



<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		$V_R$	3	V
Forward current		$I_F$	25	mA
Peak forward current	$t = 1\text{ ms}$ , duty cycle 50 %	$I_{FM}$	50	mA
Maximum surge forward current	$t \leq 1\text{ }\mu\text{s}$ , 300 pulses/s	$I_{FSM}$	1	A
Thermal resistance		$R_{thja}$	700	$^{\circ}\text{C}/\text{W}$
Power dissipation		$P_{diss}$	45	mW
Input junction temperature		$T_{j\text{ max.}}$	125	$^{\circ}\text{C}$
<b>OUTPUT</b>				
Supply voltage		$V_S$	-0.5 to 30	V
Output voltage		$V_O$	-0.5 to 25	V
Emitter base voltage		$V_{EBO}$	5	V
Average output current		$I_O$	8	mA
Peak output current		$I_O$	16	mA
Base current		$I_B$	5	mA
Thermal resistance		$R_{thja}$	300	$^{\circ}\text{C}/\text{W}$
Power dissipation		$P_{diss}$	100	mW
Output junction temperature		$T_{j\text{ max.}}$	125	$^{\circ}\text{C}$
<b>COUPLER</b>				
Isolation voltage	$t = 1\text{ min}$	$V_{ISO}$	5300	$V_{RMS}$
Storage temperature range		$T_{stg}$	-55 to +150	$^{\circ}\text{C}$
Ambient temperature range		$T_{amb}$	-40 to +100	$^{\circ}\text{C}$
Soldering temperature <sup>(1)</sup>	max. $\leq 10\text{ s}$ , dip soldering $\geq 0.5\text{ mm}$ distance from case bottom	$T_{sld}$	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 wave profile for soldering conditions for through hole devices.

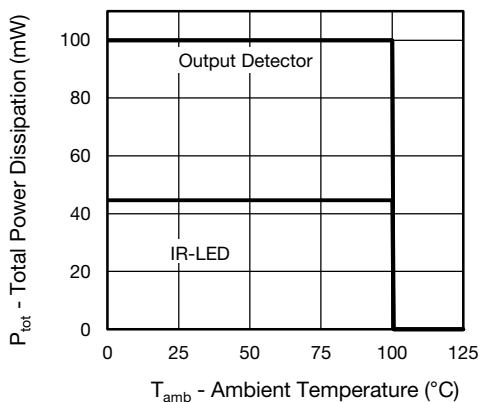


Fig. 1 - Maximum Power vs. Operating Temperature

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>							
Forward voltage	$I_F = 16\text{ mA}$		$V_F$		1.38	1.9	V
Breakdown voltage	$I_R = 10\text{ }\mu\text{A}$		$V_{BR}$	3			V
Reverse current	$V_R = 3\text{ V}$		$I_R$		0.5	10	$\mu\text{A}$
Input capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$		$C_I$		36		pF
Temperature coefficient of forward voltage	$I_F = 16\text{ mA}$		$\Delta V_F / \Delta T_{amb}$		-1.9		mV/ $^{\circ}\text{C}$
<b>OUTPUT</b>							
Logic low supply current	$I_F = 16\text{ mA}$ , $V_O = \text{open}$ , $V_{CC} = 15\text{ V}$		$I_{CCL}$		50	200	$\mu\text{A}$
Logic high supply current	$I_F = 0\text{ A}$ , $V_O = \text{open}$ , $V_{CC} = 15\text{ V}$		$I_{CCH}$		0.02	2	$\mu\text{A}$
Output voltage, output logic low	$I_F = 16\text{ mA}$ , $V_{CC} = 4.5\text{ V}$ , $I_O = 0.8\text{ mA}$	VOW135	$V_{OL}$		0.1	0.5	V
	$I_F = 16\text{ mA}$ , $V_{CC} = 4.5\text{ V}$ , $I_O = 2.4\text{ mA}$	VOW136	$V_{OL}$		0.1	0.5	V
Output current, output logic high	$I_F = 0\text{ mA}$ , $V_O = V_{CC} = 5.5\text{ V}$		$I_{OH}$		3	500	nA
	$I_F = 0\text{ mA}$ , $V_O = V_{CC} = 15\text{ V}$		$I_{OH}$		0.01	1	$\mu\text{A}$
Output capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$		$C_O$		3.70		pF
<b>COUPLER</b>							
Capacitance (input to output)	$f = 1\text{ MHz}$		$C_{IO}$		0.9		pF

