

**High Speed Infrared Emitting Diodes, 890 nm, GaAlAs, DH**

VSMF288011RGX01



VSMF288011GX01

**DESCRIPTION**

VSMF288011RG(G)X01 series are infrared, 890 nm emitting diodes in GaAlAs (DH) technology with high radiant power, high speed and typical receiving characteristics. VSMF288011RG(G)X01 is molded in clear, untinted plastic packages (with lens) for surface mounting (SMD).

FEATURES

- Package type: surface-mount
- Package form: GW, RGW
- Dimensions (L x W x H in mm): 2.3 x 2.3 x 2.8
- AEC-Q101 qualified
- Peak wavelength: $\lambda_p = 890$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\phi = \pm 11^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Terminal configurations: gullwing or reserve gullwing
- Package matches with detector VEMD2000X01 series
- Floor life: 4 weeks, MSL 2a, according to J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

**APPLICATIONS**

- IrDA compatible data transmission
- Miniature light barrier
- Photointerrupters
- Optical switch
- Metering

PRODUCT SUMMARY				
COMPONENT	I_e (mW/sr)	ϕ (°)	λ_p (nm)	t_r (ns)
VSMF288011RGX01	36	± 11	890	50
VSMF288011GX01	36	± 11	890	50

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMF288011RGX01	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Reverse gullwing
VSMF288011GX01	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Gullwing

Note

- MOQ: minimum order quantity



ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5$, $t_p = 100\text{ }\mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p = 100\text{ }\mu\text{s}$	I_{FSM}	1	A
Power dissipation		P_V	190	mW
Junction temperature		T_j	100	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	-40 to +85	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^{\circ}\text{C}$
Soldering temperature	According to Fig. 9, J-STD-020	T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance junction-to-ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	250	K/W

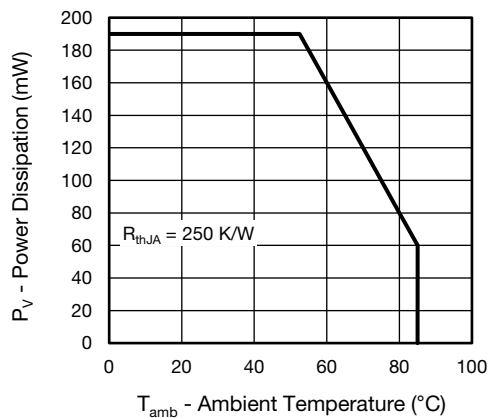


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

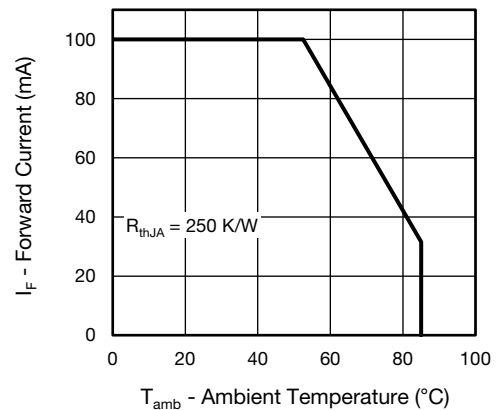


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	V_F	-	1.6	1.9	V
	$I_F = 200\text{ mA}$, $t_p = 100\text{ }\mu\text{s}$	V_F	-	1.9	2.5	V
Temperature coefficient of V_F	$I_F = 100\text{ mA}$	TK_{VF}	-	-1.1	-	mV/K
Reverse current	$V_R = 5\text{ V}$	I_R	-	-	10	μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0\text{ mW/cm}^2$	C_J	-	65	-	pF
Radiant intensity	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	I_e	18	36	70	mW/sr
Reverse light current	$E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}	-	6.4	-	μA
Radiant power	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	30	-	mW
Temperature coefficient of ϕ_e	$I_F = 100\text{ mA}$	TK_{ϕ_e}	-	-0.35	-	%/K
Angle of half intensity		ϕ	-	± 11	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	870	890	910	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	40	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$	TK_{λ_p}	-	0.33	-	nm/K
Rise time	$I_F = 100\text{ mA}$, 20 % to 80 %	t_r	-	50	-	ns
Fall time	$I_F = 100\text{ mA}$, 20 % to 80 %	t_f	-	50	-	ns



