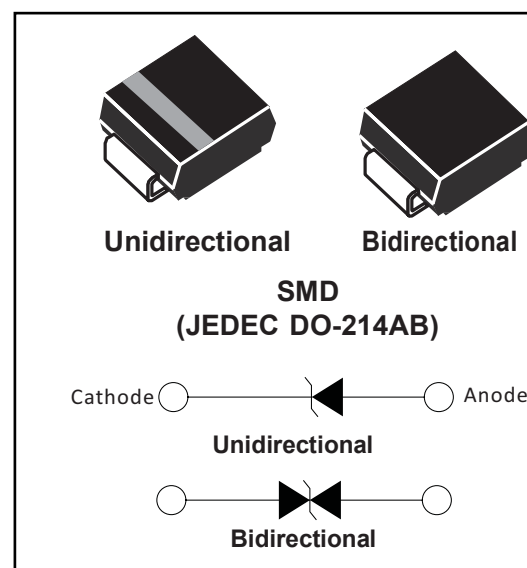


## Automotive 3000W

### Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 3000W peak pulse power capability with a 10/1000 $\mu$ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meest MSL level 1
- AEC-Q101



### Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

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

| PARAMETER                                                                                   | SYMBOL                            | UNIT | Max            |
|---------------------------------------------------------------------------------------------|-----------------------------------|------|----------------|
| Peak power dissipation, with a 10/1000 $\mu$ s waveform <sup>(1)</sup> <sup>(2)</sup>       | P <sub>PPM</sub>                  | W    | 3000           |
| Peak pulse current, with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                          | I <sub>PPM</sub>                  | A    | See Next Table |
| Power dissipation, on infinite heat sink at TL=75°C <sup>(2)</sup>                          | P <sub>D</sub>                    | W    | 6.5            |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(3)</sup> | I <sub>FSM</sub>                  | A    | 300            |
| Operating junction and storage temperature range                                            | T <sub>J</sub> , T <sub>STG</sub> | °C   | -55 to +150    |

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig.2.