**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> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Current transfer ratio	$I_F = 16\text{ mA}$ , $V_O = 0.4\text{ V}$ , $V_{CC} = 4.5\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	VOW135	CTR	7	18		%
		VOW136	CTR	19	24		%
	$I_F = 16\text{ mA}$ , $V_O = 0.5\text{ V}$ , $V_{CC} = 4.5\text{ V}$	VOW135	CTR	5			%
		VOW136	CTR	15			%

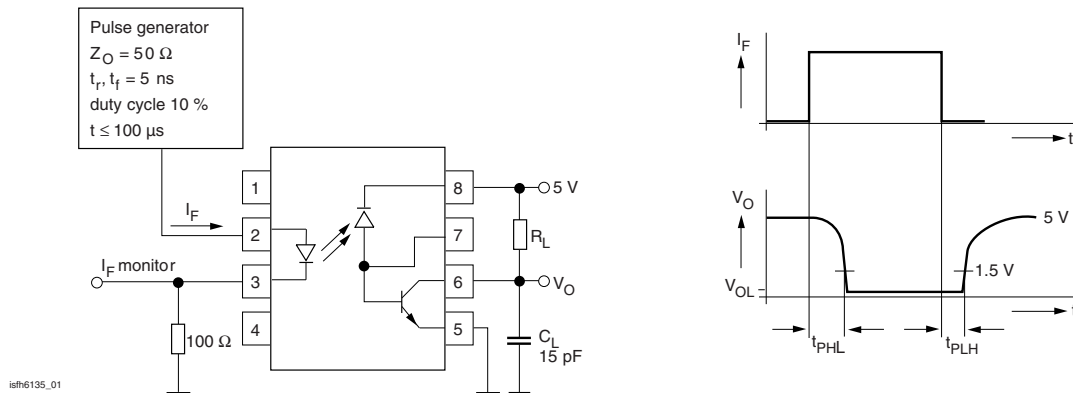


Fig. 2 - Schematics

<b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
High to low	$I_F = 16\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 4.1\text{ k}\Omega$	VOW135	$t_{PHL}$		0.2	2.0	$\mu\text{s}$
	$I_F = 16\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 1.9\text{ k}\Omega$	VOW136	$t_{PHL}$		0.2	1.0	$\mu\text{s}$
Low to high	$I_F = 16\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 4.1\text{ k}\Omega$	VOW135	$t_{PLH}$		1.3	2.0	$\mu\text{s}$
	$I_F = 16\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 1.9\text{ k}\Omega$	VOW136	$t_{PLH}$		0.6	1.0	$\mu\text{s}$

