High Speed Infrared Emitting Diodes, 850 nm, GaAlAs, DH

VSMG285011RG

VSMG285011G

DESCRIPTION

VSMG28511 series are infrared, 850 nm emitting diodes in GaAlAs (DH) technology with high radiant power and high speed, 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
- Peak wavelength: λ_p = 850 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: φ = ± 12°
- 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, acc. J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

APPLICATIONS

- Data transmission
- IR-illumination (CCTV)
- Miniature light barrier
- Photointerrupters
- Optical switch
- Shaft encoders
- IR emitter source for proximity applications
- Smoke detectors

PRODUCT SUMMARY				
COMPONENT	I_e (mW/sr)	φ (deg)	λ_p (nm)	t_r (ns)
VSMG285011RG	40	± 12	850	20
VSMG285011G	40	± 12	850	20

Note

- Test conditions see table “Basic Characteristics“

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMG285011RG	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Reverse gullwing
VSMG285011G	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Gullwing

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Surge forward current	t_p = 100 µs	I_{FSM}	1	A
Power dissipation		P_V	180	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Soldering temperature	Acc. figure 9, J-STD-020	T_{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	250	K/W

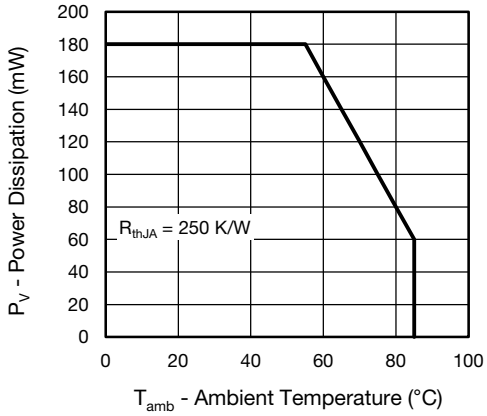


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

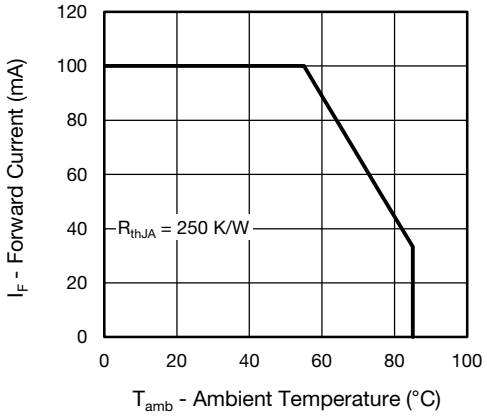


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 100 mA, t_p = 100 µs	V_F	1.25	1.5	1.8	V
	I_F = 1 A, t_p = 100 µs	V_F		2.9		V
Temperature coefficient of V_F	I_F = 1 mA	TK_{VF}		-1.8		mV/K
Reverse current	V_R = 5 V	I_R			10	µA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0 mW/cm^2	C_J		45		pF
Radiant intensity	I_F = 100 mA, t_p = 100 µs	I_e	20	40	60	mW/sr
	I_F = 1 A, t_p = 100 µs	I_e		320		mW/sr
Radiant power	I_F = 100 mA, t_p = 100 µs	ϕ_e		40		mW
Temperature coefficient of ϕ_e	I_F = 100 mA	$TK\phi_e$		-0.35		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I_F = 30 mA	λ_p	830	850	870	nm
Spectral bandwidth	I_F = 30 mA	$\Delta\lambda$		35		nm
Temperature coefficient of λ_p	I_F = 30 mA	$TK\lambda_p$		0.25		nm/K
Rise time	I_F = 100 mA, 20 % to 80 %	t_r		20		ns
Fall time	I_F = 100 mA, 20 % to 80 %	t_f		20		ns
Cut-off frequency	I_{DC} = 70 mA, I_{AC} = 30 mA pp	f_c		23		MHz

