



Micro Commercial Components



Micro Commercial Components  
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## ES1AE THRU ES1ME

### Features

- Lead Free Finish/Rohs Compliant (Note1) ("P" Suffix designates Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- High Temp Soldering: 260°C for 10 Seconds At Terminals
- Superfast Recovery Times For High Efficiency
- Halogen free available upon request by adding suffix "-HF"

### Maximum Ratings

- Operating Temperature: -50°C to +150°C
- Storage Temperature: -50°C to +150°C
- Maximum Thermal Resistance; 15°C/W Junction To Lead

| MCC Part Number | Device Marking | Maximum Recurrent Peak Reverse Voltage | Maximum RMS Voltage | Maximum DC Blocking Voltage |
|-----------------|----------------|----------------------------------------|---------------------|-----------------------------|
| ES1AE           | ES1A           | 50V                                    | 35V                 | 50V                         |
| ES1BE           | ES1B           | 100V                                   | 70V                 | 100V                        |
| ES1CE           | ES1C           | 150V                                   | 105V                | 150V                        |
| ES1DE           | ES1D           | 200V                                   | 140V                | 200V                        |
| ES1GE           | ES1G           | 400V                                   | 280V                | 400V                        |
| ES1JE           | ES1J           | 600V                                   | 420V                | 600V                        |
| ES1KE           | ES1K           | 800V                                   | 560V                | 800V                        |
| ES1ME           | ES1M           | 1000V                                  | 700V                | 1000V                       |

### Electrical Characteristics @ 25°C Unless Otherwise Specified

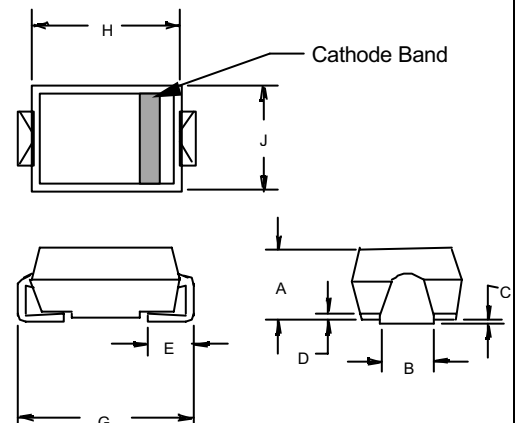
|                                                                           |             |                                      |                                                       |
|---------------------------------------------------------------------------|-------------|--------------------------------------|-------------------------------------------------------|
| Average Forward Current                                                   | $I_{F(AV)}$ | 1.0A                                 | $T_J = 75^\circ\text{C}$                              |
| Peak Forward Surge Current                                                | $I_{FSM}$   | 30A                                  | 8.3ms, half sine                                      |
| Maximum Instantaneous Forward Voltage<br>ES1AE-DE<br>ES1GE-JE<br>ES1KE~ME | $V_F$       | .975V<br>1.35V<br>1.70V              | $I_{FM} = 1.0A$ ;<br>$T_J = 25^\circ\text{C}^*$       |
| Maximum DC Reverse Current At Rated DC Blocking Voltage                   | $I_R$       | 5 $\mu\text{A}$<br>100 $\mu\text{A}$ | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ |
| Maximum Reverse Recovery Time<br>ES1AE-DE<br>ES1GE-KE<br>ES1ME            | $T_{rr}$    | 50ns<br>75ns<br>100ns                | $I_F = 0.5A$ , $I_R = 1.0A$ ,<br>$I_{rr} = 0.25A$     |
| Typical Junction Capacitance                                              | $C_J$       | 45pF                                 | Measured at 1.0MHz, $V_R = 4.0V$                      |

\*Pulse test: Pulse width 200  $\mu\text{sec}$ , Duty cycle 2%

Note: 1. High Temperature Solder Exemptions Applied, see EU Directive Annex 7.