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

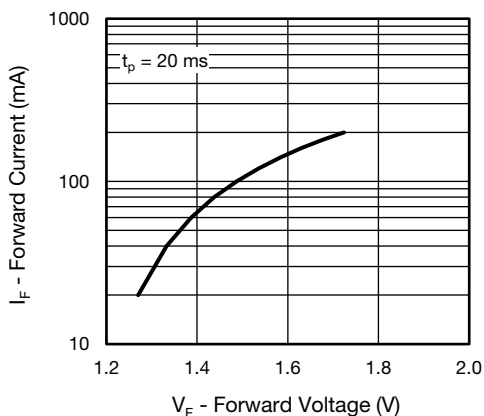


Fig. 3 - Forward Current vs. Forward Voltage

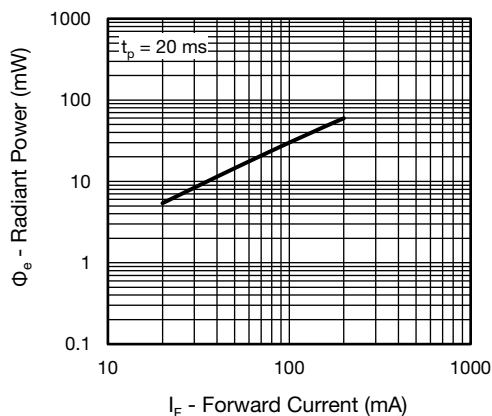


Fig. 6 - Radiant Power vs. Forward Current

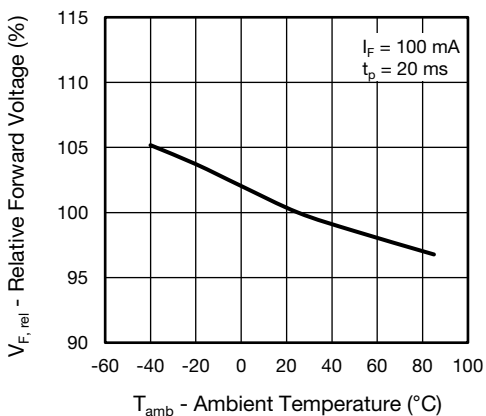


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

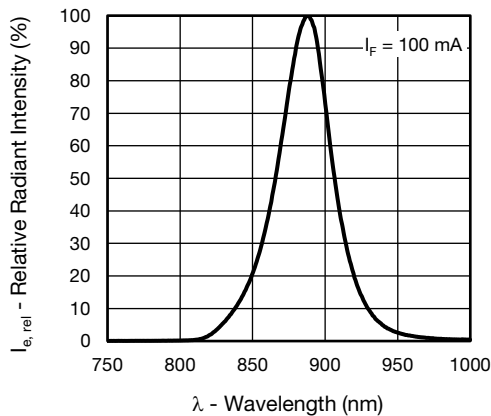


Fig. 7 - Relative Radiant Power vs. Wavelength

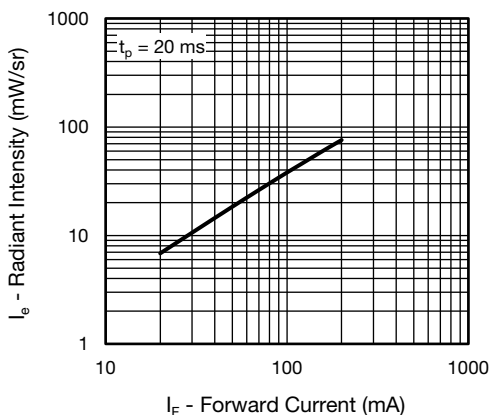


Fig. 5 - Radiant Intensity vs. Forward Current

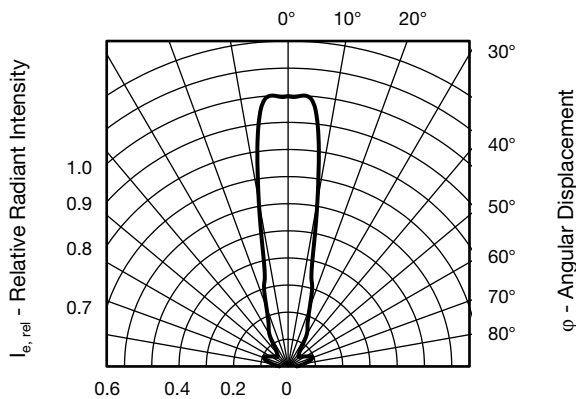


