



**THE DATASHEET OF
DFLT22AQ-7**



Features

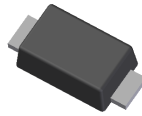
- 225W Peak Pulse Power Dissipation (10µs x 1000µs Waveform)
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DFLT5V0AQ-DFLT40AQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Case: PowerDI[®]123
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish—Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.01 grams (Approximate)

PowerDI123



Top View

Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|--------------|------------|---------|--------------------|-----------------|-------------------|
| DFLTxxxAQ-7* | Automotive | Fxx | 7 | 8 | 3,000/Tape & Reel |
| DFLTxxAQ-7* | Automotive | Fxx | 7 | 8 | 3,000/Tape & Reel |

* Add "-7" to the appropriate type number in Electrical Characteristics Table on Page 2. Example: 18V reverse standoff device = DFLT18AQ-7.

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

PowerDI123



Fxx = Product Type Marking Code
 See Electrical Characteristics Table on Page 2
 YM = Date Code Marking
 Y = Year (ex: I = 2021)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2016 | ... | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | D | ... | H | I | J | K | L | M | N | O | P | R |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|-----------|--------------|------|
| Peak Pulse Power Dissipation (Note 5) 10/1000 μs (Note 6) 8/20 μs | P_{PK} | 225 1,125 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave | I_{FSM} | 50 | A |
| Instantaneous Forward Voltage @ $I_{PP} = 12\text{A}$ (Note 7) | V_F | 3.5 | V |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| DC Steady-State Power Dissipation (Note 8) | P_D | 1.0 | W |
| Thermal Resistance, Junction to Ambient (Note 8) | $R_{\theta JA}$ | 120 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Soldering Point (Note 9) | $R_{\theta JS}$ | 6 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Part Number | Reverse Standoff Voltage | Breakdown Voltage $V_{BR} @ I_T$ (Note 10) | | Test Current | Max. Reverse Leakage @ V_{RWM} | Max. Clamping Voltage @ I_{PP} | Max. Peak Pulse Current I_{PP} | Marking Code |
|-------------|--------------------------|---|---------|--------------|----------------------------------|----------------------------------|-------------------------------------|--------------|
| | V_{RWM} (V) | Min (V) | Max (V) | I_T (mA) | I_R (μA) | V_C (V) | (A) | |
| DFLT5V0AQ | 5.0 | 6.40 | 7.0 | 10 | 400 | 9.2 | 24.5 | FAE |
| DFLT15AQ | 15 | 16.7 | 18.5 | 1.0 | 1.0 | 24.4 | 9.22 | FBM |
| DFLT16AQ | 16 | 17.8 | 19.7 | 1.0 | 1.0 | 26.0 | 8.65 | FBP |
| DFLT18AQ | 18 | 20.0 | 22.1 | 1.0 | 1.0 | 29.2 | 7.71 | FBT |
| DFLT20AQ | 20 | 22.2 | 24.5 | 1.0 | 1.0 | 32.4 | 6.94 | FBV |
| DFLT22AQ | 22 | 24.4 | 26.9 | 1.0 | 1.0 | 35.5 | 6.34 | FBX |
| DFLT24AQ | 24 | 26.7 | 29.5 | 1.0 | 1.0 | 38.9 | 5.78 | FBZ |
| DFLT26AQ | 26 | 28.9 | 31.9 | 1.0 | 1.0 | 42.1 | 5.35 | FCE |
| DFLT28AQ | 28 | 31.1 | 34.4 | 1.0 | 1.0 | 45.4 | 4.96 | FCG |
| DFLT33AQ | 33 | 36.7 | 40.6 | 1.0 | 1.0 | 53.3 | 4.22 | FCM |
| DFLT36AQ | 36 | 40.0 | 44.2 | 1.0 | 1.0 | 58.1 | 3.87 | FCP |
| DFLT40AQ | 40 | 44.4 | 49.1 | 1.0 | 1.0 | 64.5 | 3.49 | FCR |

- Notes:
5. Non-Repetitive current pulse as shown in Figure 2 and derated above $T_A = +25^\circ\text{C}$ as per Figure 1.
 6. Non-Repetitive current pulse as shown in Figure 3 and derated above $T_A = +25^\circ\text{C}$ as per Figure 1.
 7. 1/2 sine wave (or equivalent square wave), pulse width = 8.3ms, duty cycle = 4 pulses/minute maximum.
 8. Device mounted on FR-4 substrate printed circuit board with 1 inch square 2oz copper pad area.
 9. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
 10. V_{BR} measured at pulse test current I_T with $t_p \leq 5.0\text{ms}$ at $T_A = +25^\circ\text{C}$.