(2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

## ■Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage $V_{BR}@I_T$ |         |                  | Maximum<br>Reverse<br>Leakage $I_R^{(3)}$<br>@ $V_{RWM}$ ( $\mu A$ ) | Working Peak<br>Reverse<br>Voltage<br>$V_{RWM}$ (V) | Maximum<br>Reverse<br>Surge<br>Current $I_{PP}^{(2)}$<br>(A) | Maximum<br>Clamping<br>Voltage $V_c$<br>@ $I_{PP}$<br>(V) |
|----------------------|---------------------|--------------------------------|---------|------------------|----------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------|
|                      |                     | Min(V)                         | Max (V) | $I_T^{(1)}$ (mA) |                                                                      |                                                     |                                                              |                                                           |
| SMD30J5.0UC          | SMD30J5.0BC(4)      | 6.4                            | 7.07    | 10               | 1000                                                                 | 5                                                   | 326.09                                                       | 9.2                                                       |
| SMD30J6.0UC          | SMD30J6.0BC         | 6.67                           | 7.37    | 10               | 1000                                                                 | 6                                                   | 291.26                                                       | 10.3                                                      |
| SMD30J6.5UC          | SMD30J6.5BC         | 7.22                           | 7.98    | 10               | 500                                                                  | 6.5                                                 | 267.86                                                       | 11.2                                                      |
| SMD30J7.0UC          | SMD30J7.0BC         | 7.78                           | 8.6     | 10               | 200                                                                  | 7                                                   | 250                                                          | 12                                                        |
| SMD30J7.5UC          | SMD30J7.5BC         | 8.33                           | 9.21    | 1                | 100                                                                  | 7.5                                                 | 232.56                                                       | 12.9                                                      |
| SMD30J8.0UC          | SMD30J8.0BC         | 8.89                           | 9.83    | 1                | 50                                                                   | 8                                                   | 220.59                                                       | 13.6                                                      |
| SMD30J8.5UC          | SMD30J8.5BC         | 9.44                           | 10.4    | 1                | 25                                                                   | 8.5                                                 | 208.33                                                       | 14.4                                                      |
| SMD30J9.0UC          | SMD30J9.0BC         | 10                             | 11.1    | 1                | 10                                                                   | 9                                                   | 194.81                                                       | 15.4                                                      |
| SMD30J10UC           | SMD30J10BC          | 11.1                           | 12.3    | 1                | 5                                                                    | 10                                                  | 176.47                                                       | 17                                                        |
| SMD30J11UC           | SMD30J11BC          | 12.2                           | 13.5    | 1                | 5                                                                    | 11                                                  | 164.84                                                       | 18.2                                                      |
| SMD30J12UC           | SMD30J12BC          | 13.3                           | 14.7    | 1                | 5                                                                    | 12                                                  | 150.75                                                       | 19.9                                                      |
| SMD30J13UC           | SMD30J13BC          | 14.4                           | 15.9    | 1                | 5                                                                    | 13                                                  | 139.53                                                       | 21.5                                                      |
| SMD30J14UC           | SMD30J14BC          | 15.6                           | 17.2    | 1                | 5                                                                    | 14                                                  | 129.31                                                       | 23.2                                                      |
| SMD30J15UC           | SMD30J15BC          | 16.7                           | 18.5    | 1                | 5                                                                    | 15                                                  | 122.95                                                       | 24.4                                                      |
| SMD30J16UC           | SMD30J16BC          | 17.8                           | 19.7    | 1                | 5                                                                    | 16                                                  | 115.38                                                       | 26                                                        |
| SMD30J17UC           | SMD30J17BC          | 18.9                           | 20.9    | 1                | 5                                                                    | 17                                                  | 108.7                                                        | 27.6                                                      |
| SMD30J18UC           | SMD30J18BC          | 20                             | 22.1    | 1                | 5                                                                    | 18                                                  | 102.74                                                       | 29.2                                                      |
| SMD30J19UC           | SMD30J19BC          | 21.1                           | 23.3    | 1                | 5                                                                    | 19                                                  | 97.47                                                        | 30.8                                                      |
| SMD30J20UC           | SMD30J20BC          | 22.2                           | 24.5    | 1                | 5                                                                    | 20                                                  | 92.59                                                        | 32.4                                                      |
| SMD30J22UC           | SMD30J22BC          | 24.4                           | 26.9    | 1                | 5                                                                    | 22                                                  | 84.51                                                        | 35.5                                                      |
| SMD30J24UC           | SMD30J24BC          | 26.7                           | 29.5    | 1                | 5                                                                    | 24                                                  | 77.12                                                        | 38.9                                                      |
| SMD30J26UC           | SMD30J26BC          | 28.9                           | 31.9    | 1                | 5                                                                    | 26                                                  | 71.26                                                        | 42.1                                                      |
| SMD30J28UC           | SMD30J28BC          | 31.1                           | 34.4    | 1                | 5                                                                    | 28                                                  | 66.08                                                        | 45.4                                                      |
| SMD30J30UC           | SMD30J30BC          | 33.3                           | 36.8    | 1                | 5                                                                    | 30                                                  | 61.98                                                        | 48.4                                                      |
| SMD30J33UC           | SMD30J33BC          | 36.7                           | 40.6    | 1                | 5                                                                    | 33                                                  | 56.29                                                        | 53.3                                                      |
| SMD30J36UC           | SMD30J36BC          | 40                             | 44.2    | 1                | 5                                                                    | 36                                                  | 51.64                                                        | 58.1                                                      |
| SMD30J40UC           | SMD30J40BC          | 44.4                           | 49.1    | 1                | 5                                                                    | 40                                                  | 46.51                                                        | 64.5                                                      |
| SMD30J43UC           | SMD30J43BC          | 47.8                           | 52.8    | 1                | 5                                                                    | 43                                                  | 43.23                                                        | 69.4                                                      |
| SMD30J45UC           | SMD30J45BC          | 50                             | 55.3    | 1                | 5                                                                    | 45                                                  | 41.27                                                        | 72.7                                                      |
| SMD30J48UC           | SMD30J48BC          | 53.3                           | 58.9    | 1                | 5                                                                    | 48                                                  | 38.76                                                        | 77.4                                                      |