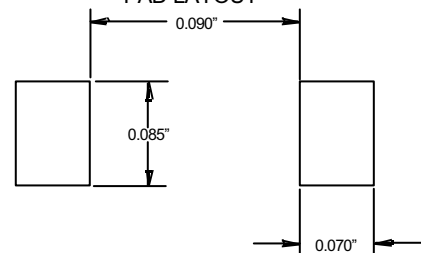
## 1 Amp Ultra Fast Recovery Silicon Rectifier 50 to 1000 Volts

### DO-214AC (SMAE)



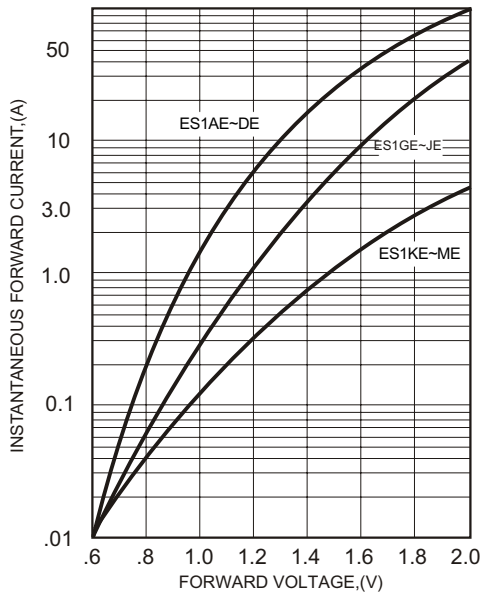
| DIM | INCHES |      | MM   |      | NOTE |
|-----|--------|------|------|------|------|
|     | MIN    | MAX  | MIN  | MAX  |      |
| A   | .079   | .096 | 2.01 | 2.44 |      |
| B   | .045   | .071 | 1.15 | 1.80 |      |
| C   | .002   | .008 | .05  | .20  |      |
| D   | —      | .02  | —    | .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



