





| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |                |                   |               |                  |
|---|----------------|-------------------|---------------|------------------|
| PARAMETER   | TEST CONDITION | SYMBOL            | VALUE         | UNIT             |
| <b>INPUT</b>  |                |                   |               |                  |
| Reverse voltage   |                | V <sub>R</sub>    | 6             | V                |
| Power dissipation   |                | P <sub>diss</sub> | 70            | mW               |
| Forward current   |                | I <sub>F</sub>    | 50            | mA               |
| <b>OUTPUT</b>   |                |                   |               |                  |
| Collector emitter voltage   |                | V <sub>CEO</sub>  | 80            | V                |
| Emitter collector voltage   |                | V <sub>ECO</sub>  | 7             | V                |
| Collector current   |                | I <sub>C</sub>    | 50            | mA               |
| Power dissipation   |                | P <sub>diss</sub> | 150           | mW               |
| <b>COUPLER</b>  |                |                   |               |                  |
| Isolation test voltage between emitter and detector                             | t = 1 min      | V <sub>ISO</sub>  | 3750          | V <sub>RMS</sub> |
| Total power dissipation   |                | P <sub>tot</sub>  | 170           | mW               |
| Storage temperature range   |                | T <sub>stg</sub>  | - 55 to + 150 | °C               |
| Ambient temperature range   |                | T <sub>amb</sub>  | - 55 to + 110 | °C               |
| Junction temperature  |                | T <sub>j</sub>    | 125           | °C               |
| Soldering temperature <sup>(1)</sup>  | t = 10 s       | T <sub>slid</sub> | 260           | °C               |

Notes

- Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.
- <sup>(1)</sup> Refer to reflow profile for soldering conditions for surface mounted devices.

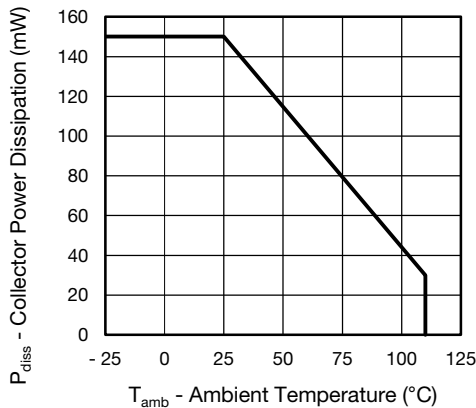


Fig. 1 - Power Dissipation vs. Ambient Temperature

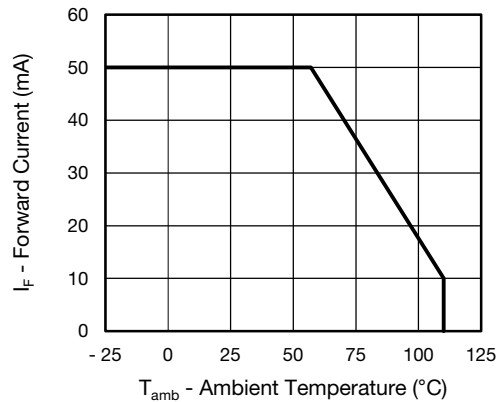


Fig. 2 - Forward Current vs. Ambient Temperature

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |             |      |      |      |               |
|--|--|-------------|------|------|------|---------------|
| PARAMETER  | TEST CONDITION   | SYMBOL      | MIN. | TYP. | MAX. | UNIT          |
| <b>INPUT</b>   |  |             |      |      |      |               |
| Forward voltage  | $I_F = 50\text{ mA}$   | $V_F$       |      | 1.1  | 1.5  | V             |
| Reverse current  | $V_R = 6\text{ V}$   | $I_R$       |      | 0.01 | 10   | $\mu\text{A}$ |
| Capacitance  | $V_R = 0\text{ V}, f = 1\text{ MHz}$                               | $C_I$       |      | 7.3  |      | pF            |
| <b>OUTPUT</b>  |  |             |      |      |      |               |
| Collector emitter leakage current  | $V_{CE} = 10\text{ V}$   | $I_{CEO}$   |      | 0.3  | 100  | nA            |
| Collector emitter breakdown voltage  | $I_C = 100\text{ }\mu\text{A}$                                     | $BV_{CEO}$  | 80   |      |      | V             |
| Emitter collector breakdown voltage  | $I_E = 10\text{ }\mu\text{A}$                                      | $BV_{ECO}$  | 7    |      |      | V             |
| Collector emitter capacitance  | $V_{CE} = 5\text{ V}, f = 1\text{ MHz}$                            | $C_{CE}$    |      | 5    |      | pF            |
| <b>COUPLER</b>   |  |             |      |      |      |               |
| Collector emitter saturation voltage   | $I_F = 5\text{ mA}, I_C = 1.25\text{ mA}$                          | $V_{CEsat}$ |      | 0.25 | 0.4  | V             |
| Cut-off frequency  | $I_F = 10\text{ mA}, V_{CC} = 5\text{ V}, R_L = 100\text{ }\Omega$ | $f_{ctr}$   |      | 155  |      | kHz           |

