

# SMD Transient Voltage Suppressor



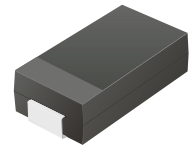
SMD Diodes Specialist

## TV30C5V0-G Thru. TV30C171-G

Working Peak Reverse Voltage: 5.0 to 170 Volts

Power Dissipation: 3000 Watts

RoHS Device

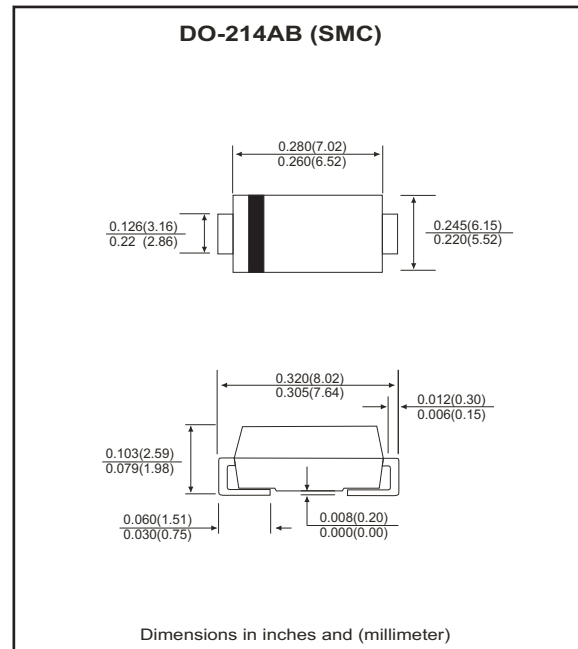


### Features

- Ideally for surface mount applications.
- Easy pick and place.
- Plastic package has Underwriters Lab. flammability classification 94V-0.
- Typical IR less than 1 $\mu$ A above 10V.
- Fast response time: typically less than 1nS for uni-direction, less than 5nS for bi-direction, from 0V to BV min.
- Use in sensitive electronic protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

### Mechanical data

- Case: JEDEC DO-214AB, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Color band denotes cathode end.
- Approx. weight: 0.21 grams



### Maximum Ratings and Electrical Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.  
Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Characteristics                                                                                                   | Symbol           | Value          | Units |
|-------------------------------------------------------------------------------------------------------------------|------------------|----------------|-------|
| Peak power dissipation on 10/1000 $\mu$ S waveform (Note 1)                                                       | P <sub>PP</sub>  | 3000           | W     |
| Peak pulse current on 10/1000 $\mu$ S waveform (Note 1)                                                           | I <sub>PP</sub>  | See Next Table | A     |
| Steady state power dissipation at T <sub>L</sub> =75 °C                                                           | P <sub>D</sub>   | 6.0            | W     |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, uni-directional only (Note 3) | I <sub>FSM</sub> | 300            | A     |
| Maximum instantaneous forward voltage at 100.0A for uni-directional only (Note 3)                                 | V <sub>F</sub>   | 3.5/5.0        | V     |
| Maximum operating junction temperature                                                                            | T <sub>J</sub>   | 150            | °C    |
| Storage temperature range                                                                                         | T <sub>STG</sub> | -55 to +150    | °C    |

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub>=25 °C, per Fig. 2.
2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V

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## RATING AND CHARACTERISTIC CURVES (TV30C5V0-G thru TV30C171-G)