## ■Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage $V_{BR}@I_T$ |         |                  | Maximum<br>Reverse<br>Leakage $I_R^{(3)}$<br>@ $V_{RWM}$ ( $\mu A$ ) | Working Peak<br>Reverse<br>Voltage<br>$V_{RWM}$ (V) | Maximum<br>Reverse<br>Surge<br>Current $I_{PP}^{(2)}$<br>(A) | Maximum<br>Clamping<br>Voltage $V_c$<br>@ $I_{PP}$<br>(V) |
|----------------------|---------------------|--------------------------------|---------|------------------|----------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------|
|                      |                     | Min(V)                         | Max (V) | $I_T^{(1)}$ (mA) |                                                                      |                                                     |                                                              |                                                           |
| SMD30J51UC           | SMD30J51BC          | 56.7                           | 62.7    | 1                | 5                                                                    | 51                                                  | 36.41                                                        | 82.4                                                      |
| SMD30J54UC           | SMD30J54BC          | 60                             | 66.3    | 1                | 5                                                                    | 54                                                  | 34.44                                                        | 87.1                                                      |
| SMD30J58UC           | SMD30J58BC          | 64.4                           | 71.2    | 1                | 5                                                                    | 58                                                  | 32.05                                                        | 93.6                                                      |
| SMD30J60UC           | SMD30J60BC          | 66.7                           | 73.7    | 1                | 5                                                                    | 60                                                  | 30.99                                                        | 96.8                                                      |
| SMD30J64UC           | SMD30J64BC          | 71.1                           | 78.6    | 1                | 5                                                                    | 64                                                  | 29.13                                                        | 103                                                       |
| SMD30J70UC           | SMD30J70BC          | 77.8                           | 86      | 1                | 5                                                                    | 70                                                  | 26.55                                                        | 113                                                       |
| SMD30J75UC           | SMD30J75BC          | 83.3                           | 92.1    | 1                | 5                                                                    | 75                                                  | 24.79                                                        | 121                                                       |
| SMD30J78UC           | SMD30J78BC          | 86.7                           | 95.8    | 1                | 5                                                                    | 78                                                  | 23.81                                                        | 126                                                       |
| SMD30J80UC           | SMD30J80BC          | 88.8                           | 97.6    | 1                | 5                                                                    | 80                                                  | 23.15                                                        | 129.6                                                     |
| SMD30J85UC           | SMD30J85BC          | 94.4                           | 104     | 1                | 5                                                                    | 85                                                  | 21.9                                                         | 137                                                       |
| SMD30J90UC           | SMD30J90BC          | 100                            | 111     | 1                | 5                                                                    | 90                                                  | 20.55                                                        | 146                                                       |
| SMD30J100UC          | SMD30J100BC         | 111                            | 123     | 1                | 5                                                                    | 100                                                 | 18.52                                                        | 162                                                       |
| SMD30J110UC          | SMD30J110BC         | 122                            | 135     | 1                | 5                                                                    | 110                                                 | 16.95                                                        | 177                                                       |
| SMD30J120UC          | SMD30J120BC         | 133                            | 147     | 1                | 5                                                                    | 120                                                 | 15.54                                                        | 193                                                       |
| SMD30J130UC          | SMD30J130BC         | 144                            | 159     | 1                | 5                                                                    | 130                                                 | 14.35                                                        | 209                                                       |
