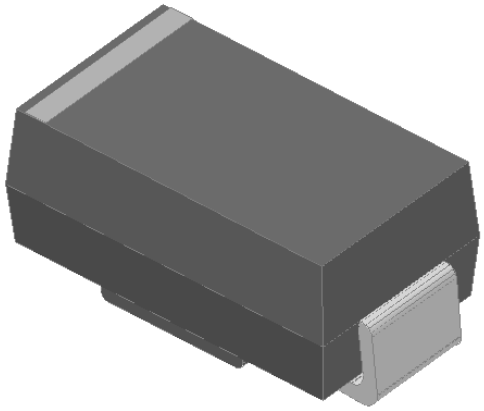
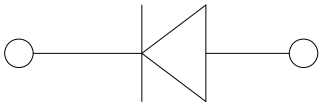
# Surface Mount Super Fast Recovery Rectifier





## Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

## Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.

## Mechanical Data

- **Package**: DO-214AC(SMA)
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

## ■Maximum Ratings (Ta=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | MURS120 | MURS140 | MURS160 |
|---|---|---|---|---|---|
| Device marking code | | | MURS120 | MURS140 | MURS160 |
| Maximum Repetitive Peak Reverse Voltage | $V_{RRM}$ | V | 200 | 400 | 600 |
| Maximum RMS Voltage | $V_{RMS}$ | V | 140 | 280 | 420 |
| Maximum DC blocking Voltage | $V_{DC}$ | V | 200 | 400 | 600 |
| Average rectified output current @60Hz sine wave, resistance load, TL (Fig.1) | $I_O$ | A | 1.0 | | |
| Forward Surge Current (Non-repetitive) @60Hz Half-sine wave,1 cycle, Tj=25℃ | $I_{FSM}$ | A | 30 | | |
| Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25℃ | | | 60 | | |
| Current squared time @1ms≤t≤8.3ms Tj=25℃ | $I^2t$ | $A^2s$ | 3.735 | | |
| Storage temperature | $T_{stg}$ | ℃ | -55 ~ +150 | | |
| Junction temperature | Tj | ℃ | -55 ~ +150 | | |

## ■Electrical Characteristics (Ta=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | MURS120 | MURS140 | MURS160 |
|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage | $V_F$ | V | $I_{FM}$=1.0A | 0.92 | 1.25 | |
| Maximum reverse recovery time | $T_{RR}$ | ns | $I_F$=0.5A,$I_R$=1.0A, $I_{rr}$=0.25A | 25 | 50 | |
| Maximum DC reverse current at rated DC blocking voltage | $I_R$ | μA | Tj =25℃ | 5.0 | | |
| | | | Tj =125℃ | 50 | | |
| Typical junction capacitance | Cj | pF | Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C | 17 | 15 | 14 |

## ■Dynamic Characteristics

### ◆ MURS120

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | | Min | Typ | Max |
|---|---|---|---|---|---|---|---|
| Reverse Recovery Time | $T_{RR}$ | ns | Tj=25℃ | $I_F$=1A，di/dt=-50A/us $V_{RM}$=30V | - | 28 | - |
| | | | Tj=25℃ | $I_F$=1A di/dt=-200A/us $V_{RM}$=100V | - | 19 | - |
| | | | Tj=125℃ | | - | 25 | - |
| Peak recovery current | $I_{RRM}$ | A | Tj=25℃ | | - | 2.6 | - |
| | | | Tj=125℃ | | - | 4.0 | - |
| Reverse recovery charge | Qrr | nC | Tj=25℃ | | - | 24.6 | - |
| | | | Tj=125℃ | | - | 52.3 | - |
| Non-repetitive avalanche energy | EAS | mJ | Tj=25℃ | $I_R$=1.4 A，L=15 mH | 14.7 | - | - |

### ◆ MURS140

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | | Min | Typ | Max |
|---|---|---|---|---|---|---|---|
| Reverse Recovery Time | $T_{RR}$ | ns | Tj=25℃ | $I_F$=1A，di/dt=-50A/us $V_{RM}$=30V | - | 26 | - |
| | | | Tj=25℃ | $I_F$=1A di/dt=-200A/us $V_{RM}$=200V | - | 22 | - |
| | | | Tj=125℃ | | - | 31 | - |
| Peak recovery current | $I_{RRM}$ | A | Tj=25℃ | | - | 1.9 | - |
| | | | Tj=125℃ | | - | 3.5 | - |
| Reverse recovery charge | Qrr | nC | Tj=25℃ | | - | 21.1 | - |
| | | | Tj=125℃ | | - | 54.9 | - |
| Non-repetitive avalanche energy | EAS | mJ | Tj=25℃ | $I_R$=0.4A，L=15 mH | 1.2 | - | - |

