



**THE DATASHEET OF
VO2223B-X001**





ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Forward current		I_F	50	mA
Reverse voltage		V_R	5	V
Input power dissipation		P_{diss}	70	mW
OUTPUT				
Repetitive peak off-state voltage	Sine wave, 50 Hz to 60 Hz, gate open	V_{DRM}	600	V
RMS on-state current		$I_{T(RMS)}$	1	A
Non repetitive surge peak on-state current	50 Hz, peak	I_{TSM}	10	A
COUPLER				
Total power dissipation ⁽¹⁾		P_{diss}	1.2	W
Ambient temperature range		T_{amb}	-40 to +85	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +150	$^{\circ}\text{C}$
Soldering temperature	$t \leq 10\text{ s max.}$	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.

⁽¹⁾ Total power dissipation value is based on 2S2P PCB

ABSOLUTE MAXIMUM RATING CURVES

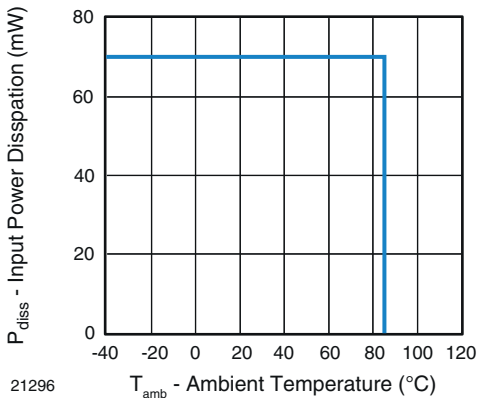


Fig. 1 - Input Power Dissipation vs. Ambient Temperature

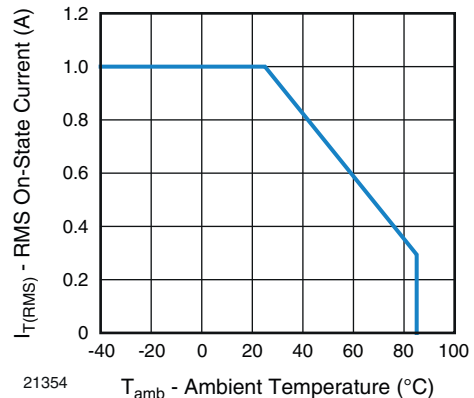


Fig. 2 - RMS On-State Current vs. Ambient Temperature

Note

- The RMS on-state current was calculated out under a given operating conditions and only for reference: input power: $Q_E = 0.015\text{ W}$, θ_{BA} (4-layer) = $30\text{ }^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
Trigger input current	$V_T = 6\text{ V}$	I_{FT}	-	-	10	mA
Input reverse current	$V_R = 5\text{ V}$	I_R	-	-	10	μA
Forward voltage	$I_F = 10\text{ mA}$	V_F	0.9	-	1.5	V
OUTPUT						
Peak on-state voltage	$I_{TM} = 1\text{ A}$	V_{TM}	-	-	1.7	V
Peak off-state current	$V_{DRM} = 600\text{ V}$	I_{DRM}	-	-	100	μA
Holding current	$R_L = 100\ \Omega$	I_H	-	-	25	mA
Critical rate of rise of off-state voltage	$V_{IN} = 400\text{ V}_{RMS}$ (Fig. 3)	dV/dt_{cr}	-	600	-	$\text{V}/\mu\text{s}$
Critical rate of rise of commutating voltage	$V_{IN} = 240\text{ V}_{RMS}$, $I_T = 1\text{ A}_{RMS}$ (Fig. 3)	dV/dt_{crq}	-	0.7	-	$\text{V}/\mu\text{s}$