**Note**

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements.

| <b>CURRENT TRANSFER RATIO</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |           |        |      |      |      |      |
|--|--|-----------|--------|------|------|------|------|
| PARAMETER  | TEST CONDITION                               | PART      | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| $I_C/I_F$  | $I_F = \pm 5\text{ mA}, V_{CE} = 5\text{ V}$ | VOS627A   | CTR    | 50   |      | 600  | %    |
|  |  | VOS627A-2 | CTR    | 63   |      | 125  | %    |
|  |  | VOS627A-3 | CTR    | 100  |      | 200  | %    |
|  |  | VOS627A-4 | CTR    | 160  |      | 320  | %    |

| <b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |           |      |      |      |               |
|---|--|-----------|------|------|------|---------------|
| PARAMETER   | TEST CONDITION   | SYMBOL    | MIN. | TYP. | MAX. | UNIT          |
| <b>NON-SATURATED</b>  |  |           |      |      |      |               |
| Rise and fall time  | $I_C = 2\text{ mA}, V_{CC} = 5\text{ V}, R_L = 100\text{ }\Omega$    | $t_r$     |      | 3    |      | $\mu\text{s}$ |
| Fall time   |  | $t_f$     |      | 3    |      | $\mu\text{s}$ |
| Turn-on time  |  | $t_{on}$  |      | 6    |      | $\mu\text{s}$ |
| Turn-off time   |  | $t_{off}$ |      | 4    |      | $\mu\text{s}$ |
| <b>SATURATED</b>  |  |           |      |      |      |               |
| Rise and fall time  | $I_F = 1.6\text{ mA}, V_{CC} = 5\text{ V}, R_L = 1.9\text{ k}\Omega$ | $t_r$     |      | 3    |      | $\mu\text{s}$ |
| Fall time   |  | $t_f$     |      | 12   |      | $\mu\text{s}$ |
| Turn-on time  |  | $t_{on}$  |      | 4    |      | $\mu\text{s}$ |
| Turn-off time   |  | $t_{off}$ |      | 18   |      | $\mu\text{s}$ |

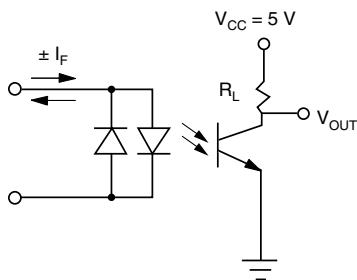
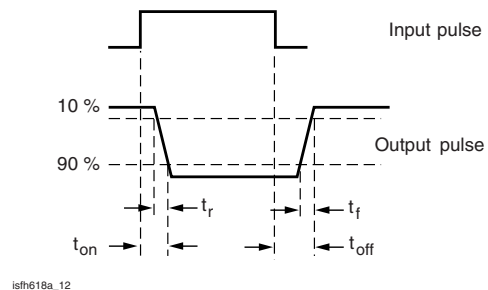