Fig.1 Peak Pulse Power Rating Curve

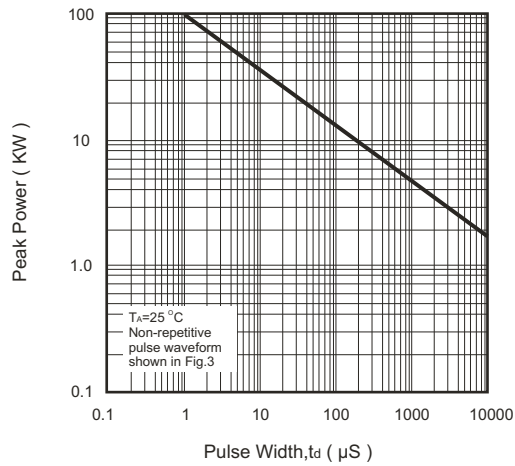


Fig.2 Pulse Derating Curve

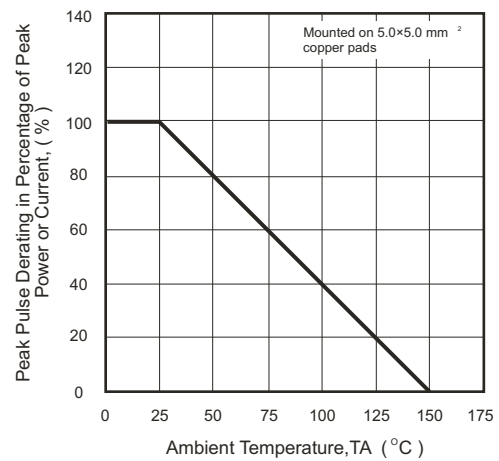


Fig.3 Pulse Waveform

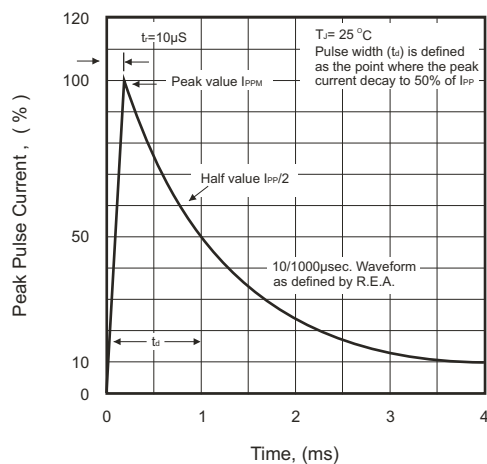


Fig.4 Typical Junction Capacitance

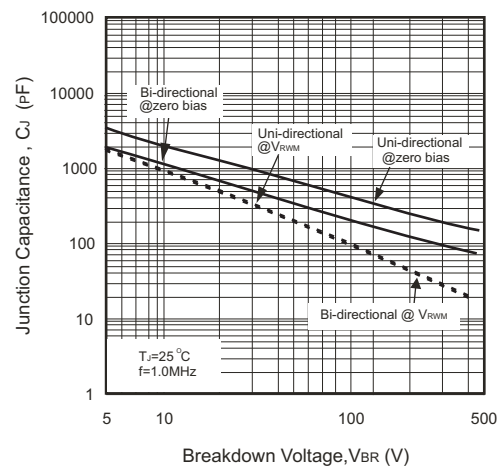


Fig.5 Steady State Power Derating Curve

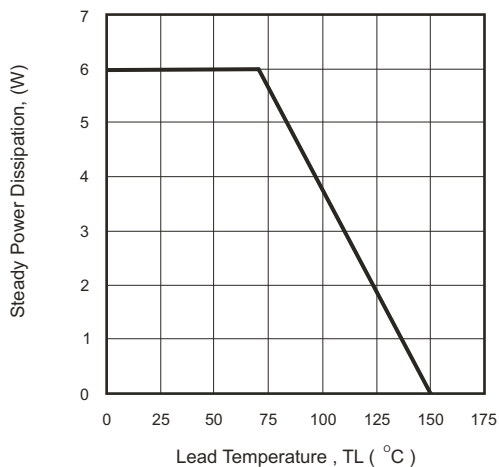
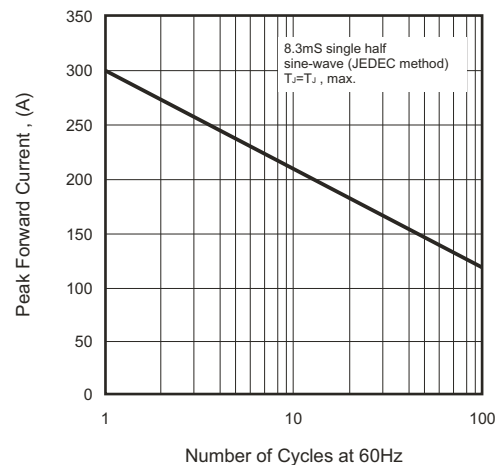


Fig.6 Max. Non-Repetitive Forward Surge Current (Uni-directional only)