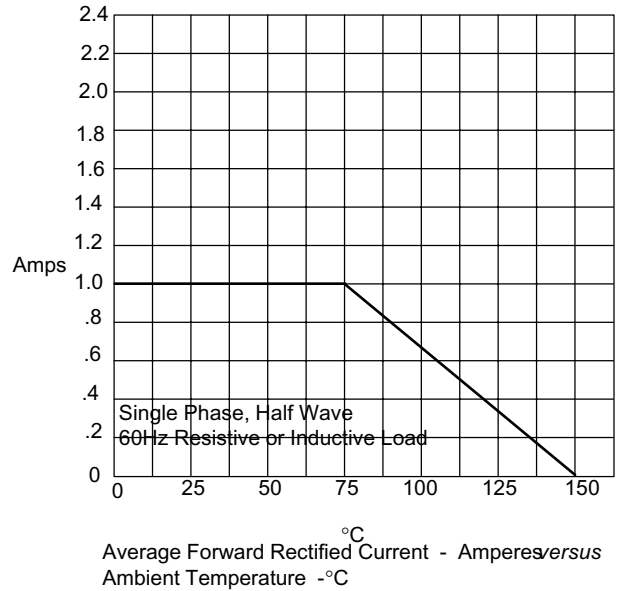
# ES1AE thru ES1ME

Figure 1  
Typical Forward Characteristics



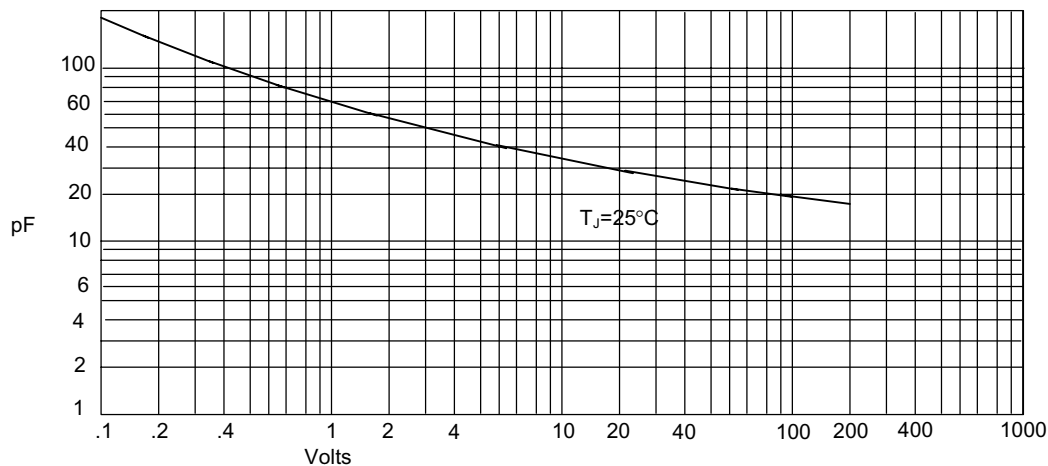
Instantaneous Forward Current - Amperes *versus*  
Instantaneous Forward Voltage - Volts

Figure 2  
Forward Derating Curve



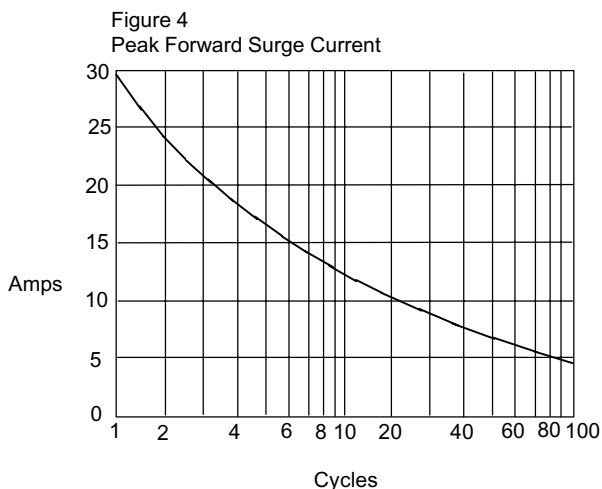
Average Forward Rectified Current - Amperes *versus*  
Ambient Temperature -  $^{\circ}C$

Figure 3  
Junction Capacitance



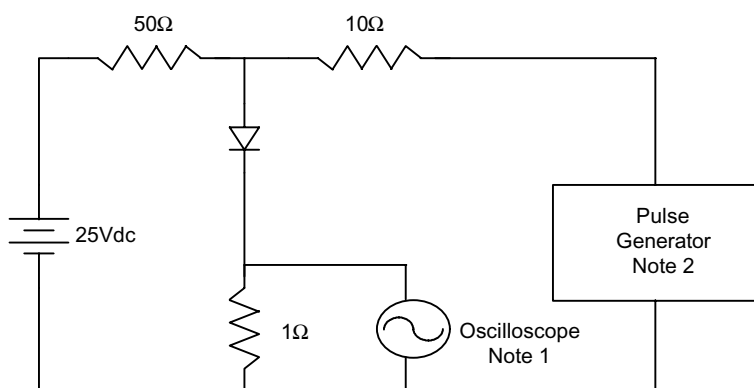
Junction Capacitance - pF *versus*  
Reverse Voltage - Volts

# ES1AE thru ES1ME



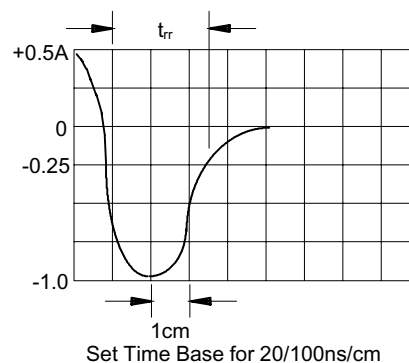
Peak Forward Surge Current - Amperes versus  
Number Of Cycles At 60Hz - Cycles

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





## Ordering Information :

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

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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