| SMD30J140UC          | SMD30J140BC         | 155                            | 171     | 1                | 5                                                                    | 140                                                 | 13.23                                                        | 226.8                                                     |
| SMD30J150UC          | SMD30J150BC         | 167                            | 185     | 1                | 5                                                                    | 150                                                 | 12.35                                                        | 243                                                       |
| SMD30J160UC          | SMD30J160BC         | 178                            | 197     | 1                | 5                                                                    | 160                                                 | 11.58                                                        | 259                                                       |
| SMD30J170UC          | SMD30J170BC         | 189                            | 209     | 1                | 5                                                                    | 170                                                 | 10.91                                                        | 275                                                       |
| SMD30J180UC          | SMD30J180BC         | 200                            | 220     | 1                | 5                                                                    | 180                                                 | 10.29                                                        | 291.6                                                     |
| SMD30J190UC          | SMD30J190BC         | 211                            | 232     | 1                | 5                                                                    | 190                                                 | 9.75                                                         | 307.8                                                     |
| SMD30J200UC          | SMD30J200BC         | 224                            | 247     | 1                | 5                                                                    | 200                                                 | 9.26                                                         | 324                                                       |
| SMD30J220UC          | SMD30J220BC         | 246                            | 272     | 1                | 5                                                                    | 220                                                 | 8.43                                                         | 356                                                       |
| SMD30J250UC          | SMD30J250BC         | 279                            | 309     | 1                | 5                                                                    | 250                                                 | 7.41                                                         | 405                                                       |
| SMD30J300UC          | SMD30J300BC         | 335                            | 371     | 1                | 5                                                                    | 300                                                 | 6.17                                                         | 486                                                       |
| SMD30J350UC          | SMD30J350BC         | 391                            | 432     | 1                | 5                                                                    | 350                                                 | 5.29                                                         | 567                                                       |
| SMD30J400UC          | SMD30J400BC         | 447                            | 494     | 1                | 5                                                                    | 400                                                 | 4.63                                                         | 648                                                       |
| SMD30J440UC          | SMD30J440BC         | 492                            | 543     | 1                | 5                                                                    | 440                                                 | 4.21                                                         | 713                                                       |
| SMD30J250UC          | SMD30J250BC         | 279                            | 309     | 1                | 5                                                                    | 250                                                 | 7.41                                                         | 405                                                       |
| SMD30J300UC          | SMD30J300BC         | 335                            | 371     | 1                | 5                                                                    | 300                                                 | 6.17                                                         | 486                                                       |
| SMD30J350UC          | SMD30J350BC         | 391                            | 432     | 1                | 5                                                                    | 350                                                 | 5.29                                                         | 567                                                       |
| SMD30J400UC          | SMD30J400BC         | 447                            | 494     | 1                | 5                                                                    | 400                                                 | 4.63                                                         | 648                                                       |
| SMD30J440UC          | SMD30J440BC         | 492                            | 543     | 1                | 5                                                                    | 440                                                 | 4.21                                                         | 713                                                       |