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Table 1. Specification

| Part No        | Absolute Maximum Rating (Ta=25 °C) |                      |                      |                |                  | Electrical Characteristic (Ta=25 °C) |                     |                                  |              |     |
|----------------|------------------------------------|----------------------|----------------------|----------------|------------------|--------------------------------------|---------------------|----------------------------------|--------------|-----|
|                | V <sub>RWM</sub>                   | V <sub>BR</sub> Min. | V <sub>BR</sub> Max. | I <sub>T</sub> | I <sub>FSM</sub> | Max. V <sub>C</sub>                  |                     | I <sub>R</sub> @V <sub>RWM</sub> | Marking Code |     |
|                | (V)                                | (V)                  | (V)                  | (mA)           | (A)@8.3mS        | (V)                                  | I <sub>PP</sub> (A) | (uA)                             | Uni          | Bi  |
| TV30C5V0K(B)-G | 5.00                               | 6.40                 | 7.30                 | 10             | 250              | 9.6                                  | 312.5               | 1000                             | HDD          | IDD |
| TV30C5V0J(B)-G | 5.00                               | 6.40                 | 7.00                 | 10             | 250              | 9.2                                  | 326.1               | 1000                             | HDE          | IDE |
| TV30C6V0K(B)-G | 6.00                               | 6.67                 | 8.15                 | 10             | 250              | 11.4                                 | 263.2               | 1000                             | HDF          | IDF |
| TV30C6V0J(B)-G | 6.00                               | 6.67                 | 7.37                 | 10             | 250              | 10.3                                 | 291.3               | 1000                             | HDG          | IDG |
| TV30C6V5K(B)-G | 6.50                               | 7.22                 | 8.82                 | 10             | 250              | 12.3                                 | 243.9               | 500                              | HDH          | IDH |
| TV30C6V5J(B)-G | 6.50                               | 7.22                 | 7.98                 | 10             | 250              | 11.2                                 | 267.9               | 500                              | HDK          | IDK |
| TV30C7V0K(B)-G | 7.00                               | 7.78                 | 9.51                 | 10             | 250              | 13.3                                 | 225.6               | 200                              | HDL          | IDL |
| TV30C7V0J(B)-G | 7.00                               | 7.78                 | 8.60                 | 10             | 250              | 12.0                                 | 250.0               | 200                              | HDM          | IDM |
| TV30C7V5K(B)-G | 7.50                               | 8.33                 | 10.30                | 1              | 250              | 14.3                                 | 209.8               | 100                              | HDN          | IDN |
| TV30C7V5J(B)-G | 7.50                               | 8.33                 | 9.21                 | 1              | 250              | 12.9                                 | 232.6               | 100                              | HDP          | IDP |
| TV30C8V0K(B)-G | 8.00                               | 8.89                 | 10.90                | 1              | 250              | 15.0                                 | 200.0               | 50                               | HDQ          | IDQ |
| TV30C8V0J(B)-G | 8.00                               | 8.89                 | 9.83                 | 1              | 250              | 13.6                                 | 220.6               | 50                               | HDR          | IDR |
| TV30C8V5K(B)-G | 8.55                               | 9.44                 | 11.50                | 1              | 250              | 15.9                                 | 188.7               | 20                               | HDS          | IDS |
| TV30C8V5J(B)-G | 8.55                               | 9.44                 | 10.40                | 1              | 250              | 14.4                                 | 208.3               | 20                               | HDT          | IDT |
| TV30C9V0K(B)-G | 9.00                               | 10.0                 | 12.20                | 1              | 250              | 16.9                                 | 177.5               | 10                               | HDU          | IDU |
| TV30C9V0J(B)-G | 9.00                               | 10.0                 | 11.10                | 1              | 250              | 15.4                                 | 194.8               | 10                               | HDV          | IDV |
| TV30C100K(B)-G | 10.0                               | 11.1                 | 13.60                | 1              | 250              | 18.8                                 | 159.6               | 5                                | HDW          | IDW |
| TV30C100J(B)-G | 10.0                               | 11.1                 | 12.30                | 1              | 250              | 17.0                                 | 176.5               | 5                                | HDX          | IDX |
| TV30C110K(B)-G | 11.0                               | 12.2                 | 14.90                | 1              | 250              | 20.1                                 | 149.3               | 5                                | HDY          | IDY |
| TV30C110J(B)-G | 11.0                               | 12.2                 | 13.50                | 1              | 250              | 18.2                                 | 164.8               | 5                                | HDZ          | IDZ |
| TV30C120K(B)-G | 12.0                               | 13.3                 | 16.30                | 1              | 250              | 19.9                                 | 136.4               | 5                                | HED          | IED |
| TV30C120J(B)-G | 12.0                               | 13.3                 | 14.70                | 1              | 250              | 19.9                                 | 150.8               | 5                                | HEE          | IEE |