### ◆ MURS160

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | | Min | Typ | Max |
|---|---|---|---|---|---|---|---|
| Reverse Recovery Time | $T_{RR}$ | ns | Tj=25℃ | $I_F$=1A，di/dt=-50A/us $V_{RM}$=30V | - | 49 | - |
| | | | Tj=25℃ | $I_F$=1A di/dt=-200A/us $V_{RM}$=400V | - | 38 | - |
| | | | Tj=125℃ | | - | 59 | - |
| Peak recovery current | $I_{RRM}$ | A | Tj=25℃ | | - | 3.5 | - |
| | | | Tj=125℃ | | - | 5.5 | - |
| Reverse recovery charge | Qrr | nC | Tj=25℃ | | - | 67.4 | - |
| | | | Tj=125℃ | | - | 160.5 | - |
| Non-repetitive avalanche energy | EAS | mJ | Tj=25℃ | IR=0.5A，L=15 mH | 1.9 | - | - |

## ■Thermal Characteristics （Ta=25℃ Unless otherwise specified）

| PARAMETER | SYMBOL | UNIT | MURS120 | MURS140 | MURS160 |
|---|---|---|---|---|---|
| Typical Thermal resistance | $R_{\theta J-A}$(1) | ℃/W | 70 | | |
| | $R_{\theta J-L}$(1) | | 22 | | |
| | $R_{\theta J-C}$(1) | | 20 | | |

Note:

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

## ■ Characteristics (Typical)

FIG.1: Io-TL Curve

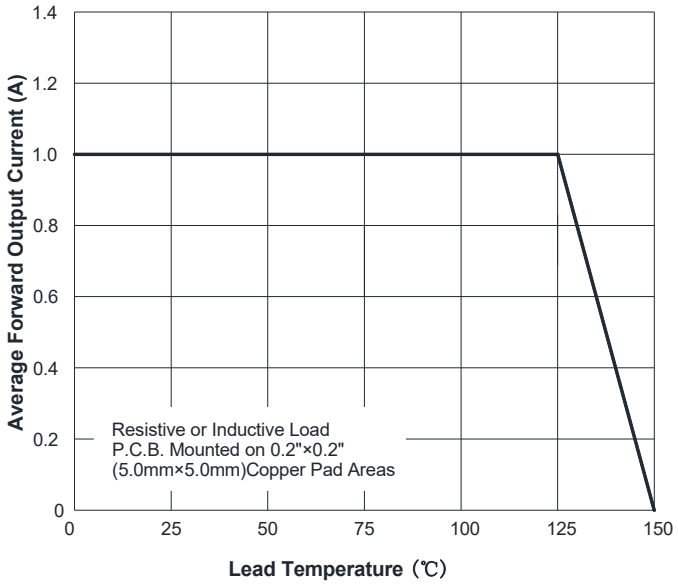



FIG.2: Forward Surge Current Capadility

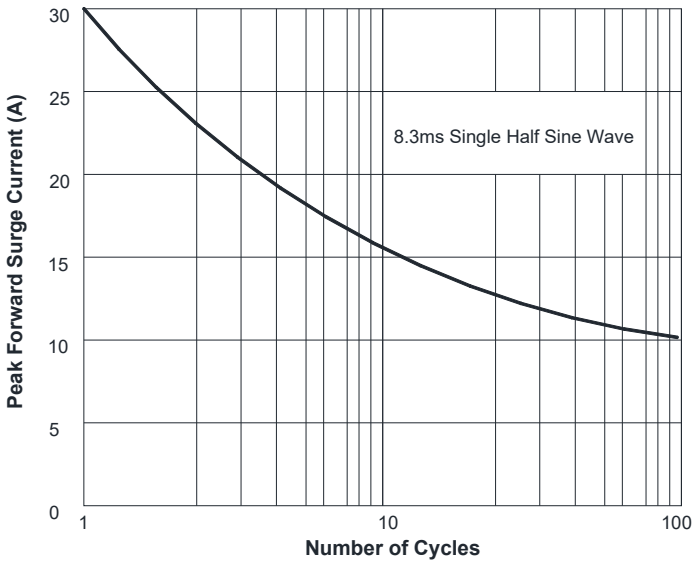



FIG.3: Typical Forward Voltage

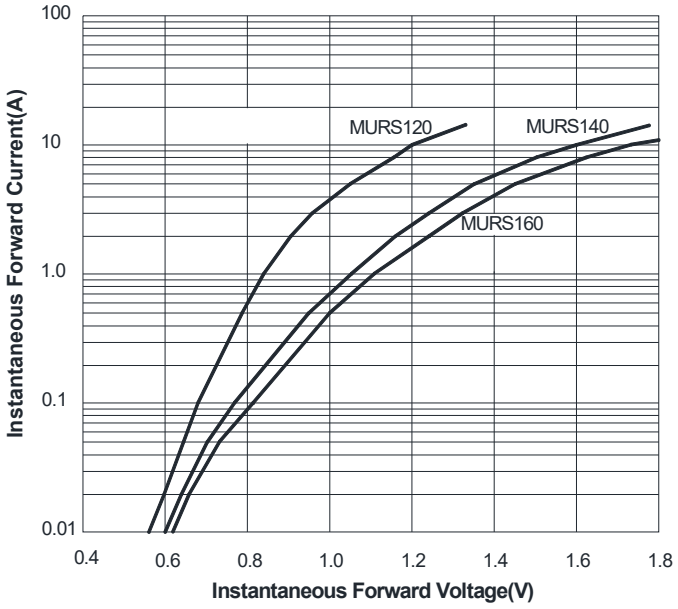



FIG.4: Typical Reverse Characteristics

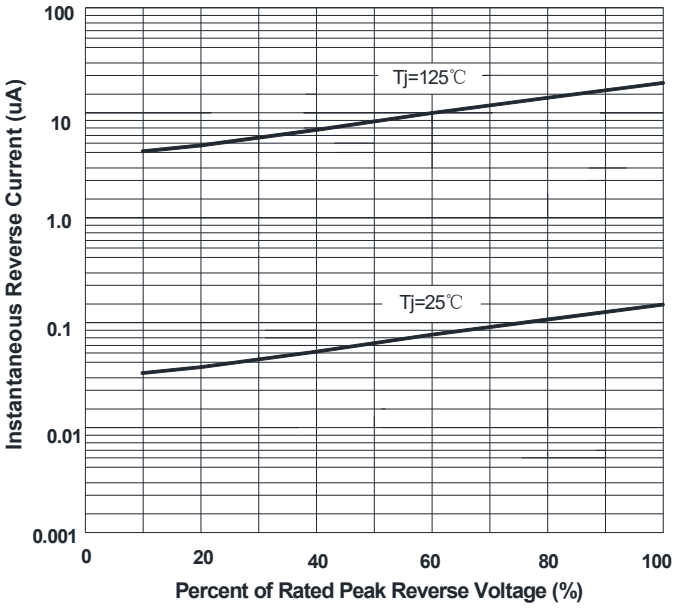
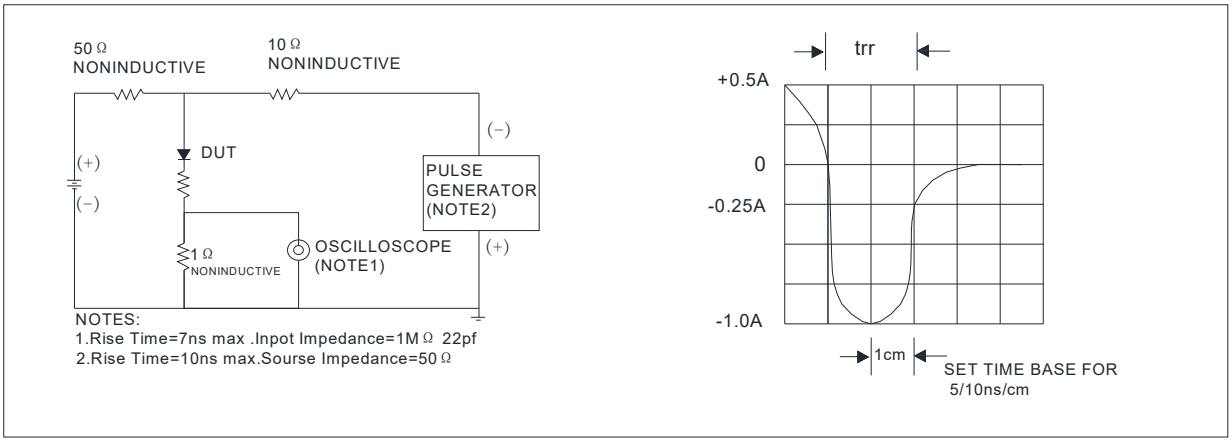