(1) Pulse Test:  $t_p \leq 50ms$  Pulse test:  $t_p \leq 50ms$ .

(2) Surge current waveform per Fig. 3 and derated per Fig.2.

(3) For bi-directional types having  $V_{RWM}$  of 10 V and less, the  $I_R$  limit is doubled.

(4) For the bi-directional SMD30J5.0BC, the maximum  $V_{BR}$  is 7.25 V.

## ■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

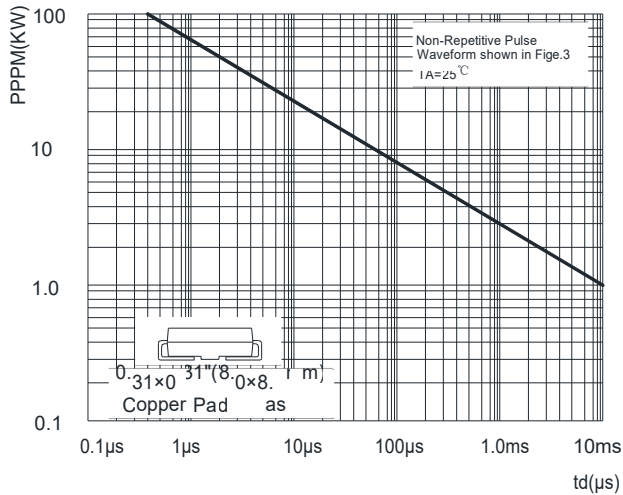


FIG2: Pulse Power or Current vs. Initial Junction Temperature

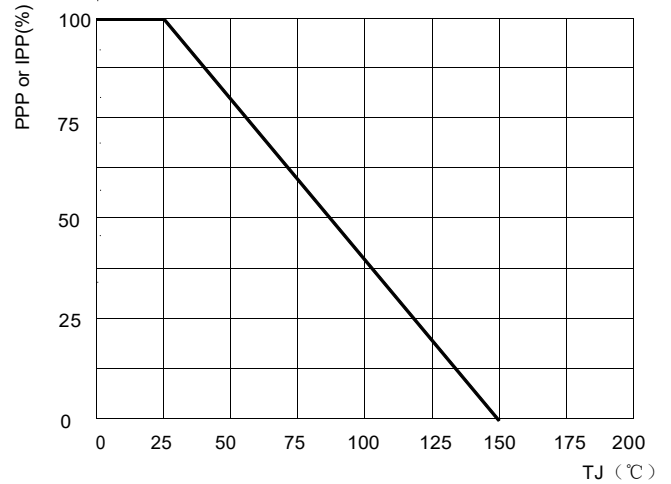


FIG3: Pulse Waveform

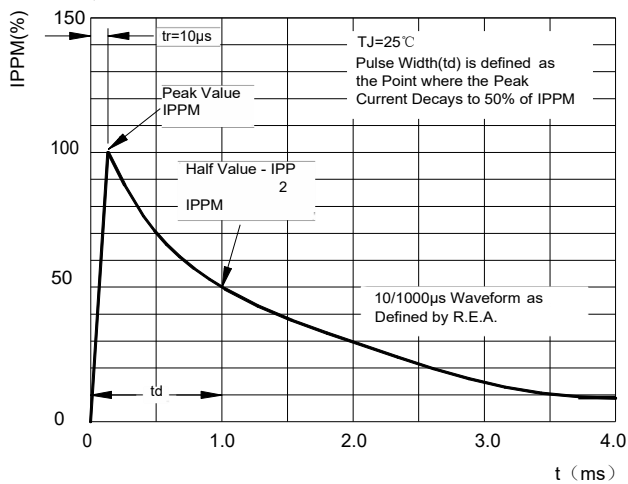


FIG4: Typical Transient Thermal Impedance

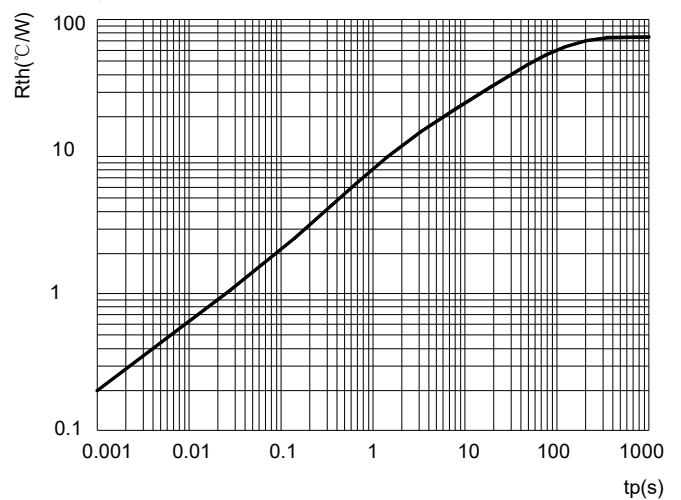


FIG5: Maximum Non-Repetitive Surge Current

