



<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
Reverse voltage		$V_R$	6	V
Power dissipation		$P_{diss}$	70	mW
Forward current		$I_F$	50	mA
<b>OUTPUT</b>				
Collector emitter voltage		$V_{CEO}$	80	V
Emitter collector voltage		$V_{ECO}$	7	V
Collector current		$I_C$	50	mA
Power dissipation		$P_{diss}$	150	mW
<b>COUPLER</b>				
Isolation test voltage between emitter and detector	$t = 1\text{ min}$	$V_{ISO}$	3750	$V_{RMS}$
Total power dissipation		$P_{tot}$	170	mW
Storage temperature range		$T_{stg}$	- 55 to + 150	$^{\circ}\text{C}$
Ambient temperature range		$T_{amb}$	- 55 to + 110	$^{\circ}\text{C}$
Junction temperature		$T_j$	125	$^{\circ}\text{C}$
Soldering temperature <sup>(1)</sup>	$t = 10\text{ s}$	$T_{sld}$	260	$^{\circ}\text{C}$

**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

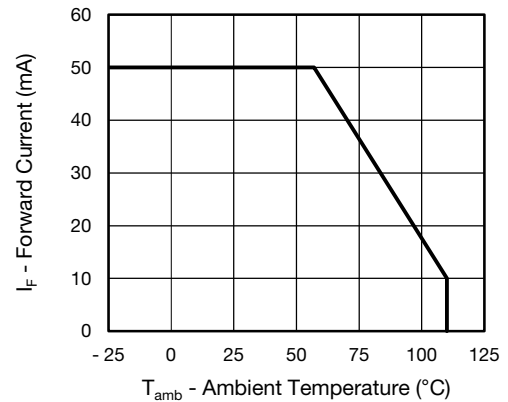


Fig. 2 - Forward Current vs. Ambient Temperature

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>						
Forward voltage	$I_F = 50\text{ mA}$	$V_F$		1.18	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	$I_F = 5\text{ mA}, I_C = 2.5\text{ mA}$	$V_{CEsat}$		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.

**CURRENT TRANSFER RATIO** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
$I_C/I_F$	$I_F = 5\text{ mA}, V_{CE} = 5\text{ V}$	VOS617A	CTR	50		600	%
		VOS617A-2	CTR	63		125	%
		VOS617A-3	CTR	100		200	%
		VOS617A-4	CTR	160		320	%
		VOS617A-7	CTR	80		160	%
		VOS617A-8	CTR	130		260	%
		VOS617A-9	CTR	200		400	%

**SWITCHING CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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		$\mu\text{s}$



isfh618a\_10

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		$V_{ISO}$	3750	$V_{RMS}$
Maximum transient isolation voltage		$V_{IOTM}$	6000	$V_{peak}$
Maximum repetitive peak isolation voltage		$V_{IORM}$	565	$V_{peak}$
Insulation resistance		$T_{amb} = 25\text{ °C}, V_{DC} = 500\text{ V}$	$R_{IO}$	$10^{12}$
Isolation resistance				
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		DTI	$\geq 0.4$	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 (saturated) 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 (non-saturated) vs. Ambient Temperature

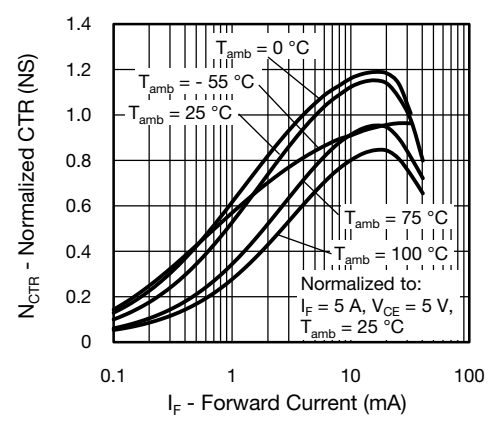


Fig. 12 - Normalized CTR (non-saturated) vs. Forward Current



Fig. 13 - Normalized CTR (saturated) vs. Forward Current



Fig. 15 -  $F_{CTR}$  vs. Collector Current

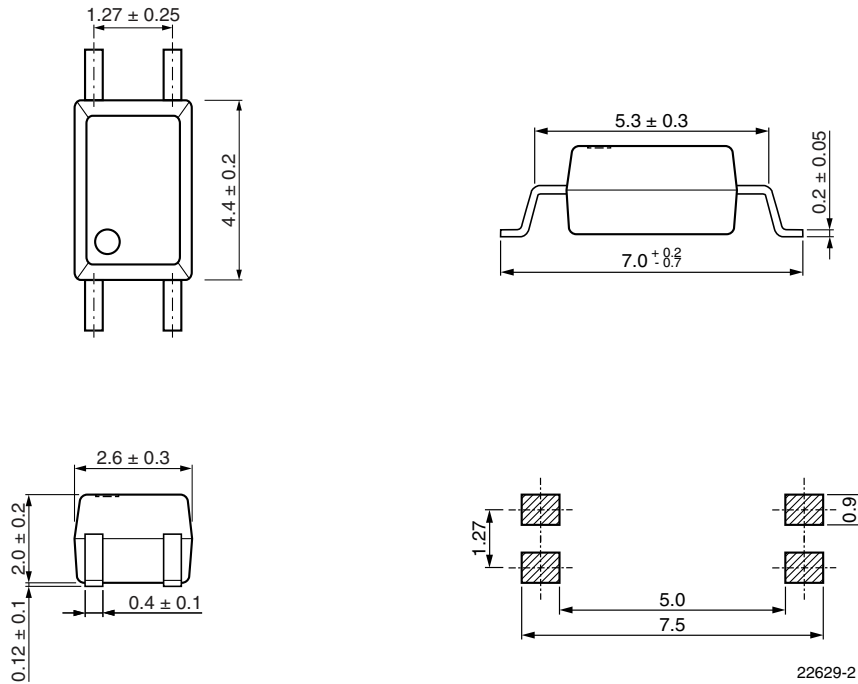


Fig. 14 -  $F_{CTR}$  vs. Phase Angle

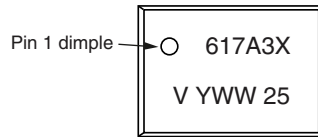


Fig. 16 - Switching Time vs. Load Resistance

**PACKAGE DIMENSIONS** in millimeters



**PACKAGE MARKING** (example of VOS617A-3X001T)



**Notes**

- VDE logo is not marked on option 1 parts, but indicated by “X”.
- Tape and reel suffix (T) is not part of the package marking.

**TAPE AND REEL DIMENSIONS** in millimeters



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



Fig. 18 - Tape Dimensions





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