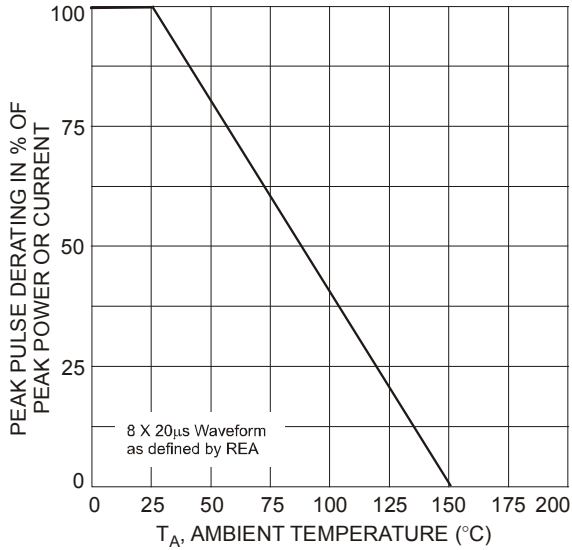


Fig. 1 Pulse Derating Curve

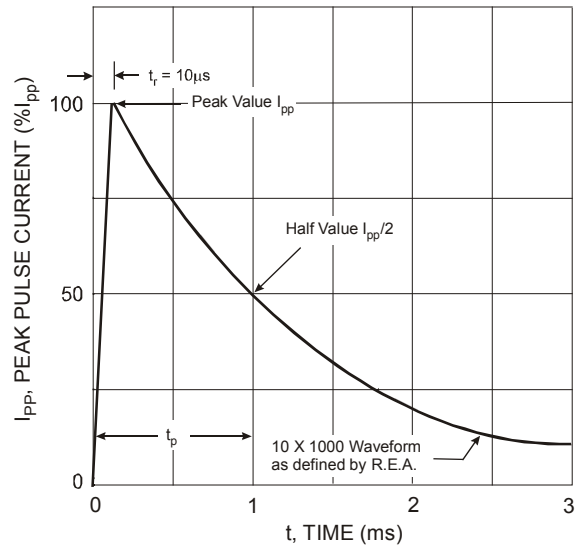


Fig. 2 Pulse Waveform

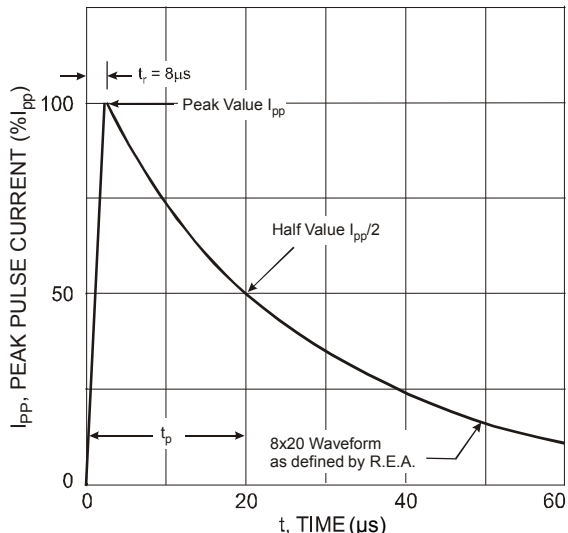


Fig. 3 Pulse Waveform

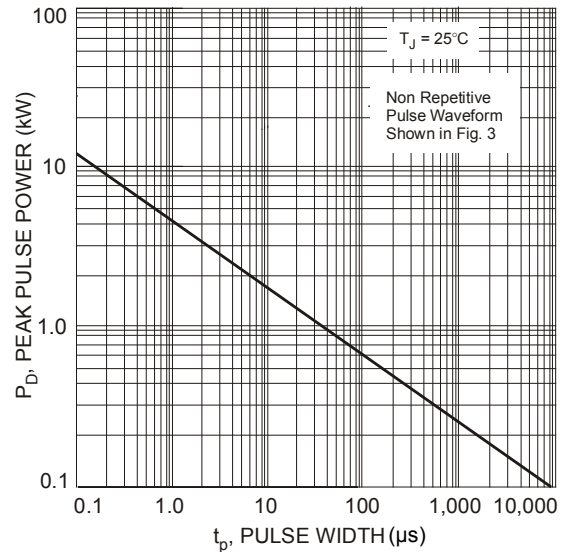


Fig. 4 Pulse Rating Curve

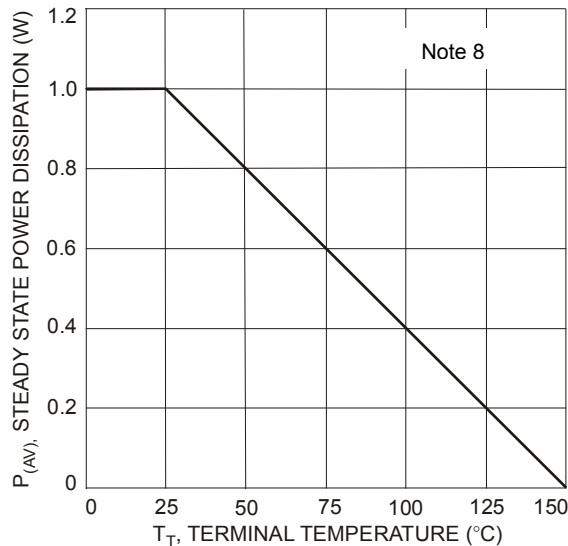


Fig. 5 Steady State Power Derating Curve

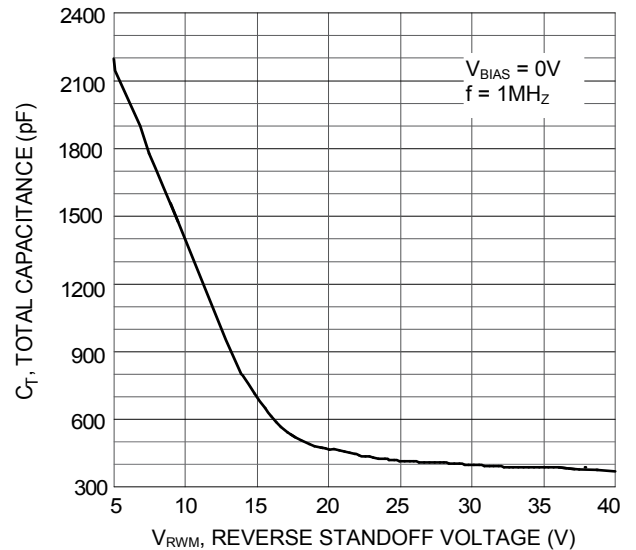
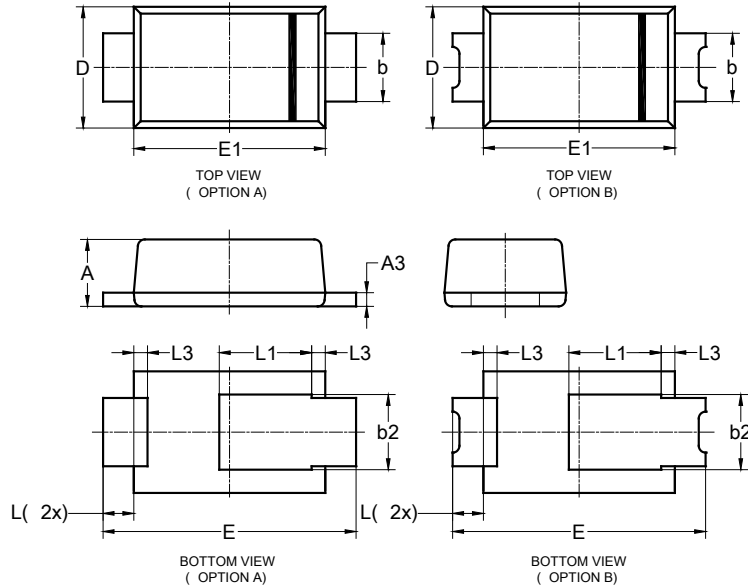


Fig. 6 Total Capacitance vs. Reverse Standoff Voltage

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI123

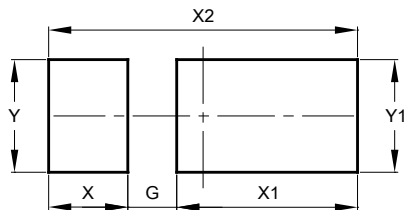


| PowerDI123 | | | |
|-----------------------------|-------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.93 | 1.00 | 0.98 |
| A3 | 0.15 | 0.25 | 0.20 |
| b | 0.85 | 1.25 | 1.00 |
| b2 | 1.025 | 1.125 | 1.10 |
| D | 1.63 | 1.93 | 1.78 |
| E | 3.50 | 3.90 | 3.70 |
| E1 | 2.60 | 3.00 | 2.80 |
| L | 0.40 | 0.50 | 0.45 |
| L1 | 1.25 | 1.40 | 1.35 |
| L3 | 0.125 | 0.275 | 0.20 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI123



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 0.65 |
| X | 1.05 |
| X1 | 2.40 |
| X2 | 4.10 |
| Y | 1.50 |
| Y1 | 1.50 |

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