Fig. 3 - Test Circuit



isfh618a\_12

Fig. 4 - Test Circuit and Waveforms

| SAFETY AND INSULATION RATINGS                                |  |            |            |            |
|--|--|------------|------------|------------|
| PARAMETER  |  | SYMBOL     | VALUE      | UNIT       |
| <b>MAXIMUM SAFETY RATINGS</b>                                |  |            |            |            |
| Output safety power  |  | $P_{SO}$   | 300        | mW         |
| Input safety current   |  | $I_{si}$   | 200        | mA         |
| Safety temperature   |  | $T_S$      | 150        | °C         |
| Comparative tracking index                                   |  | CTI        | 175        |            |
| <b>INSULATION RATED PARAMETERS</b>                           |  |            |            |            |
| Maximum withstanding isolation voltage                       | 40 % to 60 % RH, AC test of 1 min                | $V_{ISO}$  | 3750       | $V_{RMS}$  |
| Maximum transient isolation voltage                          |  | $V_{IOTM}$ | 6000       | $V_{peak}$ |
| Maximum repetitive peak isolation voltage                    |  | $V_{IORM}$ | 565        | $V_{peak}$ |
| Insulation resistance  | $T_{amb} = 25\text{ °C}, V_{DC} = 500\text{ V}$  | $R_{IO}$   | $10^{12}$  | $\Omega$   |
| Isolation resistance   | $T_{amb} = 100\text{ °C}, V_{DC} = 500\text{ V}$ | $R_{IO}$   | $10^{11}$  | $\Omega$   |
| Climatic classification (according to IEC 68 part 1)         |  |            | 55/110/21  |            |
| Environment (pollution degree in accordance to DIN VDE 0109) |  |            | 2          |            |
| Creepage distance  |  |            | $\geq 5$   | mm         |
| Clearance distance   |  |            | $\geq 5$   | mm         |
| Insulation thickness   |  |            | $\geq 0.4$ | mm         |

**Note**

- As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for “safe electrical insulation” only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits.