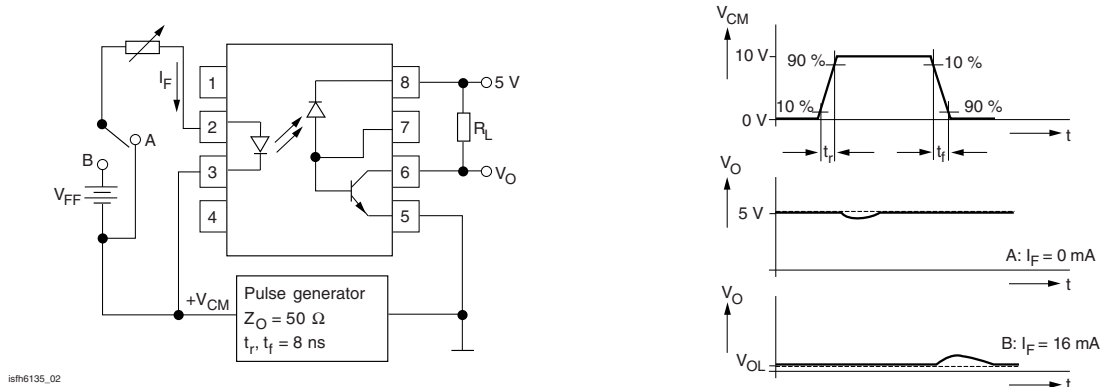


Fig. 3 - Common Mode Interference Immunity

<b>COMMON MODE TRANSIENT IMMUNITY</b> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
High	$V_{CM} = 10\text{ V}_{PP}$ , $V_{CC} = 5\text{ V}$ , $I_F = 0\text{ mA}$ , $R_L = 4.1\text{ k}\Omega$	VOW135	$CM_H$	1000			$\text{V}/\mu\text{s}$
	$V_{CM} = 10\text{ V}_{PP}$ , $V_{CC} = 5\text{ V}$ , $I_F = 0\text{ mA}$ , $R_L = 1.9\text{ k}\Omega$	VOW136	$CM_H$	1000			$\text{V}/\mu\text{s}$
Low	$V_{CM} = 10\text{ V}_{PP}$ , $V_{CC} = 5\text{ V}$ , $I_F = 16\text{ mA}$ , $R_L = 4.1\text{ k}\Omega$	VOW135	$CM_L$	1000			$\text{V}/\mu\text{s}$
	$V_{CM} = 10\text{ V}_{PP}$ , $V_{CC} = 5\text{ V}$ , $I_F = 16\text{ mA}$ , $R_L = 1.9\text{ k}\Omega$	VOW136	$CM_L$	1000			$\text{V}/\mu\text{s}$

<b>SAFETY AND INSULATION RATINGS</b>				
PARAMETER		SYMBOL	VALUE	UNIT
<b>MAXIMUM SAFETY RATINGS</b>				
Output safety power		$P_{SO}$	700	mW
Input safety current		$I_{si}$	400	mA
Safety temperature		$T_S$	150	$^{\circ}\text{C}$
Comparative tracking index		CTI	250	
<b>INSULATION RATED PARAMETERS</b>				
Maximum withstanding isolation voltage	$t = 1\text{ min}$	$V_{ISO}$	5300	$V_{RMS}$
Maximum transient isolation voltage		$V_{IOTM}$	8000	$V_{peak}$
Maximum repetitive peak isolation voltage		$V_{IORM}$	1414	$V_{peak}$
Insulation resistance	$T_{amb} = 25\text{ }^{\circ}\text{C}$ , $V_{DC} = 500\text{ V}$	$R_{IO}$	$\geq 10^{12}$	$\Omega$
	$T_{amb} = 100\text{ }^{\circ}\text{C}$ , $V_{DC} = 500\text{ V}$	$R_{IO}$	$\geq 10^{11}$	$\Omega$
Input to output test voltage, method b	$V_{IORM} \times 1.875 = V_{PR}$ , 100 % production test with $t_M = 1\text{ s}$ , partial discharge $< 5\text{ pC}$	$V_{PR}$	2651	$V_{peak}$
Input to output test voltage, method a	$V_{IORM} \times 1.6 = V_{PR}$ , 100 % production test with $t_M = 10\text{ s}$ , partial discharge $< 5\text{ pC}$	$V_{PR}$	2262	$V_{peak}$
Climatic classification (according to IEC 68 part 1)			55/100/21	
Environment (pollution degree in accordance to DIN VDE 0109)			2	
Clearance distance (DIP-8, wide-body)			$\geq 10$	mm
Creepage distance (DIP-8, wide-body)			$\geq 10$	mm
Insulation thickness			DTI	$\geq 0.4$ mm

**Note**

- As per DIN EN 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** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

