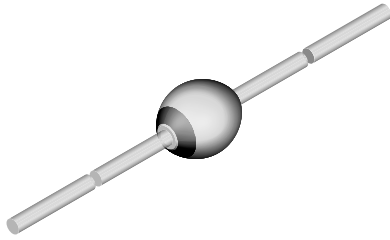


Zener Diodes with Surge Current Specification



949539

FEATURES

- Glass passivated junction
- Hermetically sealed package
- Clamping time in picoseconds
- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

APPLICATIONS

- Medium power voltage regulators and medium power transient suppression circuits

PRIMARY CHARACTERISTICS

| PARAMETER | VALUE | UNIT |
|-----------------------|---------------|------|
| V_Z range nom. | 6.2 to 300 | V |
| Test current I_{ZT} | 2 to 100 | mA |
| V_Z specification | Pulse current | |
| Int. construction | Single | |

ORDERING INFORMATION (Example)

| DEVICE NAME | ORDERING CODE | TAPED UNITS | MINIMUM ORDER QUANTITY |
|-------------|---------------|----------------------------|------------------------|
| BZT03C6V2 | BZT03C6V2-TR | 5000 per 10" tape and reel | 25 000 |
| BZT03C6V2 | BZT03C6V2-TAP | 5000 per ammpack | 25 000 |

PACKAGE

| PACKAGE NAME | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
|--------------|--------|--------------------------------------|--------------------------------------|--------------------------|
| SOD-57 | 369 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|------------|---------------|------|
| Power dissipation | $l = 10\text{ mm}$, $T_L = 25\text{ °C}$ | P_{tot} | 3250 | mW |
| | $T_{amb} = 25\text{ °C}$ | P_{tot} | 1300 | |
| Repetitive peak reverse power dissipation | | P_{ZRM} | 10 | W |
| Non repetitive peak surge power dissipation | $t_p = 100\text{ }\mu\text{s}$, $T_j = 25\text{ °C}$ | P_{ZSM} | 600 | W |
| Junction to ambient air | $l = 10\text{ mm}$, $T_L = \text{constant}$ | R_{thJA} | 46 | K/W |
| | On PC board with spacing 25 mm | R_{thJA} | 100 | |
| Junction temperature | | T_j | 175 | °C |
| Storage temperature range | | T_S | - 65 to + 175 | °C |
| Forward voltage (max.) | $I_F = 0.5\text{ A}$ | V_F | 1.2 | V |



| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | | | | | | | | |
|--|---------------------|------|------|--------------|-------------------------|-----|--------------------|------|-------------------------|------|--------------------------|------|--------------------------|-----|
| PART NUMBER | ZENER VOLTAGE RANGE | | | TEST CURRENT | REVERSE LEAKAGE CURRENT | | DYNAMIC RESISTANCE | | TEMPERATURE COEFFICIENT | | CLAMPING ⁽¹⁾ | | STAND OFF ⁽²⁾ | |
| | V_Z at I_{ZT1} | | | I_{ZT1} | I_R at V_R | | Z_Z at I_{ZT1} | | TC_{VZ} at I_{ZT1} | | $V_{(CL)R}$ at I_{RMS} | | I_R at V_R | |
| | V | | | mA | μA | V | Ω | | %K | | V | A | μA | V |
| | MIN. | NOM. | MAX. | | MAX. | | TYP. | MAX. | MIN. | MAX. | MAX. | | MAX. | |
| BZT03C6V2 | 5.8 | 6.2 | 6.6 | 100 | 1500 | 4.7 | 1 | 2 | 0 | 0.07 | 9.3 | 34 | 3000 | 5.1 |
| BZT03C6V8 | 6.4 | 6.8 | 7.2 | 100 | 1000 | 5.1 | 1 | 2 | 0 | 0.07 | 10.2 | 31 | 2000 | 5.6 |
| BZT03C7V5 | 7 | 7.5 | 7.9 | 100 | 750 | 5.6 | 1 | 2 | 0 | 0.07 | 11.3 | 26.5 | 1500 | 6.2 |
| BZT03C8V2 | 7.7 | 8.2 | 8.7 | 100 | 600 | 6.2 | 1 | 2 | 0.03 | 0.08 | 12.3 | 24.4 | 1200 | 6.8 |
| BZT03C9V1 | 8.5 | 9.1 | 9.6 | 50 | 20 | 6.8 | 2 | 4 | 0.03 | 0.08 | 13.3 | 22.7 | 50 | 7.5 |
| BZT03C10 | 9.4 | 10 | 10.6 | 50 | 10 | 7.5 | 2 | 4 | 0.05 | 0.09 | 14.8 | 20.3 | 20 | 8.2 |
| BZT03C11 | 10.4 | 11 | 11.6 | 50 | 4 | 8.2 | 4 | 7 | 0.05 | 0.1 | 15.7 | 19.1 | 5 | 9.1 |
| BZT03C12 | 11.4 | 12 | 12.7 | 50 | 3 | 9.1 | 4 | 7 | 0.05 | 0.1 | 17 | 17.7 | 5 | 10 |
| BZT03C13 | 12.4 | 13 | 14.1 | 50 | 2 | 10 | 5 | 10 | 0.05 | 0.1 | 18.9 | 15.9 | 5 | 11 |
| BZT03C15 | 13.8 | 15 | 15.6 | 50 | 1 | 11 | 5 | 10 | 0.05 | 0.1 | 20.9 | 14.4 | 5 | 12 |
| BZT03C16 | 15.3 | 16 | 17.1 | 25 | 1 | 12 | 6 | 15 | 0.06 | 0.11 | 22.9 | 13.1 | 5 | 13 |
| BZT03C18 | 16.8 | 18 | 19.1 | 25 | 1 | 13 | 6 | 15 | 0.06 | 0.11 | 25.6 | 11.7 | 5 | 15 |
| BZT03C20 | 18.8 | 20 | 21.2 | 25 | 1 | 15 | 6 | 15 | 0.06 | 0.11 | 28.4 | 10.6 | 5 | 16 |
| BZT03C22 | 20.8 | 22 | 23.3 | 25 | 1 | 16 | 6 | 15 | 0.06 | 0.11 | 31 | 9.7 | 5 | 18 |
| BZT03C24 | 22.8 | 24 | 25.6 | 25 | 1 | 18 | 7 | 15 | 0.06 | 0.11 | 33.8 | 8.9 | 5 | 20 |
| BZT03C27 | 25.1 | 27 | 28.9 | 25 | 1 | 20 | 7 | 15 | 0.06 | 0.11 | 38.1 | 7.9 | 5 | 22 |