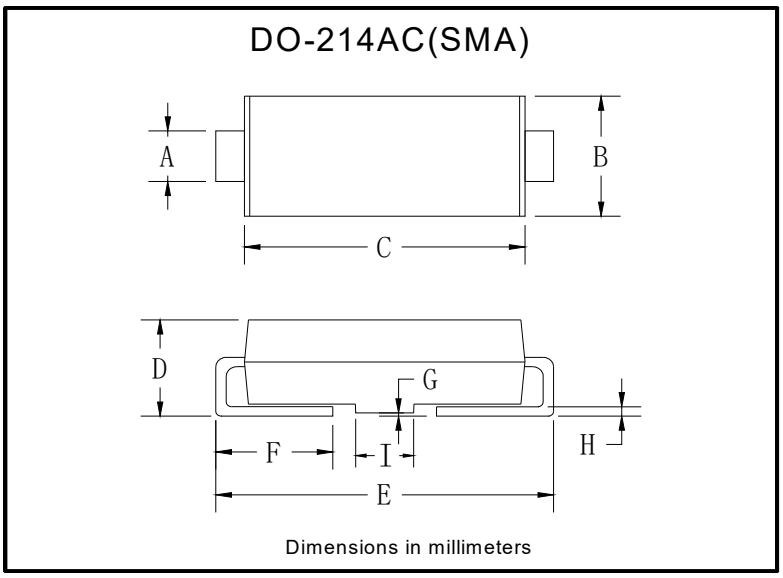

FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



## ■Ordering Information (Example)

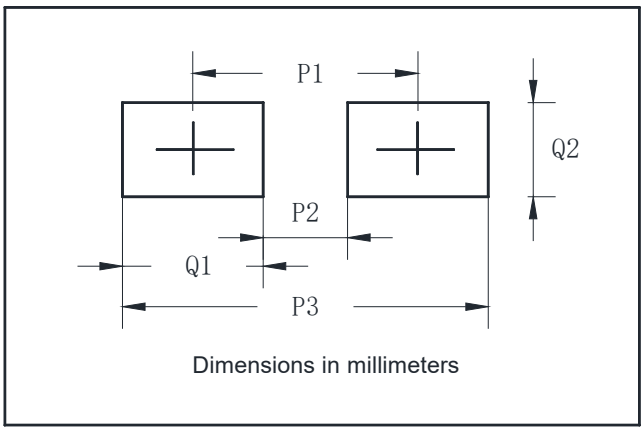
| PREFERED P/N | PACKAGE CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| MURS120-MURS160 | F1 | Approximate 0.059 | 5000 | / | 80000 | 13” reel |
| MURS120-MURS160 | F2 | Approximate 0.059 | 7500 | / | 120000 | 13” reel |
| MURS120-MURS160 | F3 | Approximate 0.059 | 7500 | / | 60000 | 13” reel |
| MURS120-MURS160 | F4 | Approximate 0.059 | 1800 | 14400 | 57600 | 7” reel |
| MURS120-MURS160 | F5 | Approximate 0.059 | 2000 | 16000 | 64000 | 7” reel |
| MURS120-MURS160 | F6 | Approximate 0.059 | 5000 | / | 100000 | 13” reel |

## ■ Outline Dimensions




| DO-214AC(SMA) | | |
|---|---|---|
| Dim | Min | Max |
| A | 1.25 | 1.58 |
| B | 2.40 | 2.83 |
| C | 4.00 | 4.75 |
| D | 1.90 | 2.30 |
| E | 4.93 | 5.28 |
| F | 0.76 | 1.41 |
| G | 0.05 | 0.20 |
| H | 0.15 | 0.31 |
| I | 1.70 | 2.10 |

## ■Suggested Pad Layout




| DO-214AC(SMA) | |
|---|---|
| Dim | Millimeters |
| P1 | 4.00 |
| P2 | 1.50 |
| P3 | 6.50 |
| Q1 | 2.50 |
| Q2 | 1.70 |

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