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

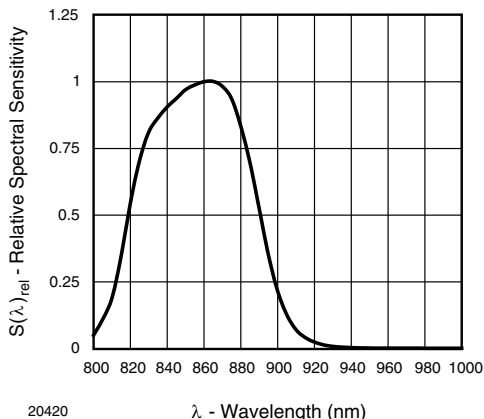


Fig. 9 - Relative Spectral Sensitivity vs. Wavelength

SOLDER PROFILE

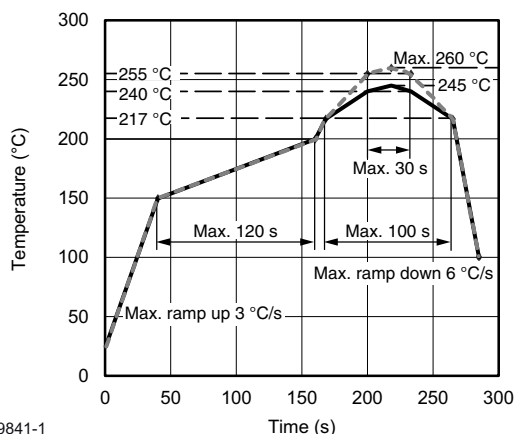


Fig. 10 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

FLOOR LIFE

Floor life (time between soldering and removing from MBB) must not exceed the time indicated on MBB label:

Floor life: 4 weeks

Conditions: $T_{amb} < 30\text{ °C}$, $RH < 60\%$

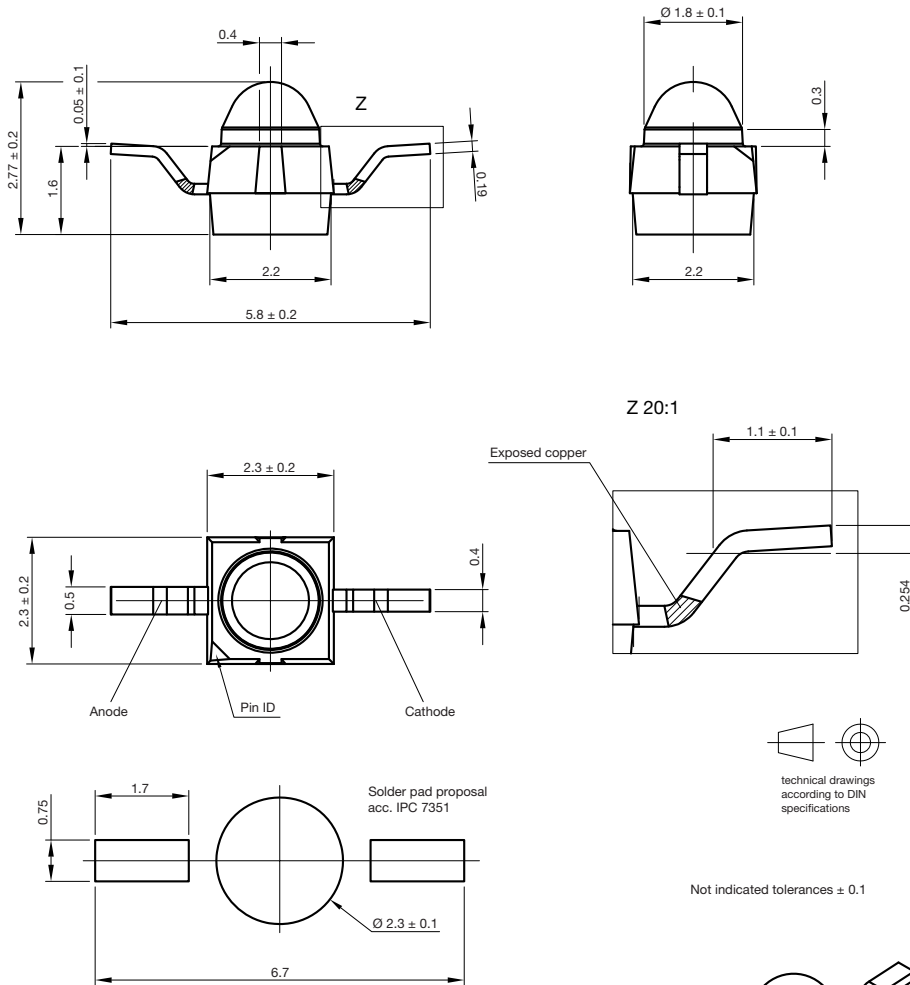
Moisture sensitivity level 2a, acc. to J-STD-020.