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

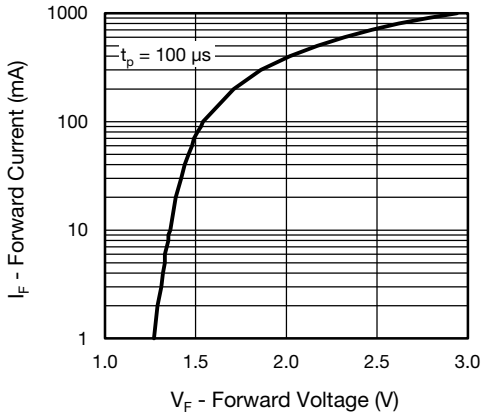


Fig. 3 - Forward Current vs. Forward Voltage

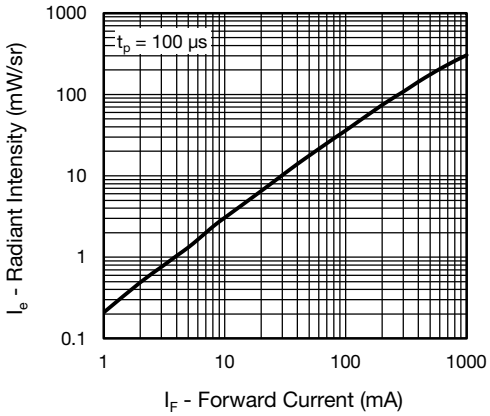


Fig. 6 - Radiant Intensity vs. Forward Current

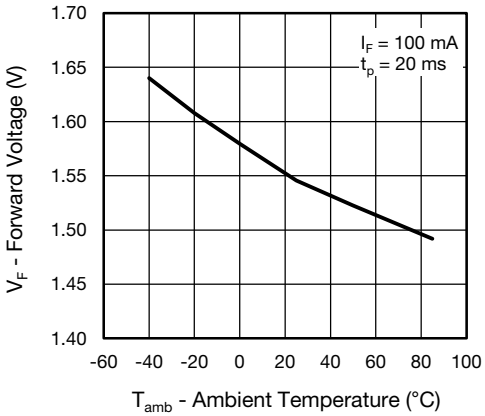


Fig. 4 - Forward Voltage vs. Ambient Temperature

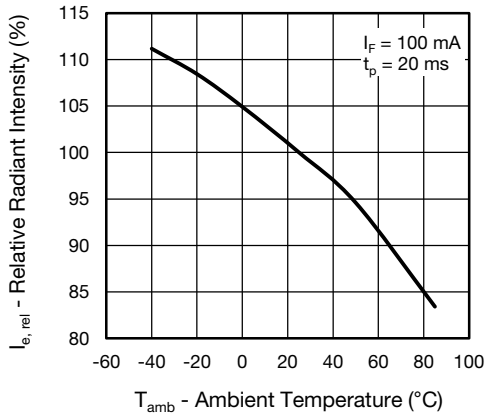


Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature

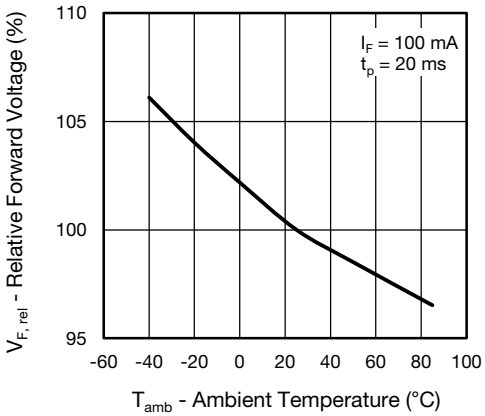


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

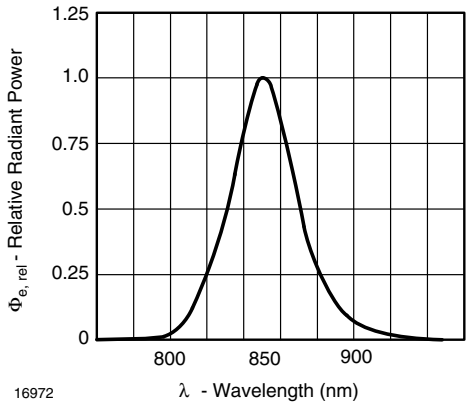


Fig. 8 - Relative Radiant Power vs. Wavelength

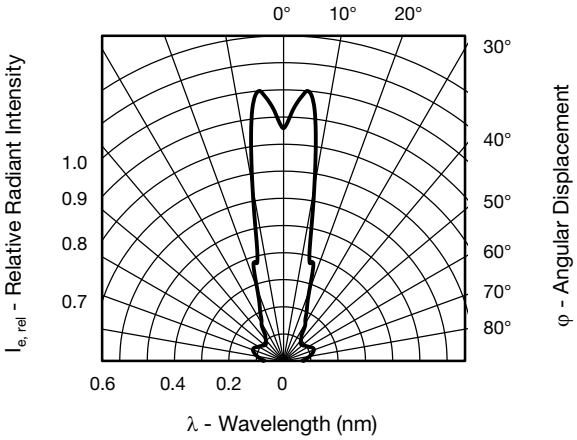


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

SOLDER PROFILE

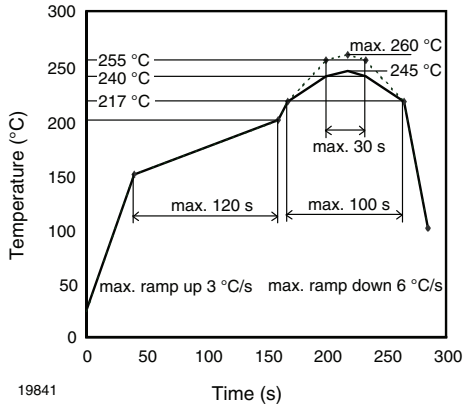


Fig. 10 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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:

