# TPA SERIES

Application：

TPA series solid state Arrestor is oplicationed to prefect overvoltage Telecommunication equipment and other etec-tric ericuits.

Electrical Parameter:Limit Value

| Symbol | Paramefer | Testcondition | Value | Unit |
|---|---|---|---|---|
| $I_{PP}$ | Impulse current | 10/1000μs | 50 | A |
| | | 8/20Uμs | 100 | A |
| $I_{tsm}$ | Surge current,half-period wave pertime 50HZ | 220V/μs | 25 | A |
| $T_{STG}$ | storage temperature | | -40~150 | C |
| $T_J$ | Junction temperature | | 150 | C |
| $T_l$ | Maximum lead bonding temperature | 10s | 230 | C |
| Dvdt | on state voltage critical rising rate | 67%$V_{BR}$ | 5 | KV/us |

Electrical Parameter (Ta = 25℃)

| Part Number | off-state current | | breakdown voltage | | beadover voltage | | On State voltage | | Hold Current | Capacity |
|---|---|---|---|---|---|---|---|---|---|---|
| | $I_{RM}$ | $V_{RM}$ | $V_{BR}$ | $I_R$ | $V_{BO}$ | $I_{BO}$ | $V_T$ | $I_T$ | $I_H$ | $C_{50VIMHZ}$ |
| | Max | | Min | | Max | Min | Max | | Min | Max |
| | μA | V | V | MA | V | MA | V | A | MA | Pf |
| TPA62 | 2 | 56 | 62 | 1 | 82 | 300 | 4 | 1 | 120 | 100 |
| TPA100 | 2 | 90 | 100 | 1 | 133 | 300 | 4 | 1 | 120 | 100 |
| TPA180 | 2 | 162 | 180 | 1 | 240 | 300 | 4 | 1 | 120 | 75 |
| TPA200 | 2 | 180 | 200 | 1 | 267 | 300 | 4 | 1 | 120 | 75 |
| TPA220 | 2 | 198 | 220 | 1 | 293 | 300 | 4 | 1 | 120 | 75 |
| TPA240 | 2 | 216 | 240 | 1 | 320 | 300 | 4 | 1 | 120 | 75 |
| TPA270 | 2 | 243 | 270 | 1 | 360 | 300 | 4 | 1 | 120 | 75 |

Note: The surge of TPA type solid Arrestor Complies with the following standards.

| | | |
|---|---|---|
| CCITTK17-K20 | 10/700μs | 1.5KV |
| | 5/310μs | 38A |
| VDE0433 | 10/700μs | 2KV |
| | 5/200μs | 50A |
| CENT | 0.5/700μs | 1.5KV |
| | 0.2/310μs | 38A |

3. Packaging Mode: Lead pin plastic capsulation

4. Outline：

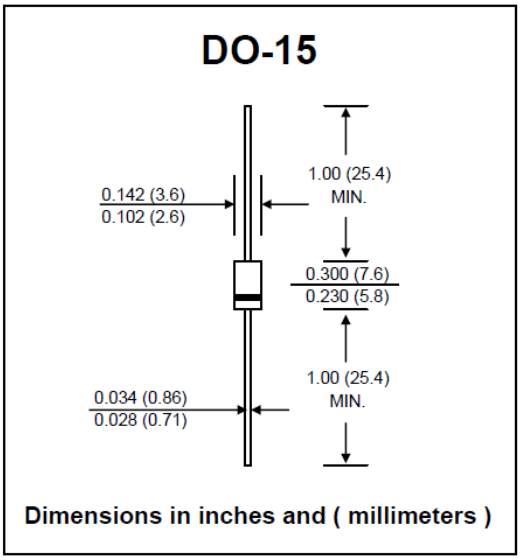



Table 1 Electrical characteristics-definitions （T=25℃）

| Symbol | Parameter |
|---|---|
| $V_{RM}$ | Stand-off voltage |
| $V_{BR}$ | Breakdown voltage |
| $V_{BO}$ | Breakover voltage |
| $I_{RM}$ | Leakage current |
| $I_{PP}$ | Peak pulse current |
| $I_{BO}$ | Breakover current |
| $I_H$ | Holding current |
| $V_R$ | Continuous reverse voltage |
| $I_R$ | Leakage current at $V_R$ |
| C | Capacitance |