| BZT03C30 | 28 | 30 | 32 | 25 | 1 | 22 | 8 | 15 | 0.06 | 0.11 | 42.2 | 7.1 | 5 | 24 |
| BZT03C33 | 31 | 33 | 35 | 25 | 1 | 24 | 8 | 15 | 0.06 | 0.11 | 46.2 | 6.5 | 5 | 27 |
| BZT03C36 | 34 | 36 | 38 | 10 | 1 | 27 | 21 | 40 | 0.06 | 0.11 | 50.1 | 6 | 5 | 30 |
| BZT03C39 | 37 | 39 | 41 | 10 | 1 | 30 | 21 | 40 | 0.06 | 0.11 | 54.1 | 5.5 | 5 | 33 |
| BZT03C43 | 40 | 43 | 46 | 10 | 1 | 33 | 24 | 45 | 0.07 | 0.12 | 60.7 | 4.9 | 5 | 36 |
| BZT03C47 | 44 | 47 | 50 | 10 | 1 | 36 | 24 | 45 | 0.07 | 0.12 | 65.5 | 4.6 | 5 | 39 |
| BZT03C51 | 48 | 51 | 54 | 10 | 1 | 39 | 25 | 60 | 0.07 | 0.12 | 70.8 | 4.2 | 5 | 43 |
| BZT03C56 | 52 | 56 | 60 | 10 | 1 | 43 | 25 | 60 | 0.07 | 0.12 | 78.6 | 3.8 | 5 | 47 |
| BZT03C62 | 58 | 62 | 66 | 10 | 1 | 47 | 25 | 80 | 0.08 | 0.13 | 86.5 | 3.5 | 5 | 51 |
| BZT03C68 | 64 | 68 | 72 | 10 | 1 | 51 | 25 | 80 | 0.08 | 0.13 | 94.4 | 3.2 | 5 | 56 |
| BZT03C75 | 70 | 75 | 79 | 10 | 1 | 56 | 30 | 100 | 0.08 | 0.13 | 103.5 | 2.9 | 5 | 62 |
| BZT03C82 | 77 | 82 | 87 | 10 | 1 | 62 | 30 | 100 | 0.08 | 0.13 | 114 | 2.6 | 5 | 68 |
| BZT03C91 | 85 | 91 | 96 | 5 | 1 | 68 | 60 | 200 | 0.09 | 0.13 | 126 | 2.4 | 5 | 75 |
| BZT03C100 | 94 | 100 | 106 | 5 | 1 | 75 | 60 | 200 | 0.09 | 0.13 | 139 | 2.2 | 5 | 82 |
| BZT03C110 | 104 | 110 | 116 | 5 | 1 | 82 | 80 | 250 | 0.09 | 0.13 | 152 | 2 | 5 | 91 |
| BZT03C120 | 114 | 120 | 127 | 5 | 1 | 91 | 80 | 250 | 0.09 | 0.13 | 167 | 1.8 | 5 | 100 |
| BZT03C130 | 124 | 130 | 141 | 5 | 1 | 100 | 110 | 300 | 0.09 | 0.13 | 185 | 1.6 | 5 | 110 |
| BZT03C150 | 138 | 150 | 156 | 5 | 1 | 110 | 130 | 300 | 0.09 | 0.13 | 204 | 1.5 | 5 | 120 |
| BZT03C160 | 153 | 160 | 171 | 5 | 1 | 120 | 150 | 350 | 0.09 | 0.13 | 224 | 1.3 | 5 | 130 |
| BZT03C180 | 168 | 180 | 191 | 5 | 1 | 130 | 180 | 400 | 0.09 | 0.13 | 249 | 1.2 | 5 | 150 |
| BZT03C200 | 188 | 200 | 212 | 5 | 1 | 150 | 200 | 500 | 0.09 | 0.13 | 276 | 1.1 | 5 | 160 |
| BZT03C220 | 208 | 220 | 233 | 2 | 1 | 160 | 350 | 750 | 0.09 | 0.13 | 305 | 1 | 5 | 180 |
| BZT03C240 | 228 | 240 | 256 | 2 | 1 | 180 | 400 | 850 | 0.09 | 0.13 | 336 | 0.9 | 5 | 200 |
| BZT03C270 | 251 | 270 | 289 | 2 | 1 | 200 | 450 | 1000 | 0.09 | 0.13 | 380 | 0.8 | 5 | 220 |
| BZT03C300 | 280 | 300 | 320 | 2 | 1 | 220 | 450 | 1000 | 0.09 | 0.13 | 419 | 0.72 | 5 | 240 |