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C ($+ 5\text{ °C}$), $RH < 5\%$.



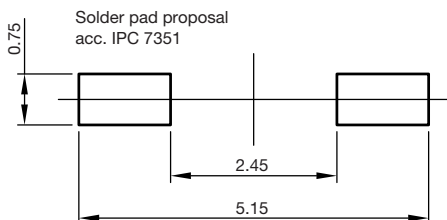
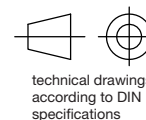
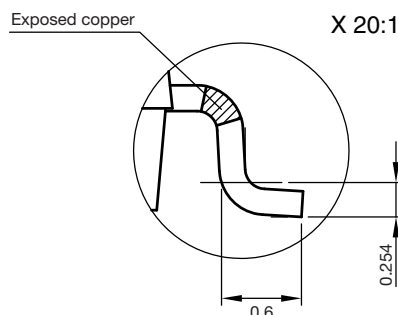
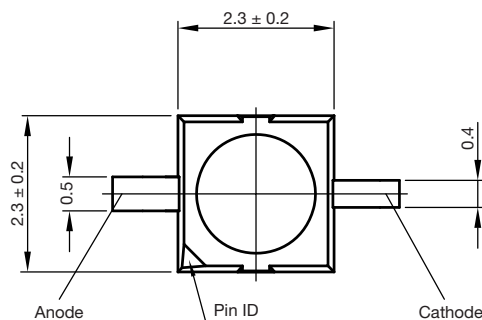
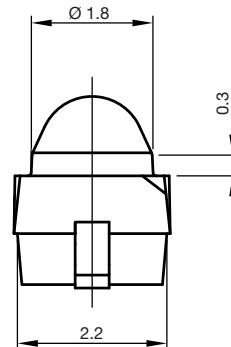
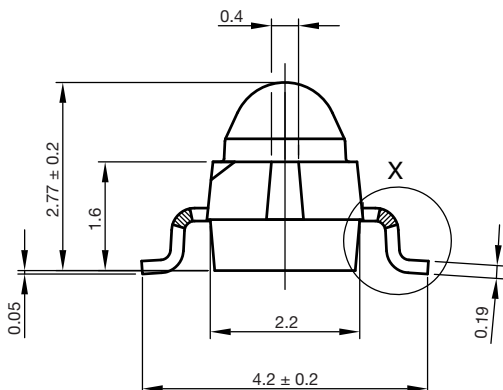
PACKAGE DIMENSIONS in millimeters: **VSMF288011RGX01**



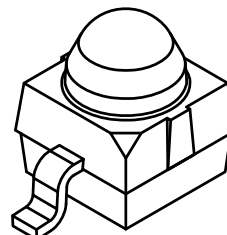
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 22100