| TV30C130K(B)-G | 13.0                               | 14.4                 | 17.60                | 1              | 250              | 23.8                                 | 126.1               | 5                                | HEF          | IEF |
| TV30C130J(B)-G | 13.0                               | 14.4                 | 15.90                | 1              | 250              | 21.5                                 | 139.5               | 5                                | HEG          | IEG |
| TV30C140K(B)-G | 14.0                               | 15.6                 | 19.10                | 1              | 250              | 25.8                                 | 116.3               | 5                                | HEH          | IEH |
| TV30C140J(B)-G | 14.0                               | 15.6                 | 17.20                | 1              | 250              | 23.2                                 | 129.3               | 5                                | HEK          | IEK |
| TV30C150K(B)-G | 15.0                               | 16.7                 | 20.40                | 1              | 250              | 26.9                                 | 111.5               | 5                                | HEL          | IEL |
| TV30C150J(B)-G | 15.0                               | 16.7                 | 18.50                | 1              | 250              | 24.4                                 | 123.0               | 5                                | HEM          | IEM |
| TV30C160K(B)-G | 16.0                               | 17.8                 | 21.80                | 1              | 250              | 28.8                                 | 104.2               | 5                                | HEN          | IEN |
| TV30C160J(B)-G | 16.0                               | 17.8                 | 19.70                | 1              | 250              | 26.0                                 | 115.4               | 5                                | HEP          | IEP |
| TV30C170K(B)-G | 17.0                               | 18.9                 | 23.10                | 1              | 250              | 30.5                                 | 98.4                | 5                                | HEQ          | IEQ |
| TV30C170J(B)-G | 17.0                               | 18.9                 | 20.90                | 1              | 250              | 27.6                                 | 108.7               | 5                                | HER          | IER |
| TV30C180K(B)-G | 18.0                               | 20.0                 | 24.40                | 1              | 250              | 32.2                                 | 93.2                | 5                                | HES          | IES |
| TV30C180J(B)-G | 18.0                               | 20.0                 | 22.10                | 1              | 250              | 29.2                                 | 102.7               | 5                                | HET          | IET |
| TV30C200K(B)-G | 20.0                               | 22.2                 | 27.10                | 1              | 250              | 35.8                                 | 83.8                | 5                                | HDU          | IEU |
| TV30C200J(B)-G | 20.0                               | 22.2                 | 24.50                | 1              | 250              | 32.4                                 | 92.6                | 5                                | HEV          | IEV |
| TV30C220K(B)-G | 22.0                               | 24.4                 | 29.80                | 1              | 250              | 39.4                                 | 76.1                | 5                                | HEW          | IEW |
| TV30C220J(B)-G | 22.0                               | 24.4                 | 26.90                | 1              | 250              | 35.5                                 | 84.5                | 5                                | HEX          | IEX |
| TV30C240K(B)-G | 24.0                               | 26.7                 | 32.60                | 1              | 250              | 43.0                                 | 69.8                | 5                                | HEY          | IEY |
| TV30C240J(B)-G | 24.0                               | 26.7                 | 29.50                | 1              | 250              | 38.9                                 | 77.1                | 5                                | HEZ          | IEZ |
| TV30C260K(B)-G | 26.0                               | 28.9                 | 35.30                | 1              | 250              | 46.6                                 | 64.4                | 5                                | HFD          | IFD |
| TV30C260J(B)-G | 26.0                               | 28.9                 | 31.90                | 1              | 250              | 42.1                                 | 71.3                | 5                                | HFE          | IFE |
| TV30C280K(B)-G | 28.0                               | 31.1                 | 38.00                | 1              | 250              | 50.0                                 | 60.0                | 5                                | HFF          | IFF |
| TV30C280J(B)-G | 28.0                               | 31.1                 | 34.40                | 1              | 250              | 45.4                                 | 66.1                | 5                                | HFG          | IFG |
| TV30C300K(B)-G | 30.0                               | 33.3                 | 40.70                | 1              | 250              | 53.5                                 | 56.1                | 5                                | HFH          | IFH |
| TV30C300J(B)-G | 30.0                               | 33.3                 | 36.80                | 1              | 250              | 48.4                                 | 62.0                | 5                                | HFK          | IFK |
| TV30C330K(B)-G | 33.0                               | 36.7                 | 44.90                | 1              | 250              | 59.0                                 | 50.8                | 5                                | HFL          | IFL |
| TV30C330J(B)-G | 33.0                               | 36.7                 | 40.60                | 1              | 250              | 53.3                                 | 56.3                | 5                                | HFM          | IFM |