Note

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

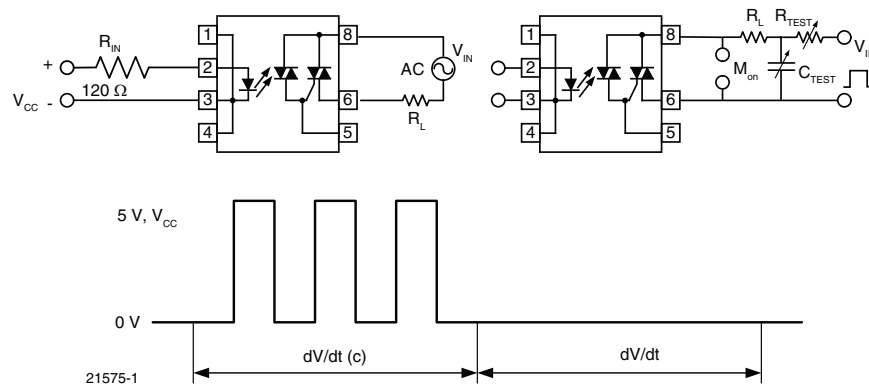


Fig. 3 - dV/dt Test Circuit

SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		40 / 85 / 21	
Pollution degree	According to DIN VDE 0109		2	
Comparative tracking index	Insulation group IIIa	CTI	175	
Maximum rated withstanding isolation voltage	According to UL1577, $t = 1\text{ min}$	V_{ISO}	5300	V_{RMS}
Maximum transient isolation voltage	According to DIN EN 60747-5-5	V_{IOTM}	8000	V_{peak}
Maximum repetitive peak isolation voltage	According to DIN EN 60747-5-5	V_{IORM}	890	V_{peak}
Isolation resistance	$T_{amb} = 25\text{ }^{\circ}\text{C}$, $V_{IO} = 500\text{ V}$	R_{IO}	$\geq 10^{12}$	Ω
	$T_{amb} = 100\text{ }^{\circ}\text{C}$, $V_{IO} = 500\text{ V}$	R_{IO}	$\geq 10^{11}$	Ω
Output safety power		P_{SO}	2000	mW
Input safety current		I_{SI}	150	mA
Input safety temperature		T_{SI}	165	$^{\circ}\text{C}$
Creepage distance	DIP-8		≥ 7	mm
Clearance distance			≥ 7	mm
Creepage distance	SMD-8, option 7		≥ 8	mm
Clearance distance			≥ 8	mm

Note

- This phototriac coupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with safety ratings shall be ensured by means of protective circuits