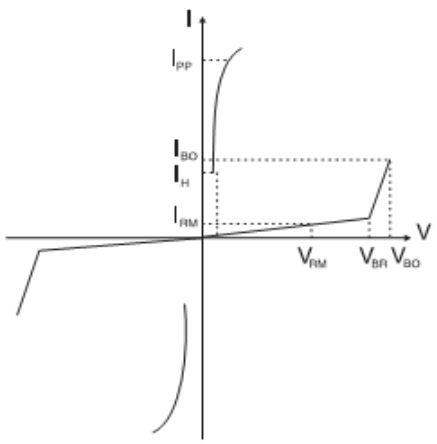



**Figure 1. Pulse waveform (10/1000 μs)**

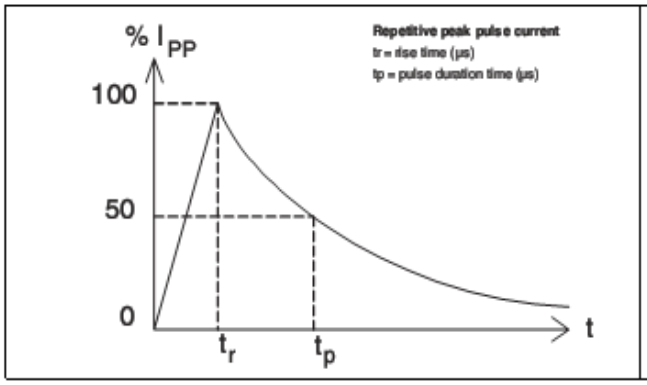



**Figure 2. Non repetitive surge peak on-state current versus overload duration**

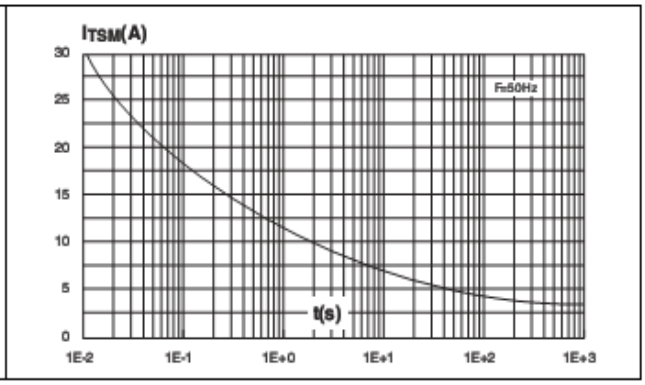


**Figure 3. On-state voltage versus on-state current (typical values)**

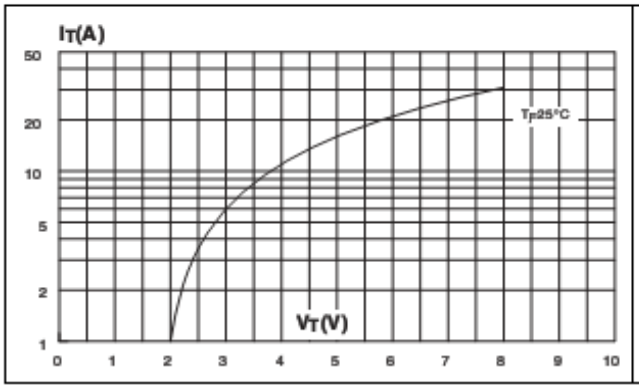



**Figure 4. Relative variation of holding current versus junction temperature**

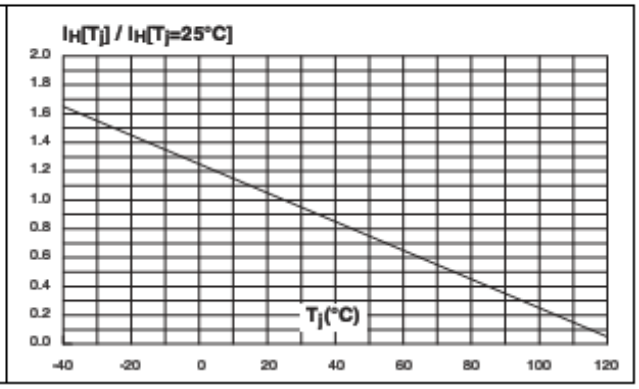



**Figure 5. Relative variation of breakover voltage versus junction temperature**

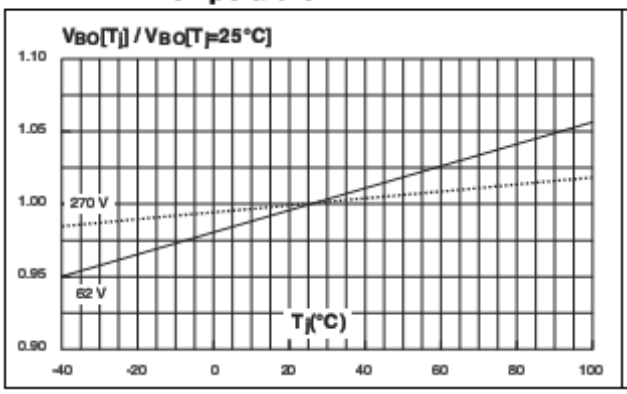



**Figure 6. Relative variation of leakage current versus reverse voltage applied (typical values)**

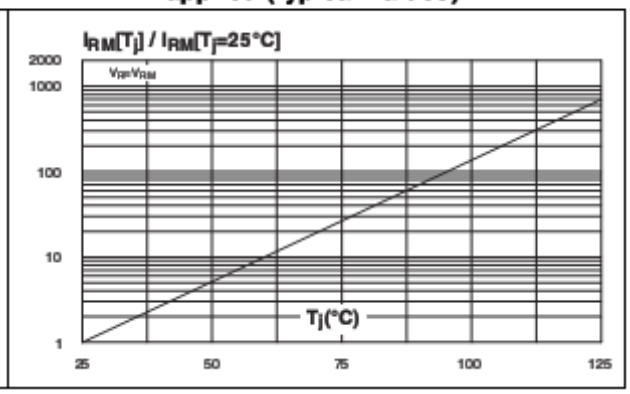



**Figure 7. Variation of thermal impedance junction to ambient versus pulse duration (Printed circuit board FR4, $S_{Cu}$ = 35 µm, recommended pad layout)**