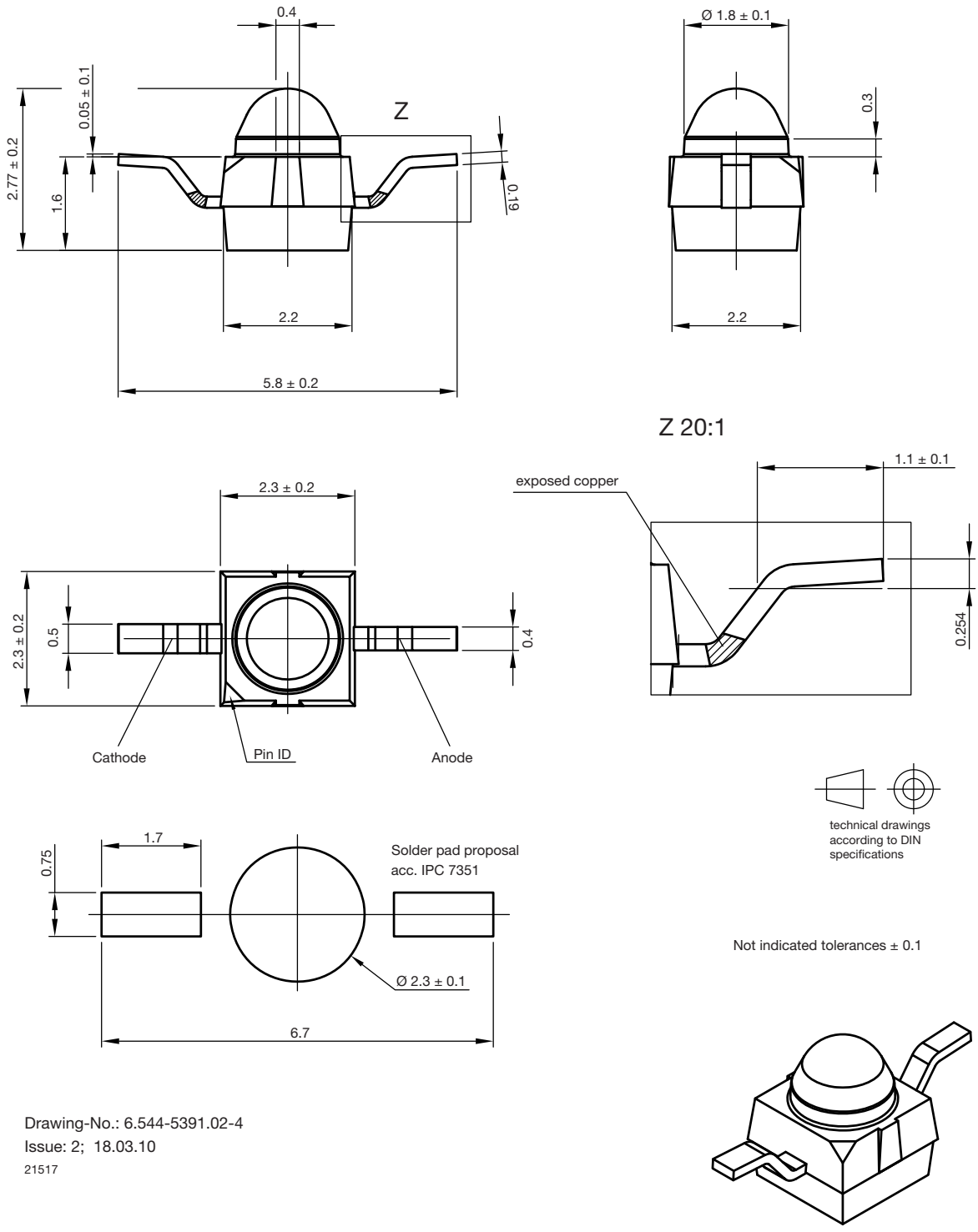
Floor life: 4 weeks

Conditions: T_{amb} < 30 °C, RH < 60 %
Moisture sensitivity level 2a, acc. to J-STD-020.