Notes

- (1) 10/1000 exp. falling pulse $t_p = 1000\text{ }\mu\text{s}$ down to 50 %
- (2) Stand-off voltage = recommended supply voltage



| ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) | | | | | | | | | | | | | | |
|---|------------------------------------|------|------|------------------|----------------------------------|------|------------------------------------|------|--------------------------------------|------|--|------|----------------------------------|------|
| PART NUMBER | ZENER VOLTAGE RANGE | | | TEST CURRENT | REVERSE LEAKAGE CURRENT | | DYNAMIC RESISTANCE | | TEMPERATURE COEFFICIENT | | CLAMPING ⁽¹⁾ | | STAND OFF ⁽²⁾ | |
| | V _Z at I _{ZT1} | | | I _{ZT1} | I _R at V _R | | Z _Z at I _{ZT1} | | TC _{VZ} at I _{ZT1} | | V _{(CL)R} at I _{RMS} | | I _R at V _R | |
| | V | | | mA | μA | V | Ω | | % / K | | V | A | μA | V |
| | MIN. | NOM. | MAX. | | MAX. | | TYP. | MAX. | MIN. | MAX. | MAX. | | MAX. | |
| BZT03D6V2 | 5.6 | 6.2 | 6.8 | 100 | 1500 | 4.4 | 1 | 2 | 0 | 0.07 | 9.5 | 34 | 3000 | 4.8 |
| BZT03D6V8 | 6.1 | 6.8 | 7.5 | 100 | 1000 | 4.8 | 1 | 2 | 0 | 0.07 | 10.5 | 31 | 2000 | 5.3 |
| BZT03D7V5 | 6.75 | 7.5 | 8.25 | 100 | 750 | 5.3 | 1 | 2 | 0 | 0.07 | 11.6 | 26.5 | 1500 | 5.9 |
| BZT03D8V2 | 7.4 | 8.2 | 9 | 100 | 600 | 5.9 | 1 | 2 | 0.03 | 0.08 | 12.6 | 24.4 | 1200 | 6.5 |
| BZT03D9V1 | 8.2 | 9.1 | 10 | 50 | 20 | 6.5 | 2 | 4 | 0.03 | 0.08 | 13.7 | 22.7 | 50 | 7.1 |
| BZT03D10 | 9 | 10 | 11 | 50 | 10 | 7.1 | 2 | 4 | 0.05 | 0.09 | 15.2 | 20.3 | 20 | 7.9 |
| BZT03D11 | 9.9 | 11 | 12.1 | 50 | 4 | 7.9 | 4 | 7 | 0.05 | 0.1 | 16.2 | 19.1 | 5 | 8.6 |
| BZT03D12 | 10.8 | 12 | 13.2 | 50 | 3 | 8.6 | 4 | 7 | 0.05 | 0.1 | 17.5 | 17.7 | 5 | 9.3 |
| BZT03D13 | 11.7 | 13 | 14.3 | 50 | 2 | 9.3 | 5 | 10 | 0.05 | 0.1 | 19.1 | 15.9 | 5 | 10.6 |
| BZT03D15 | 13.5 | 15 | 16.5 | 50 | 1 | 10.6 | 5 | 10 | 0.05 | 0.1 | 21.8 | 14.4 | 5 | 11.6 |
| BZT03D16 | 14.4 | 16 | 17.6 | 25 | 1 | 11.6 | 6 | 15 | 0.06 | 0.11 | 23.4 | 13.1 | 5 | 12.6 |
| BZT03D18 | 16.2 | 18 | 19.8 | 25 | 1 | 12.6 | 6 | 15 | 0.06 | 0.11 | 26.3 | 11.7 | 5 | 14.4 |
| BZT03D20 | 18 | 20 | 22 | 25 | 1 | 14.4 | 6 | 15 | 0.06 | 0.11 | 29.2 | 10.6 | 5 | 15.8 |
| BZT03D22 | 29.8 | 22 | 24.2 | 25 | 1 | 15.8 | 6 | 15 | 0.06 | 0.11 | 31.9 | 9.7 | 5 | 17.2 |
| BZT03D24 | 21.6 | 24 | 26.4 | 25 | 1 | 17.2 | 7 | 15 | 0.06 | 0.11 | 34.6 | 8.9 | 5 | 19.4 |