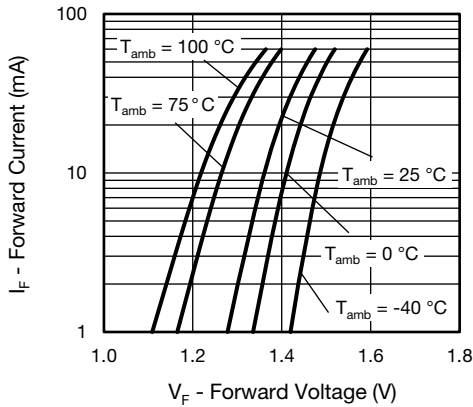


Fig. 4 - Output Current vs. Forward Voltage

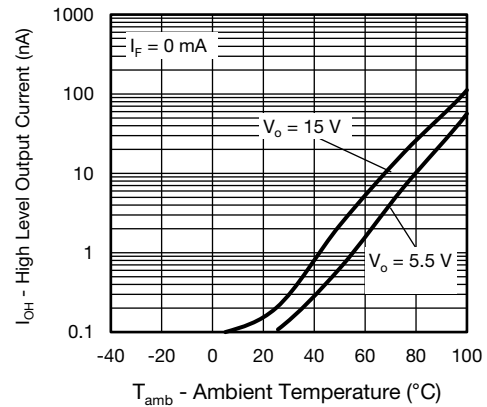


Fig. 7 - Logic High Level Output Current vs. Temperature

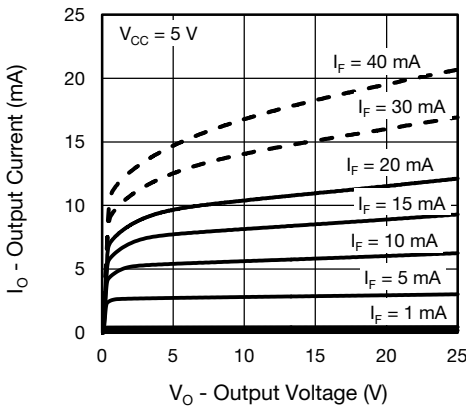


Fig. 5 - Output Current vs. Output Voltage

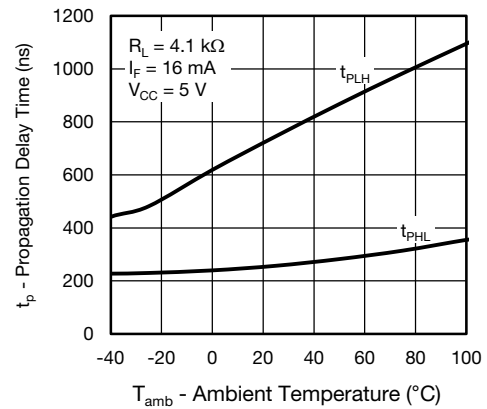


Fig. 8 - Propagation Delay vs. Ambient Temperature - VOW135

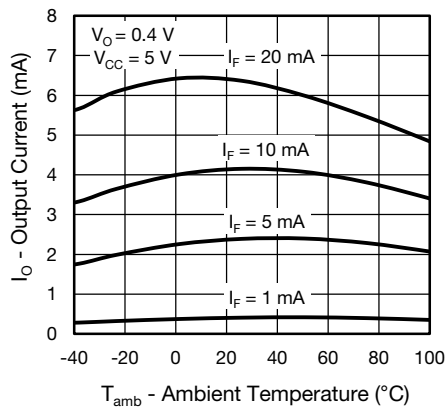


Fig. 6 - Output Current vs. Temperature

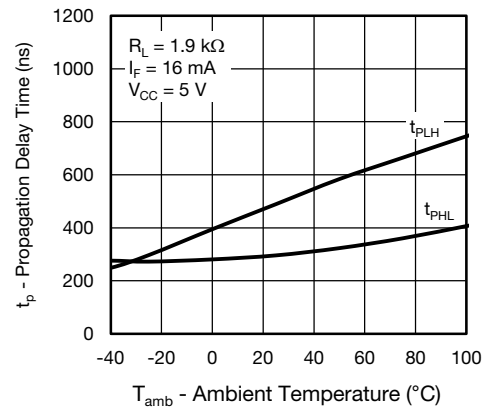