DRYING

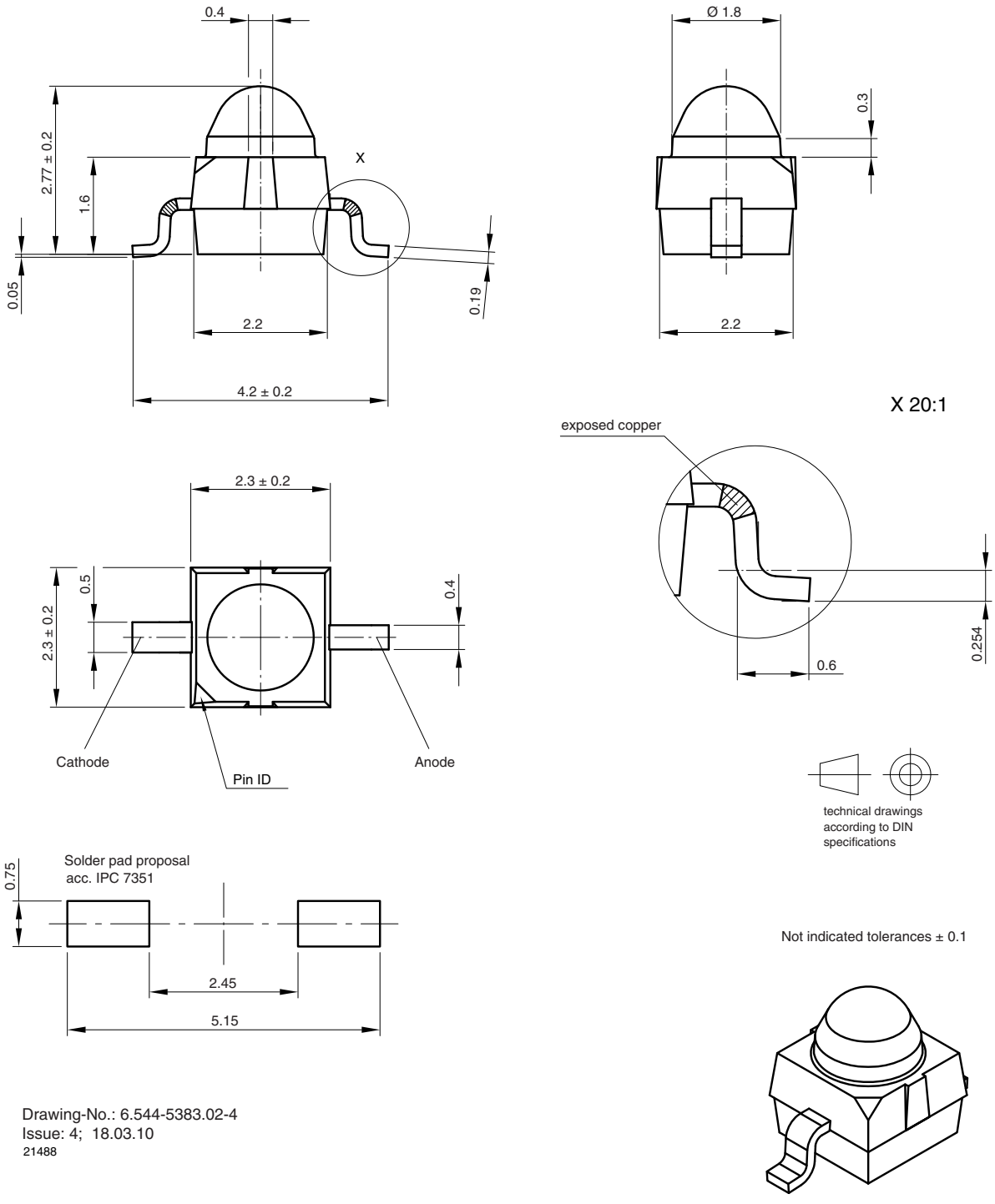
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), RH < 5 %.