| BZT03D27 | 24.3 | 27 | 29.7 | 25 | 1 | 19.4 | 7 | 15 | 0.06 | 0.11 | 39 | 7.9 | 5 | 21.5 |
| BZT03D30 | 27 | 30 | 33 | 25 | 1 | 21.5 | 8 | 15 | 0.06 | 0.11 | 43.5 | 7.1 | 5 | 23.5 |
| BZT03D33 | 29.7 | 33 | 36.3 | 25 | 1 | 23.5 | 8 | 15 | 0.06 | 0.11 | 47.5 | 6.5 | 5 | 25.8 |
| BZT03D36 | 32.4 | 36 | 39.6 | 10 | 1 | 25.8 | 21 | 40 | 0.06 | 0.11 | 51.5 | 6 | 5 | 28 |
| BZT03D39 | 35.1 | 39 | 42.9 | 10 | 1 | 28 | 21 | 40 | 0.06 | 0.11 | 56 | 5.5 | 5 | 31 |
| BZT03D43 | 38.7 | 43 | 47.3 | 10 | 1 | 31 | 24 | 45 | 0.07 | 0.12 | 62 | 4.9 | 5 | 33.5 |
| BZT03D47 | 42.3 | 47 | 51.7 | 10 | 1 | 33.5 | 24 | 45 | 0.07 | 0.12 | 67.5 | 4.6 | 5 | 36.5 |
| BZT03D51 | 45.9 | 51 | 56.1 | 10 | 1 | 36.5 | 25 | 60 | 0.07 | 0.12 | 73 | 4.2 | 5 | 40 |
| BZT03D56 | 50.4 | 56 | 61.6 | 10 | 1 | 40 | 25 | 60 | 0.07 | 0.12 | 81 | 3.8 | 5 | 44.5 |
| BZT03D62 | 55.8 | 62 | 68.2 | 10 | 1 | 44.5 | 25 | 80 | 0.08 | 0.13 | 89 | 3.5 | 5 | 49 |
| BZT03D68 | 61.2 | 68 | 74.8 | 10 | 1 | 49 | 25 | 80 | 0.08 | 0.13 | 97 | 3.2 | 5 | 54 |
| BZT03D75 | 67.5 | 75 | 82.5 | 10 | 1 | 54 | 30 | 100 | 0.08 | 0.13 | 107 | 2.9 | 5 | 59 |
| BZT03D82 | 73.8 | 82 | 90.2 | 10 | 1 | 59 | 30 | 100 | 0.08 | 0.13 | 117 | 2.6 | 5 | 65 |
| BZT03D91 | 81.9 | 91 | 100 | 5 | 1 | 65 | 60 | 200 | 0.09 | 0.13 | 130 | 2.4 | 5 | 71 |
| BZT03D100 | 90 | 100 | 110 | 5 | 1 | 71 | 60 | 200 | 0.09 | 0.13 | 143 | 2.2 | 5 | 79 |
| BZT03D110 | 99 | 110 | 121 | 5 | 1 | 79 | 80 | 250 | 0.09 | 0.13 | 157 | 2 | 5 | 86 |
| BZT03D120 | 108 | 120 | 132 | 5 | 1 | 86 | 80 | 250 | 0.09 | 0.13 | 172 | 1.8 | 5 | 93 |
| BZT03D130 | 117 | 130 | 143 | 5 | 1 | 93 | 110 | 300 | 0.09 | 0.13 | 187 | 1.6 | 5 | 106 |
| BZT03D150 | 135 | 150 | 165 | 5 | 1 | 106 | 130 | 300 | 0.09 | 0.13 | 213 | 1.5 | 5 | 116 |
| BZT03D160 | 144 | 160 | 176 | 5 | 1 | 116 | 150 | 350 | 0.09 | 0.13 | 229 | 1.3 | 5 | 126 |
| BZT03D180 | 162 | 180 | 198 | 5 | 1 | 126 | 180 | 400 | 0.09 | 0.13 | 256 | 1.2 | 5 | 144 |
| BZT03D200 | 180 | 200 | 220 | 5 | 1 | 144 | 200 | 500 | 0.09 | 0.13 | 284 | 1.1 | 5 | 158 |
| BZT03D220 | 198 | 220 | 242 | 2 | 1 | 158 | 350 | 750 | 0.09 | 0.13 | 314 | 1 | 5 | 172 |
| BZT03D240 | 216 | 240 | 264 | 2 | 1 | 172 | 400 | 850 | 0.09 | 0.13 | 364 | 0.9 | 5 | 194 |
| BZT03D270 | 243 | 270 | 297 | 2 | 1 | 194 | 450 | 1000 | 0.09 | 0.13 | 388 | 0.8 | 5 | 215 |

