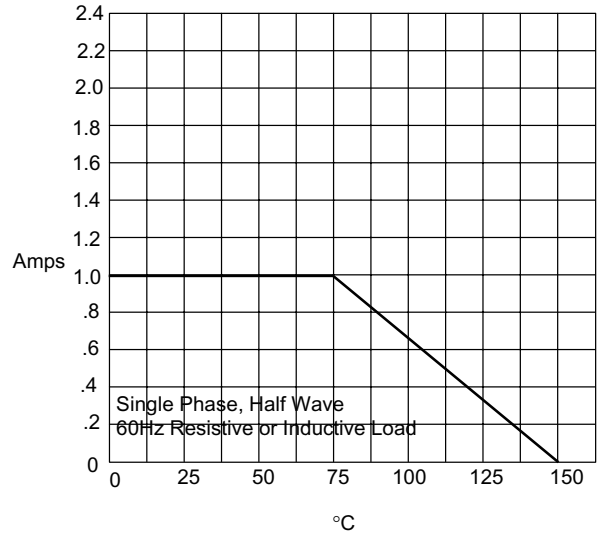
# US1AE thru US1ME

Figure 1  
Typical Forward Characteristics



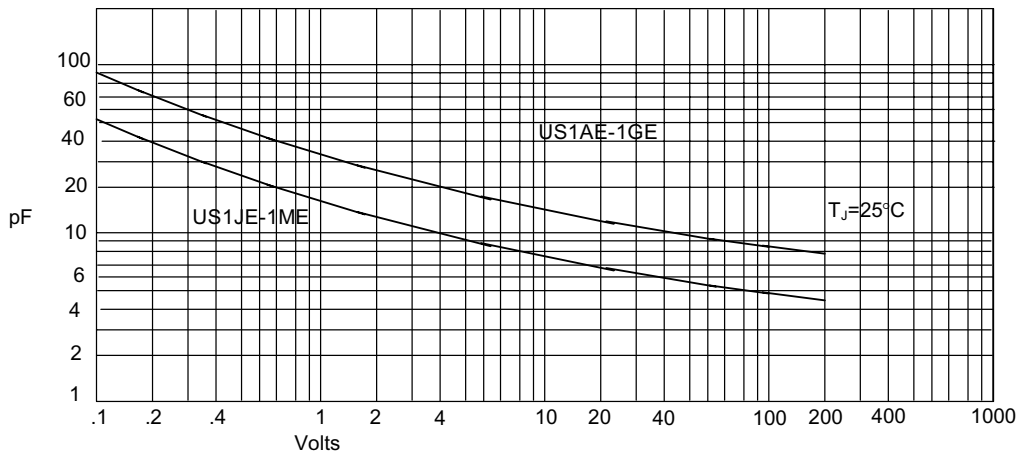
Instantaneous Forward Current - Amperes versus  
Instantaneous Forward Voltage - Volts

Figure 2  
Forward Derating Curve



Average Forward Rectified Current - Amperes versus  
Lead Temperature -  $^\circ\text{C}$

Figure 3  
Junction Capacitance



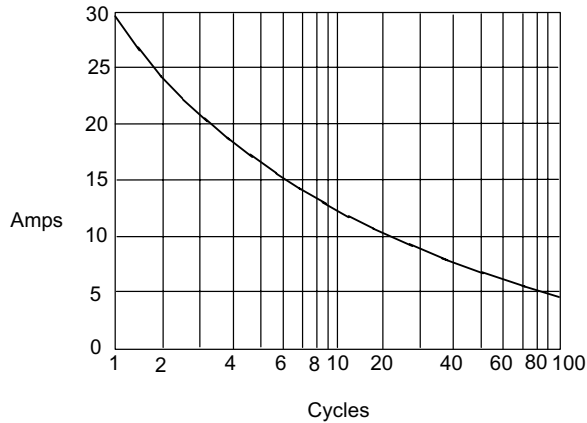
Junction Capacitance - pF versus  
Reverse Voltage - Volts

# US1AE thru US1ME



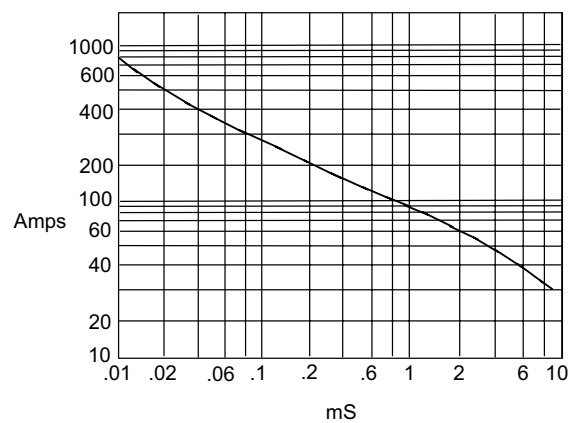
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Figure 4  
Peak Forward Surge Current



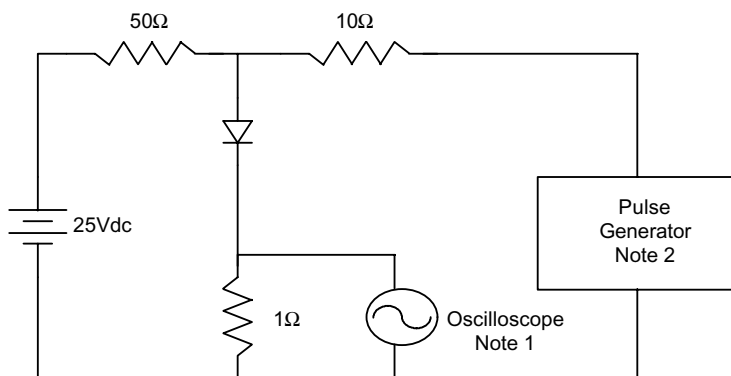
Peak Forward Surge Current - Amperes versus  
Number Of Cycles At 60Hz - Cycles

Figure 5  
Peak Forward Surge Current



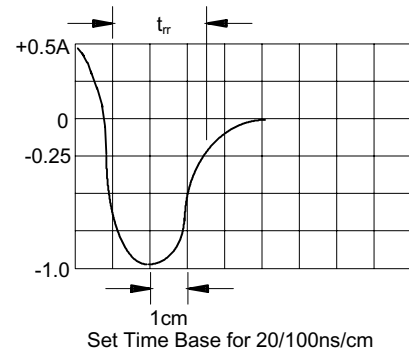
Peak Forward Surge Current - Amperes versus  
Pulse Duration - Milliseconds (mS)

Figure 6  
Reverse Recovery Time Characteristic And Test Circuit Diagram



Notes:

1. Rise Time = 7ns max.  
Input impedance = 1 megohm, 22pF
2. Rise Time = 10ns max.  
Source impedance = 50 ohms
3. Resistors are non-inductive





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### Ordering Information :

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 6Kpcs/Reel |

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