Fig. 9 - Propagation Delay vs. Ambient Temperature - VOW136

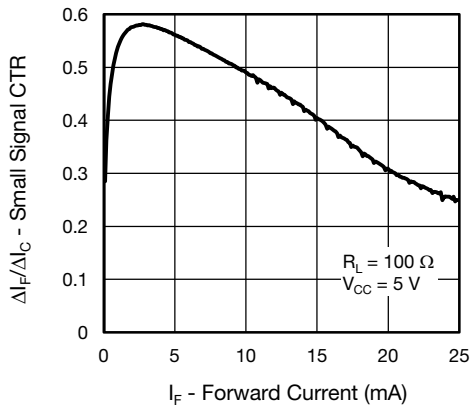


Fig. 10 - Small Signal Current Transfer Ratio vs. Forward Current

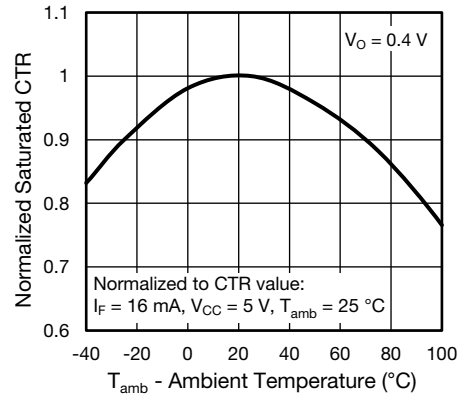


Fig. 13 - Normalized Saturated CTR vs. Ambient Temperature

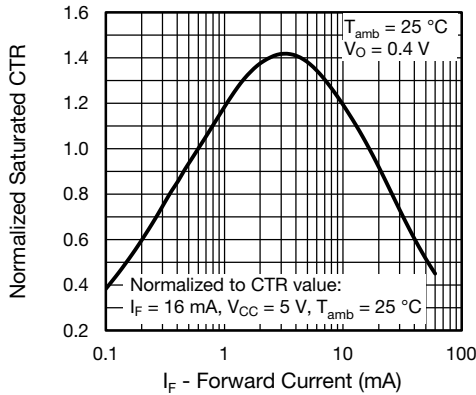


Fig. 11 - Normalized Saturated CTR vs. Forward Current

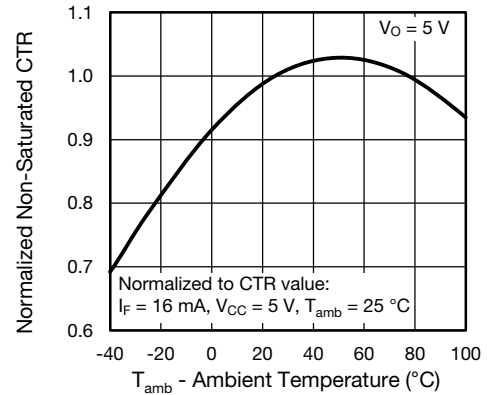


Fig. 14 - Normalized Non-Saturated CTR vs. Ambient Temperature

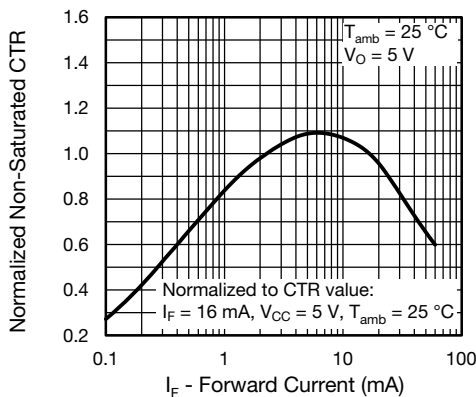
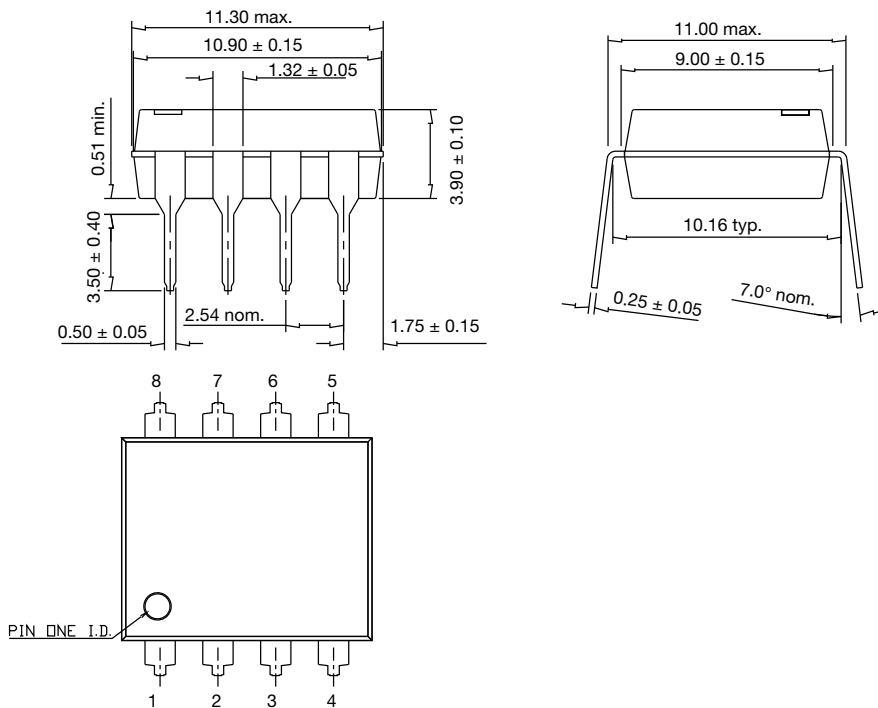