PACKAGE DIMENSIONS in millimeters: **VSMF288011GX01**



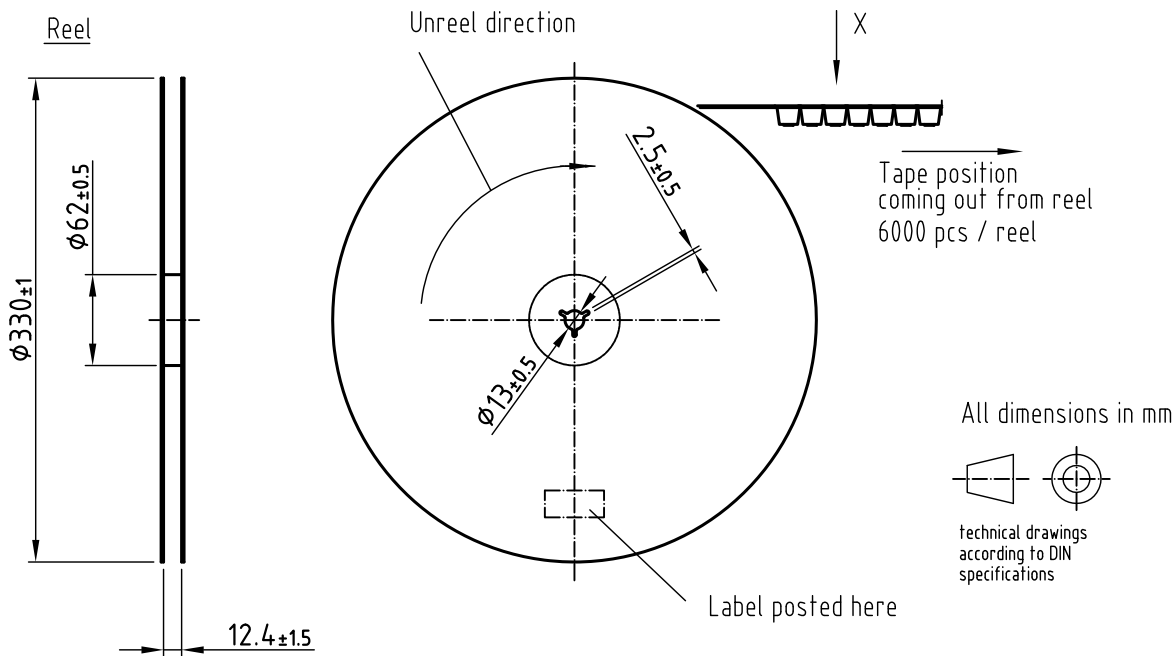
Not indicated tolerances ± 0.1



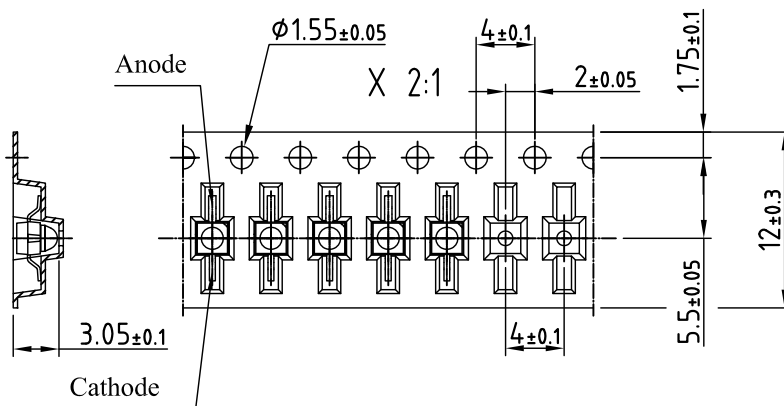
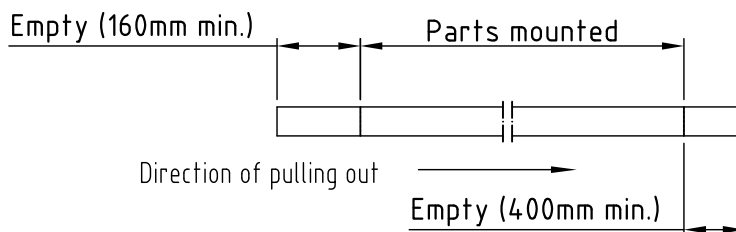
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TAPING AND REEL DIMENSIONS in millimeters: **VSMF288011RGX01**