PACKAGE DIMENSIONS in millimeters: **VSMG285011RG**



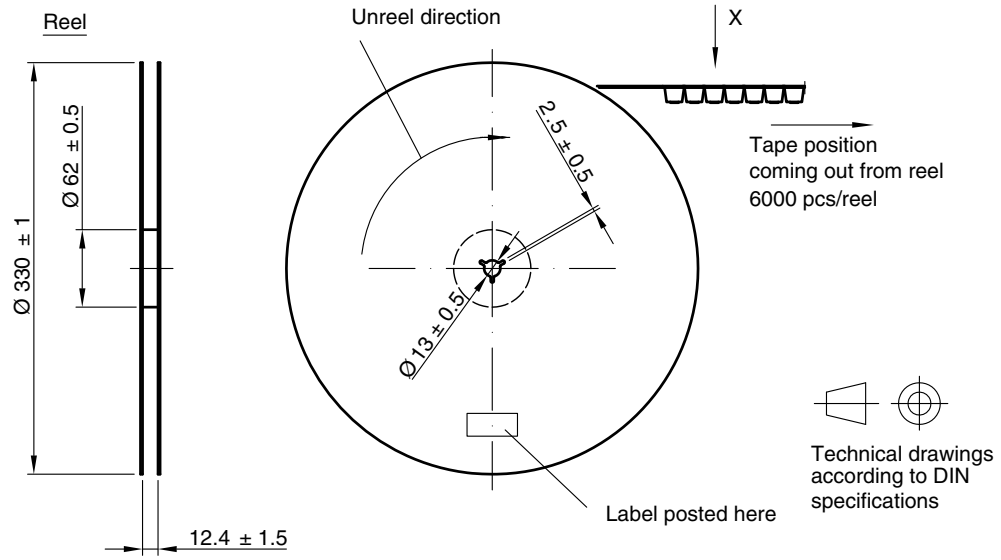
Drawing-No.: 6.544-5391.02-4
Issue: 2; 18.03.10
21517

PACKAGE DIMENSIONS in millimeters: **VSMG285011G**

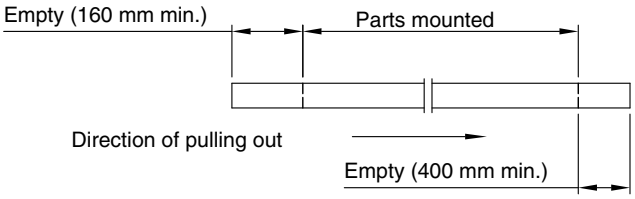


Drawing-No.: 6.544-5383.02-4
Issue: 4; 18.03.10
21488

TAPING AND REEL DIMENSIONS in millimeters: **VSMG285011RG**

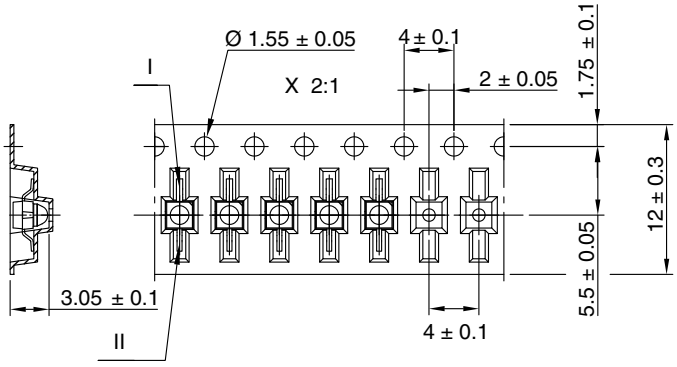


Leader and trailer tape:



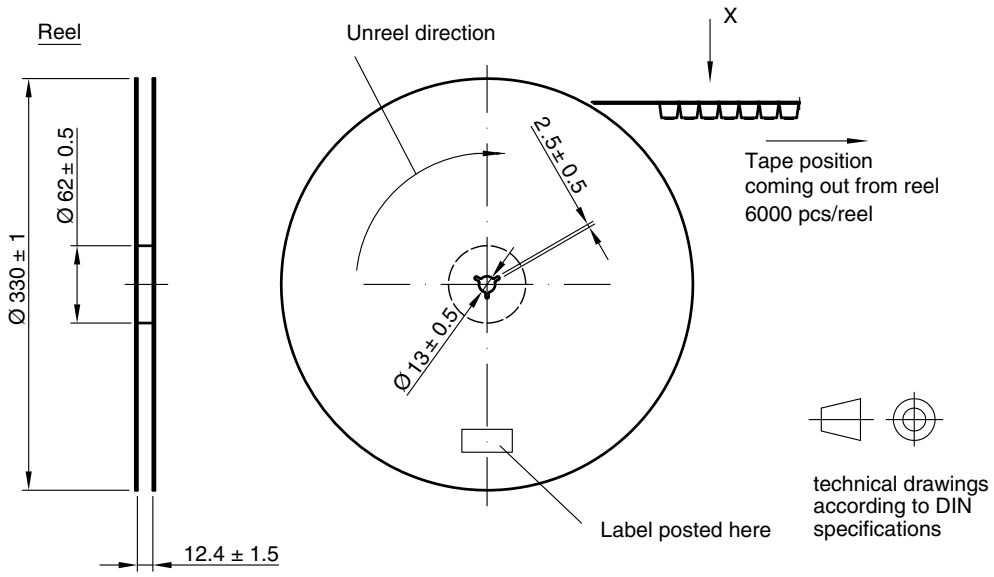
Terminal position in tape

Devicce	Lead I	Lead II
VEMT2000	Collector	Emitter
VEMT2500		
VEMD2000	Cathode	Anode
VEMD2500		
VSMB2000		
VSMG2000		
VSMY2850RG	Anode	Cathode

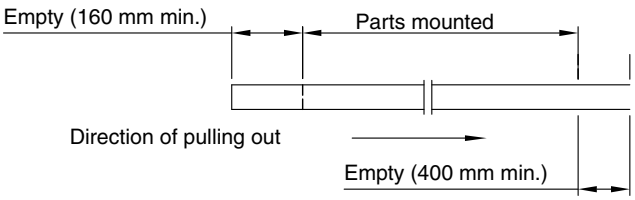


Drawing-No.: 9.800-5100.01-4
Issue: 2; 18.03.10
21572

TAPING AND REEL DIMENSIONS in millimeters: **VSMG285011G**

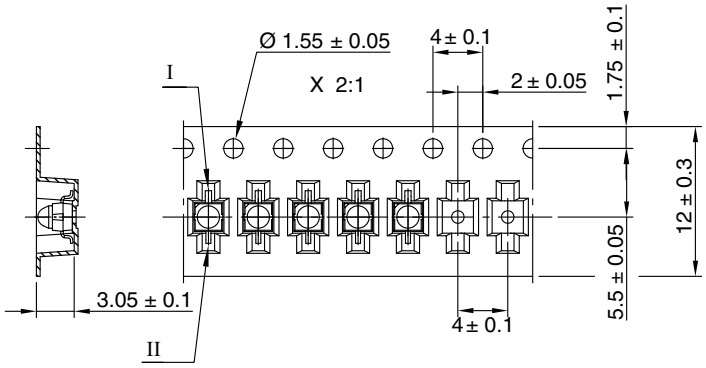


Leader and trailer tape:



Terminal position in tape

Devicce	Lead I	Lead II
VEMT2020	Collector	Emitter
VEMT2520		
VSMB2020	Cathode	Anode
VSMG2020		
VEMD2020		
VEMD2520		
VSMY2850G	Anode	Cathode



Drawing-No.: 9.800-5091.01-4
Issue: 3; 18.03.10
21571

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