**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ °C}$ , unless otherwise specified)


Fig. 5 - Forward Voltage vs. Forward Current



Fig. 6 - Collector Current vs. Collector Emitter Voltage



Fig. 7 - Leakage Current vs. Ambient Temperature



Fig. 10 - Normalized Current Transfer Ratio vs. Ambient Temperature

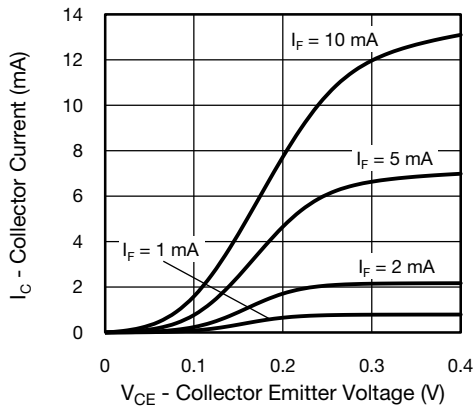


Fig. 8 - Collector Current vs. Collector Emitter Voltage

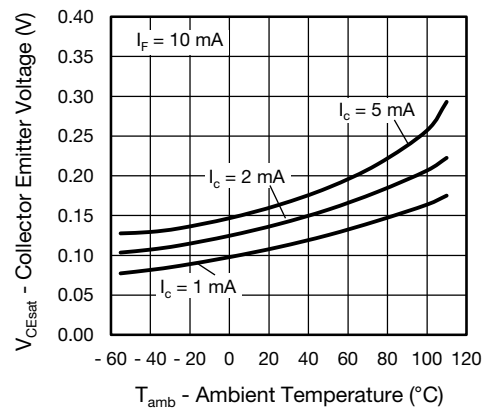


Fig. 11 - Collector Emitter Voltage vs. Ambient Temperature



Fig. 9 - Normalized Current Transfer Ratio vs. Ambient Temperature

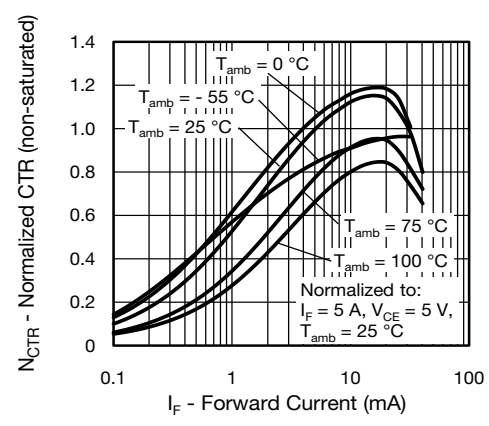


Fig. 12 - Normalized CTR vs. Forward Current

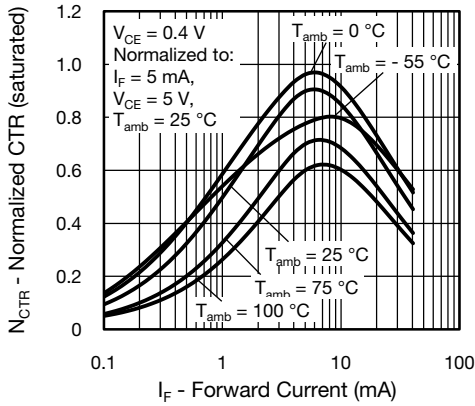


Fig. 13 - Normalized CTR vs. Forward Current

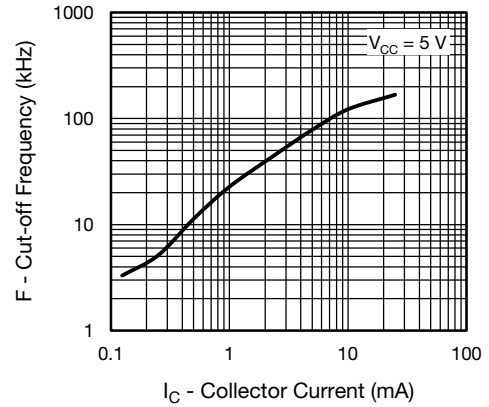


Fig. 15 - Cut-off Frequency vs. Collector Current

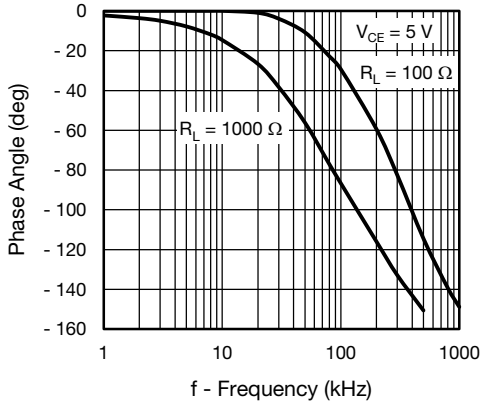


Fig. 14 - Frequency vs. Phase Angle

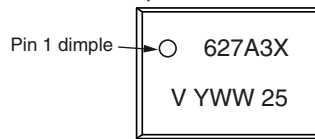


Fig. 16 - Switching Time vs. Load Resistance

**PACKAGE DIMENSIONS** in millimeters



**PACKAGE MARKING** (example of VOS627A-3X001T)



**Notes**

- Option 1 is reflected with letter “X”.
- Tape and reel suffix (T) is not part of the package marking.
- VOS627AT can be marked as 627A1, 627A2, 627A3, or 627A4.
- VOS627A-X001T can be marked as 627A1X, 627A2X, 627A3X, or 627A4X.

**TAPE AND REEL DIMENSIONS** in millimeters

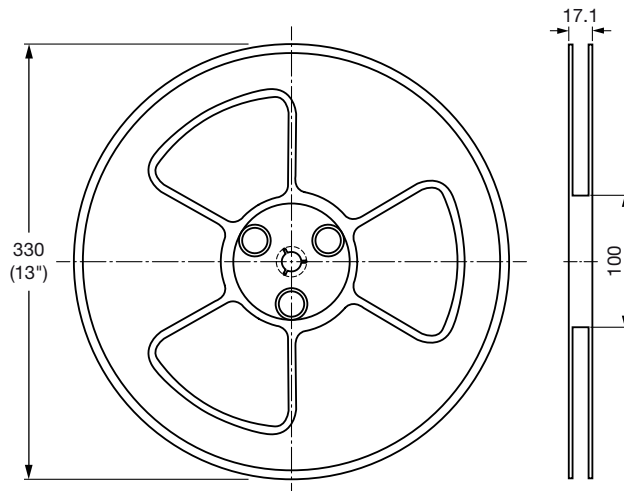


Fig. 17 - Reel Dimensions (3000 units per reel)



Fig. 18 - Tape Dimensions





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