Notes

- (1) 10/1000 exp. falling pulse t_p = 1000 μs down to 50 %
- (2) Stand-off voltage = recommended supply voltage

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

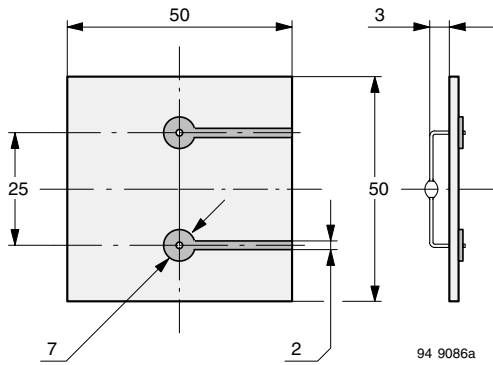


Fig. 1 - Epoxy Glass Hard Tissue, Board Thickness 1.5 mm, $R_{thJA} \leq 100\text{ K/W}$

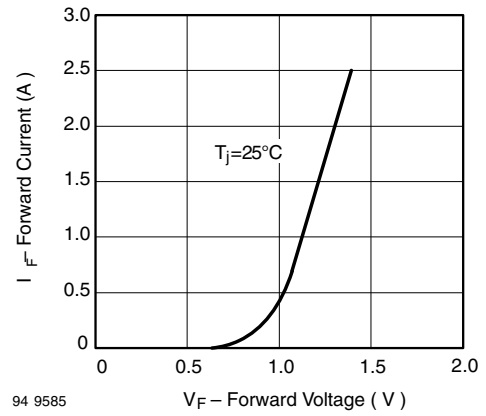


Fig. 3 - Forward Current vs. Forward Voltage

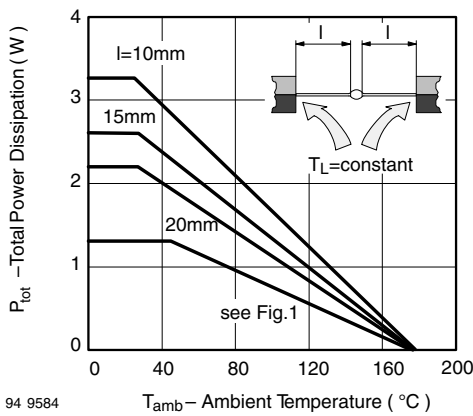


Fig. 2 - Total Power Dissipation vs. Ambient Temperature

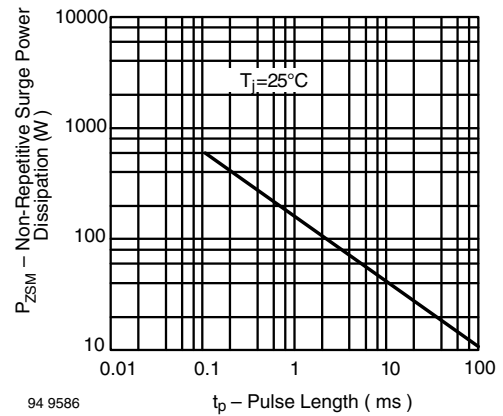
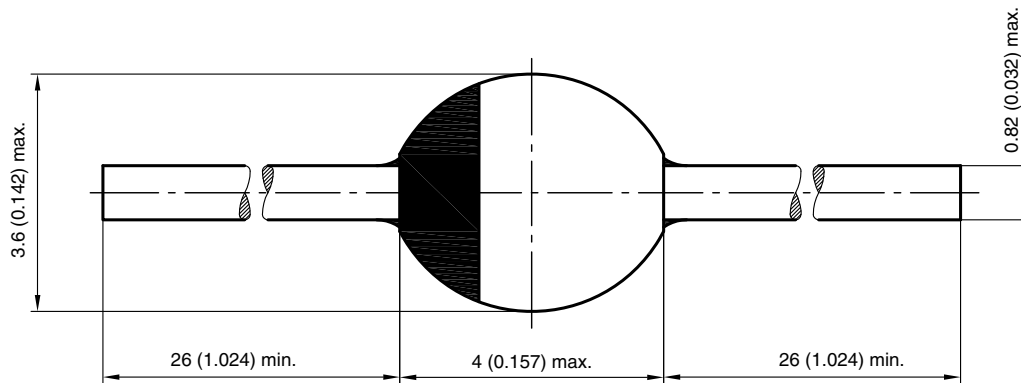


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

PACKAGE DIMENSIONS in millimeters (inches): **SOD-57**



20543
Rev. 3 - Date: 09.February 2005
Document no.:6.563-5006.3-4



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