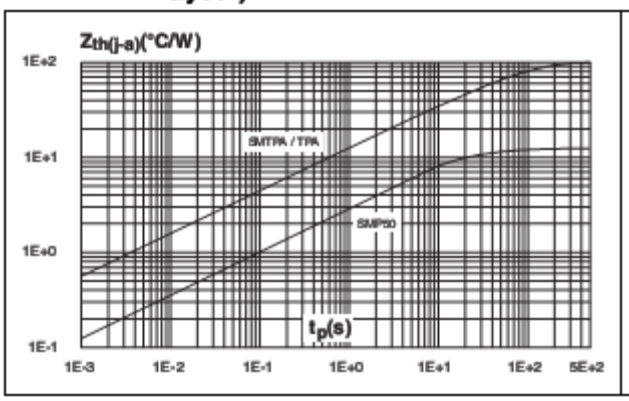



**Figure 8. Relative variation of junction capacitance versus reverse voltage applied (typical values)**

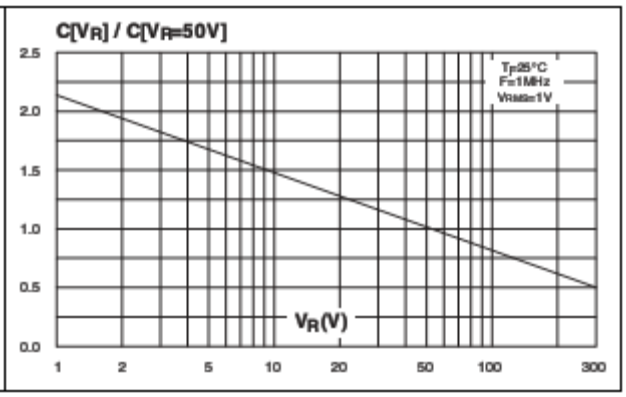


**Figure 9. Test circuit 1 for Dynamic $I_{BO}$ and $V_{BO}$ parameters**

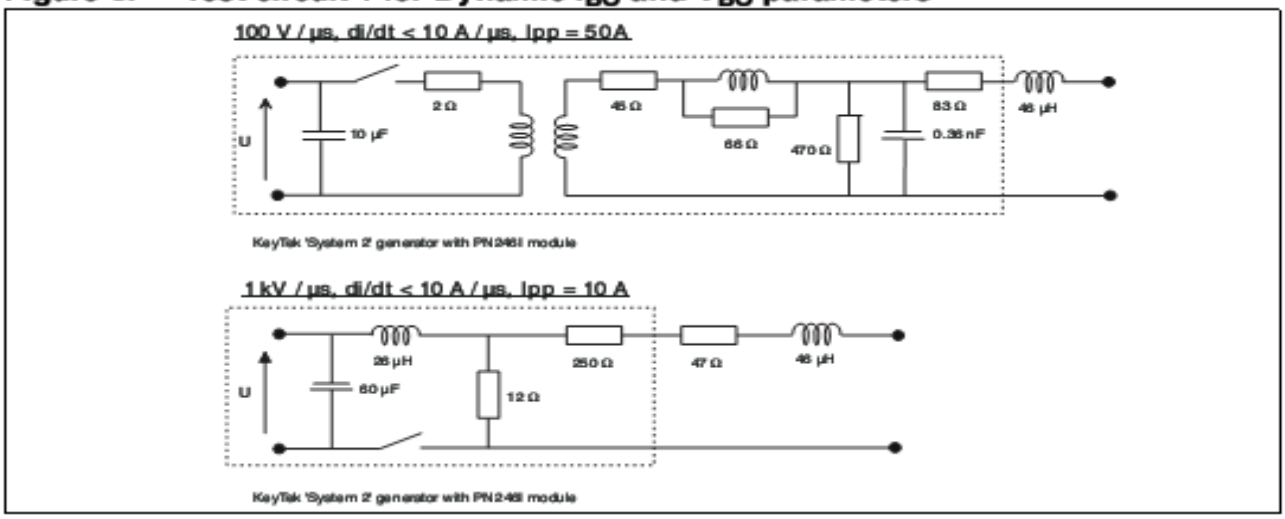
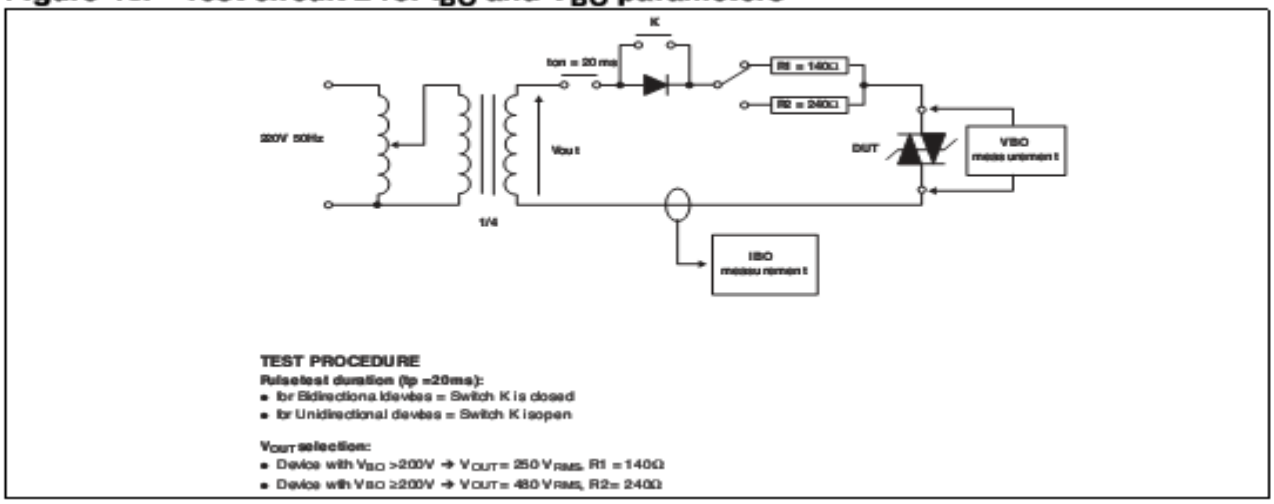



**Figure 10. Test circuit 2 for $I_{BO}$ and $V_{BO}$ parameters**




**TEST PROCEDURE**

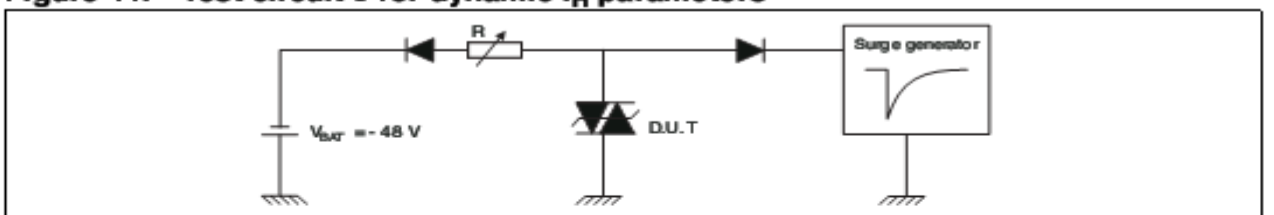
**Pulsetest duration (tp =20ms):**

- for Bidirectional devices = Switch K is closed
- for Unidirectional devices = Switch K is open

**$V_{OUT}$ selection:**

- Device with $V_{BO}$ >200V → $V_{OUT}$= 250 $V_{RMS}$, R1 = 140Ω
- Device with $V_{BO}$ ≥200V → $V_{OUT}$= 480 $V_{RMS}$, R2= 240Ω

**Figure 11. Test circuit 3 for dynamic $I_H$ parameters**




This is a GO-NOGO test which allows to confirm the holding current ($I_H$) level in a functional test circuit.

**TEST PROCEDURE**

1/Adjust the current level at the Ih value by short circuiting the A-K of the D.U.T.
2/ Fire the D.U.T. with a surge current → IPP = 10A, 10/1000µs.
3/ The D.U.T. will come back off-state within 50ms maximum.