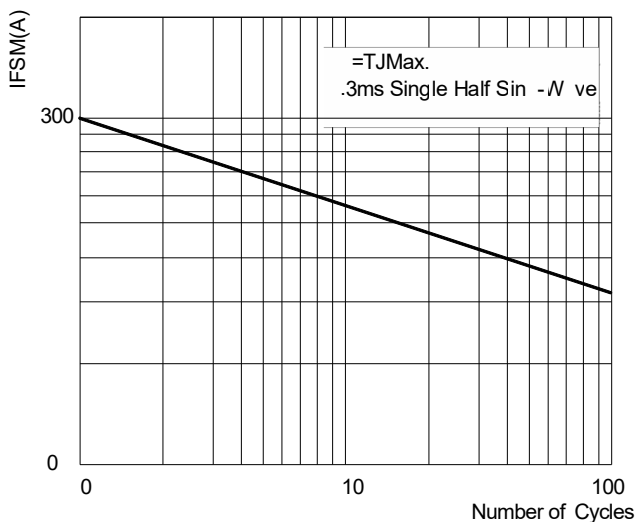
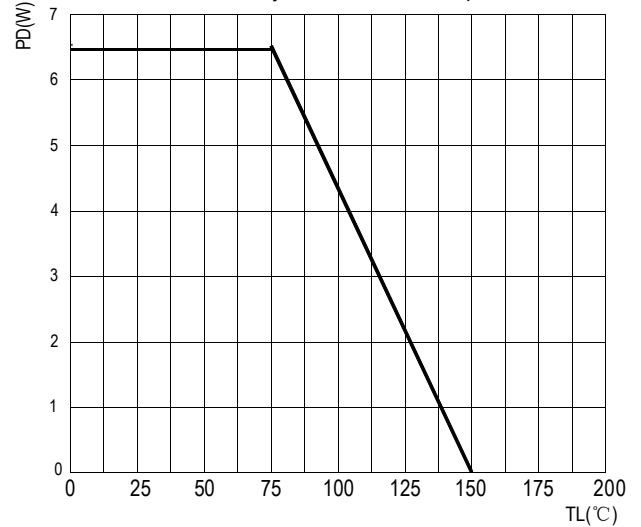
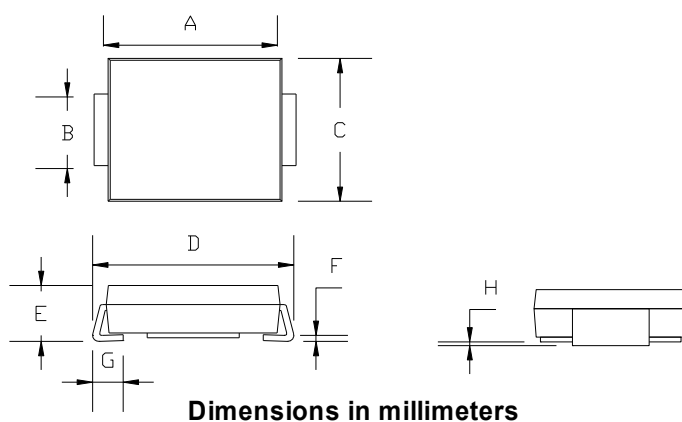


FIG6: Steady State Power Dissipation



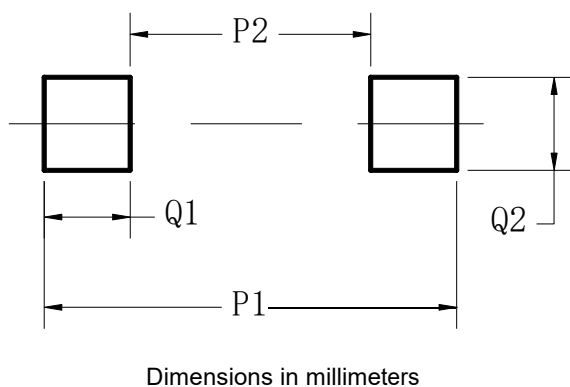
## ■ Outline Dimensions

### DO-214AB(SMD)



| DO-214AB (SMD) |      |      |
|----------------|------|------|
| Dim            | Min  | Max  |
| A              | 6.60 | 7.11 |
| B              | 2.85 | 3.27 |
| C              | 5.59 | 6.22 |
| D              | 7.75 | 8.13 |
| E              | 1.99 | 2.61 |
| F              | 0.15 | 0.31 |
| G              | 0.76 | 1.52 |
| H              | 0.05 | 0.20 |

## ■ Suggested pad layout



| Dim | Typ  |
|-----|------|
| P1  | 9.9  |
| P2  | 3.84 |
| Q1  | 3.03 |
| Q2  | 3.82 |