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Table 1. Specification

| Part No        | Absolute Maximum Rating (Ta=25 °C) |          |          |      |           | Electrical Characteristic (Ta=25 °C) |         |         |              |     |
|----------------|------------------------------------|----------|----------|------|-----------|--------------------------------------|---------|---------|--------------|-----|
|                | VRWM                               | VBR Min. | VBR Max. | IT   | IFSM      | Max. V C                             |         | IR@VRWM | Marking Code |     |
|                | (V)                                | (V)      | (V)      | (mA) | (A)@8.3mS | (V)                                  | IPP (A) | (uA)    | Uni          | Bi  |
| TV30C360K(B)-G | 36.0                               | 40.0     | 48.9     | 1    | 250       | 64.3                                 | 46.7    | 5       | HFN          | IFN |
| TV30C360J(B)-G | 36.0                               | 40.0     | 44.2     | 1    | 250       | 58.1                                 | 51.6    | 5       | HFP          | IFP |
| TV30C400K(B)-G | 40.0                               | 44.4     | 54.3     | 1    | 250       | 71.4                                 | 42.0    | 5       | HFQ          | IFQ |
| TV30C400J(B)-G | 40.0                               | 44.4     | 49.1     | 1    | 250       | 64.5                                 | 46.5    | 5       | HFR          | IFR |
| TV30C430K(B)-G | 43.0                               | 47.8     | 58.4     | 1    | 250       | 76.7                                 | 39.1    | 5       | HFS          | IFS |
| TV30C430J(B)-G | 43.0                               | 47.8     | 52.8     | 1    | 250       | 69.4                                 | 43.2    | 5       | HFT          | IFT |
| TV30C450K(B)-G | 45.0                               | 50.0     | 61.1     | 1    | 250       | 80.3                                 | 37.4    | 5       | HFU          | IFU |
| TV30C450J(B)-G | 45.0                               | 50.0     | 55.3     | 1    | 250       | 72.7                                 | 41.3    | 5       | HFV          | IFV |
| TV30C480K(B)-G | 48.0                               | 53.3     | 65.1     | 1    | 250       | 85.5                                 | 35.1    | 5       | HFW          | IFW |
| TV30C480J(B)-G | 48.0                               | 53.3     | 58.9     | 1    | 250       | 77.4                                 | 38.8    | 5       | HFX          | IFX |
| TV30C510K(B)-G | 51.0                               | 56.7     | 69.3     | 1    | 250       | 91.1                                 | 32.9    | 5       | HFY          | IFY |
| TV30C510J(B)-G | 51.0                               | 56.7     | 62.7     | 1    | 250       | 82.4                                 | 36.4    | 5       | HFZ          | IFZ |
| TV30C540K(B)-G | 54.0                               | 60.0     | 73.3     | 1    | 250       | 96.3                                 | 31.2    | 5       | GGD          | IGD |
| TV30C540J(B)-G | 54.0                               | 60.0     | 66.3     | 1    | 250       | 87.1                                 | 34.4    | 5       | GGE          | IGE |
| TV30C580K(B)-G | 58.0                               | 64.4     | 78.7     | 1    | 250       | 103                                  | 29.1    | 5       | GGF          | IGF |
| TV30C580J(B)-G | 58.0                               | 64.4     | 71.2     | 1    | 250       | 93.6                                 | 32.1    | 5       | HGG          | IGG |
| TV30C600K(B)-G | 60.0                               | 66.7     | 81.5     | 1    | 250       | 107                                  | 28.0    | 5       | HGH          | IGH |
| TV30C600J(B)-G | 60.0                               | 66.7     | 73.7     | 1    | 250       | 96.8                                 | 31.0    | 5       | HGK          | IGK |
| TV30C640K(B)-G | 64.0                               | 71.1     | 86.4     | 1    | 250       | 114                                  | 26.3    | 5       | HGL          | IGL |
| TV30C640J(B)-G | 64.0                               | 71.1     | 78.6     | 1    | 250       | 103                                  | 29.1    | 5       | HGM          | IGM |
| TV30C700K(B)-G | 70.0                               | 77.8     | 95.1     | 1    | 250       | 125                                  | 24.0    | 5       | HGN          | IGN |