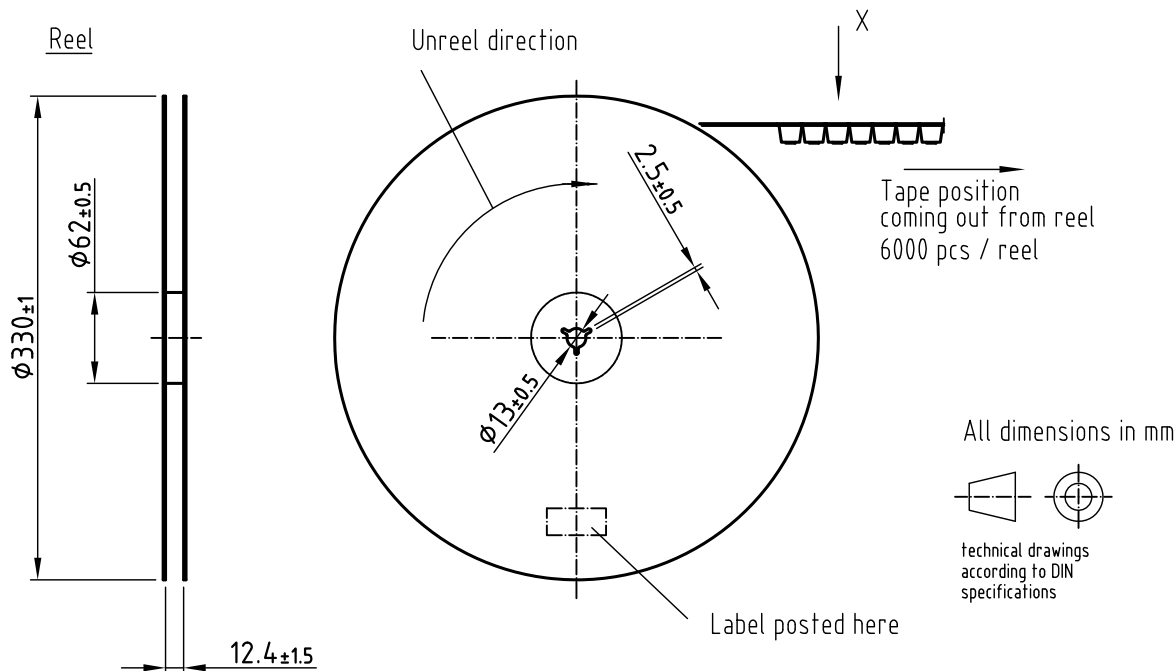


Leader and trailer tape:

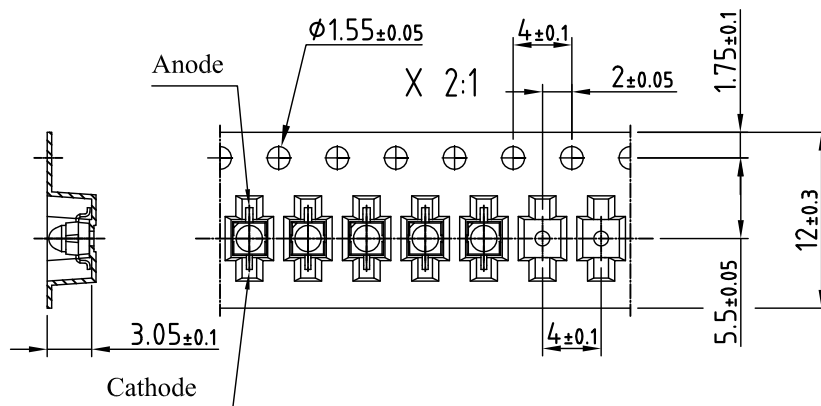
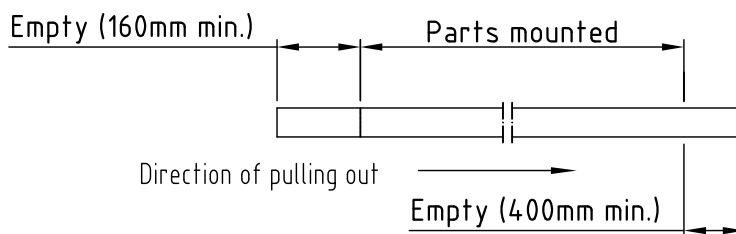




TAPING AND REEL DIMENSIONS in millimeters: **VSMF288011GX01**



Leader and trailer tape:





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