Fig. 12 - Normalized Non-Saturated CTR vs. Forward Current

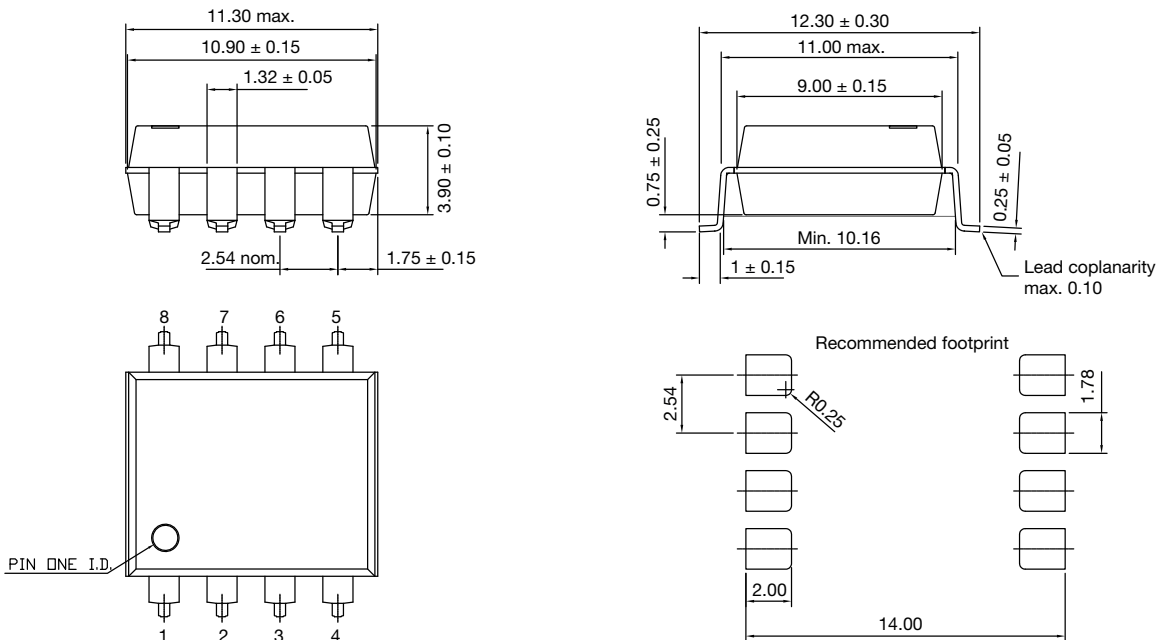


### PACKAGE DIMENSIONS in millimeters

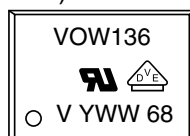
#### DIP-8, widebody



#### SMD-8, widebody (Option 7)



#### PACKAGE MARKING (Example of VOW136-X017T)



#### Note

- Tape and reel suffix (T) is not part of the package marking.