| TV30C700J(B)-G | 70.0                               | 77.8     | 86.0     | 1    | 250       | 113                                  | 26.5    | 5       | HGP          | IGP |
| TV30C750K(B)-G | 75.0                               | 83.3     | 102.0    | 1    | 250       | 134                                  | 22.4    | 5       | HGQ          | IGQ |
| TV30C750J(B)-G | 75.0                               | 83.3     | 92.1     | 1    | 250       | 121                                  | 24.8    | 5       | HGR          | IGR |
| TV30C780K(B)-G | 78.0                               | 86.7     | 106.0    | 1    | 250       | 139                                  | 21.6    | 5       | HGS          | IGS |
| TV30C780J(B)-G | 78.0                               | 86.7     | 95.8     | 1    | 250       | 126                                  | 23.8    | 5       | HGT          | IGT |
| TV30C850K(B)-G | 85.0                               | 94.4     | 115.0    | 1    | 250       | 151                                  | 19.9    | 5       | HGU          | IGU |
| TV30C850J(B)-G | 85.0                               | 94.4     | 104.0    | 1    | 250       | 137                                  | 21.9    | 5       | HGV          | IGV |
| TV30C900K(B)-G | 90.0                               | 100      | 122.0    | 1    | 250       | 160                                  | 18.8    | 5       | HGW          | IGW |
| TV30C900J(B)-G | 90.0                               | 100      | 111.0    | 1    | 250       | 146                                  | 20.5    | 5       | HGX          | IGX |
| TV30C101K(B)-G | 100                                | 111      | 136.0    | 1    | 250       | 179                                  | 16.8    | 5       | HGY          | IGY |
| TV30C101J(B)-G | 100                                | 111      | 123.0    | 1    | 250       | 162                                  | 18.5    | 5       | HGZ          | IGZ |
| TV30C111K(B)-G | 110                                | 122      | 149.0    | 1    | 250       | 196                                  | 15.3    | 5       | HHH          | IHH |
| TV30C111J(B)-G | 110                                | 122      | 135.0    | 1    | 250       | 177                                  | 16.9    | 5       | HHE          | IHE |
| TV30C121K(B)-G | 120                                | 133      | 163.0    | 1    | 250       | 214                                  | 14.0    | 5       | HHF          | IHF |
| TV30C121J(B)-G | 120                                | 133      | 147.0    | 1    | 250       | 193                                  | 15.5    | 5       | HHG          | IHG |
| TV30C131K(B)-G | 130                                | 144      | 176.0    | 1    | 250       | 231                                  | 13.0    | 5       | HHH          | IHH |
| TV30C131J(B)-G | 130                                | 144      | 159.0    | 1    | 250       | 209                                  | 14.4    | 5       | HHK          | IHK |
| TV30C151K(B)-G | 150                                | 167      | 204.0    | 1    | 250       | 268                                  | 11.2    | 5       | HHL          | IHL |
| TV30C151J(B)-G | 150                                | 167      | 185.0    | 1    | 250       | 243                                  | 12.3    | 5       | HHM          | IHM |
| TV30C161K(B)-G | 160                                | 178      | 218.0    | 1    | 250       | 287                                  | 10.5    | 5       | HHN          | IHN |
| TV30C161J(B)-G | 160                                | 178      | 197.0    | 1    | 250       | 259                                  | 11.6    | 5       | HHP          | IHP |
| TV30C171K(B)-G | 170                                | 189      | 231.0    | 1    | 250       | 304                                  | 9.9     | 5       | HHQ          | IHQ |
| TV30C171J(B)-G | 170                                | 189      | 209.0    | 1    | 250       | 275                                  | 10.9    | 5       | HHR          | IHR |

Notes:

1. Suffix K denotes 10% tolerance devices, suffix J denotes 5% tolerance devices.
2. Suffix B after part number to specify bi-directional devices.
3. For bi-directional devices having Vr of 10 volts and under, the Ir limit is double.

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