**PACKING INFORMATION (TAPE AND REEL)**

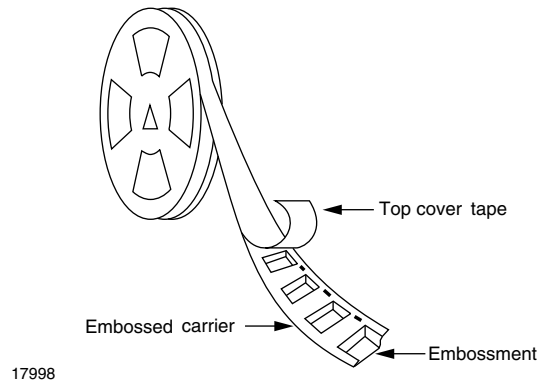


Fig. 15 - Tape and Reel Shipping Medium

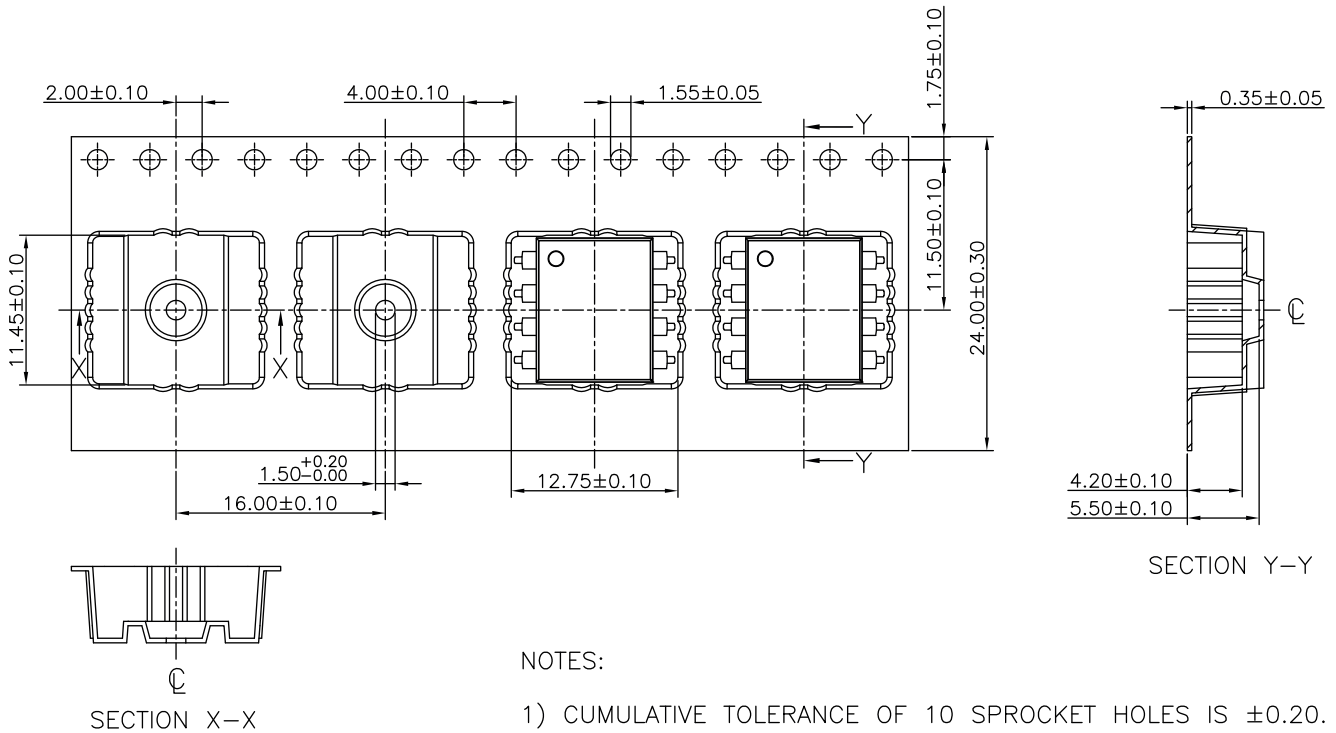


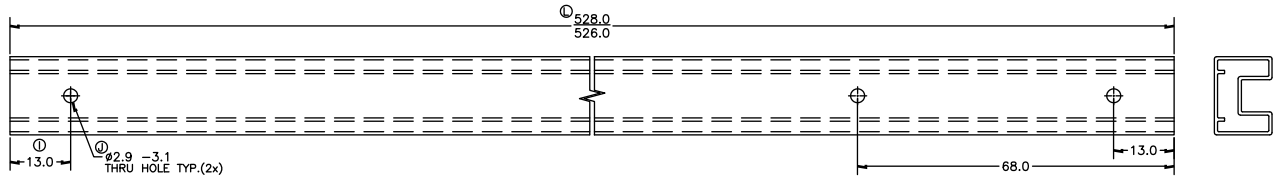
Fig. 16 - Tape and Reel Packing Option 7 (750 parts per reel)





PACKING INFORMATION (Tubes)

DEVICE PER TUBE			
TYPE	UNITS/TUBE	TUBE/BOX	UNITS/BOX
DIP-8, widebody	40	30	1200



TUBE COLOUR:	CLEAR
PRINT COLOUR:	-

1. ALL DIMENSIONS ARE IN MILLIMETERS, U.O.S.

1. ALL TUBE TOLERANCES TO BE  $\pm 0.25$  UNLESS OTHERWISE SPECIFIED.
2. ALL RADII AND ANGLES REFERENCE ONLY, UNLESS OTHERWISE SPECIFIED.



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