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

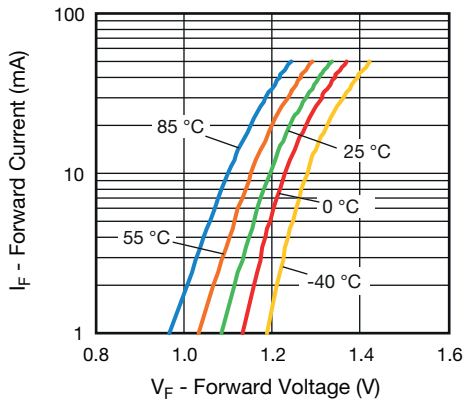


Fig. 4 - Forward Current vs. Forward Voltage

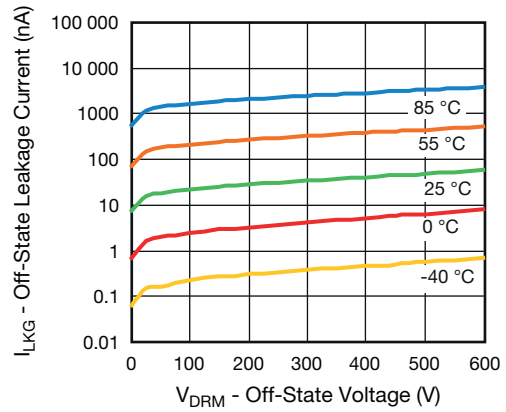


Fig. 7 - Off-State Leakage Current vs. Off-State Voltage

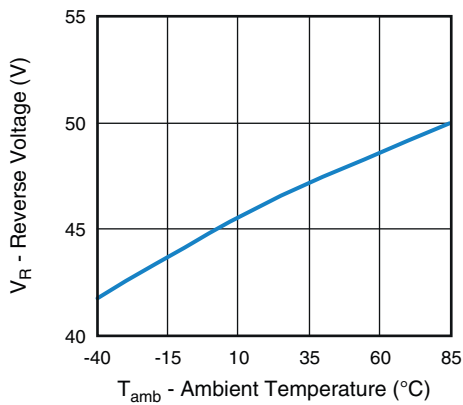


Fig. 5 - Reverse Voltage vs. Ambient Temperature

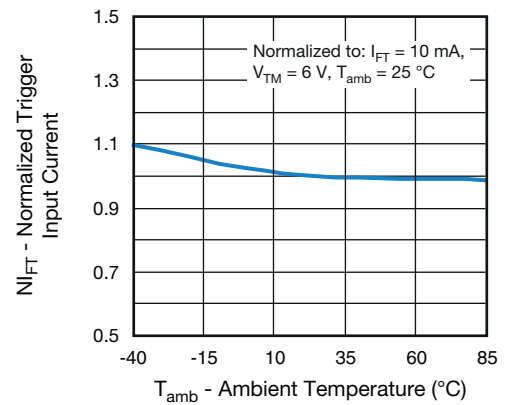


Fig. 8 - Normalized Trigger Input Current vs. Ambient Temperature

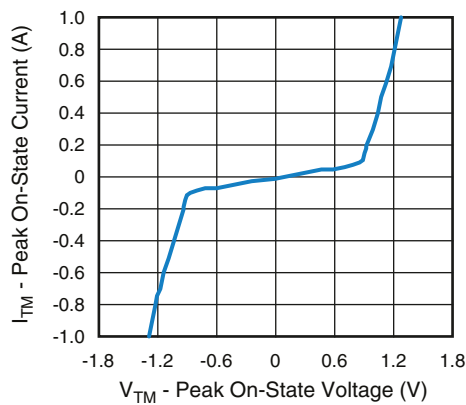


Fig. 6 - On-State Current vs. On-State Voltage

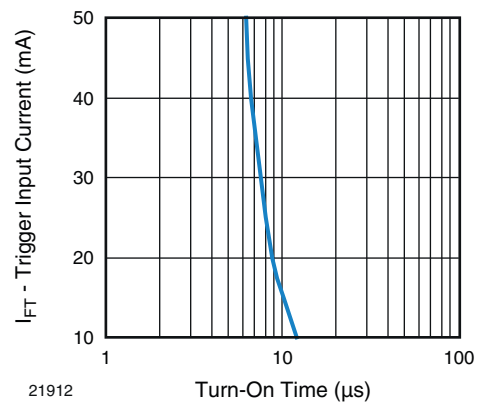


Fig. 9 - Trigger Input Current vs. Turn-On Time

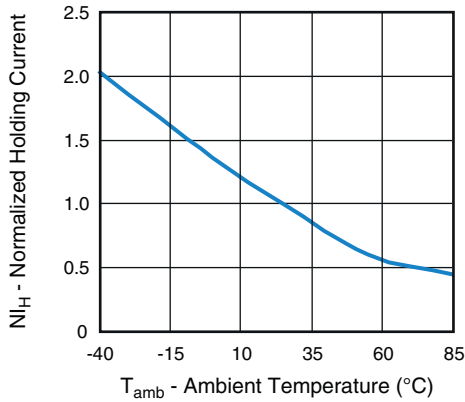


Fig. 10 - Normalized Holding Current vs. Ambient Temperature

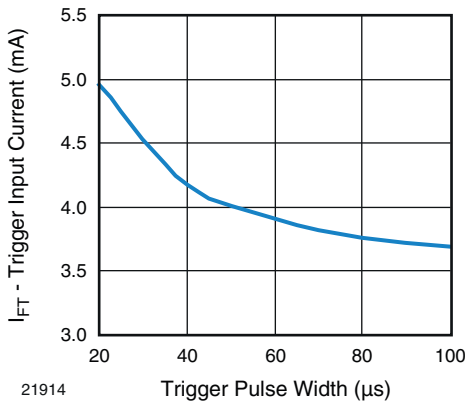


Fig. 11 - Trigger Input Current vs. Trigger Pulse Width

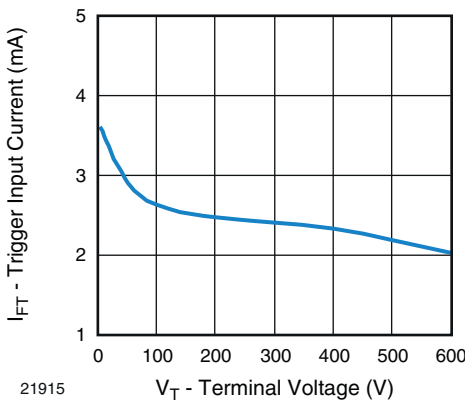
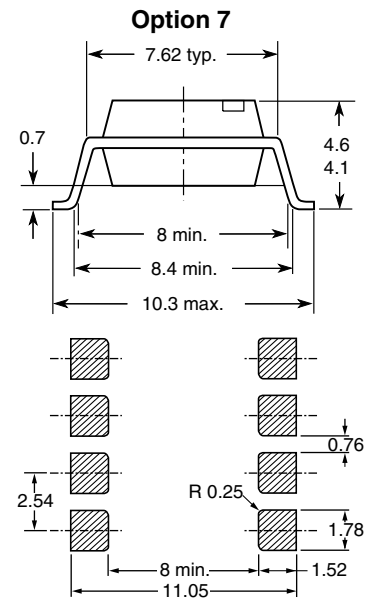
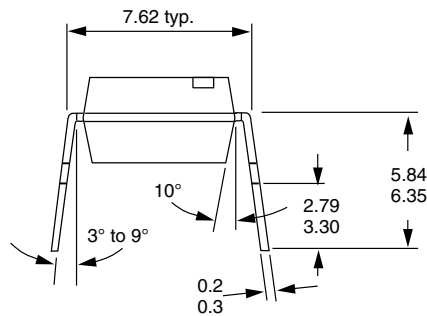
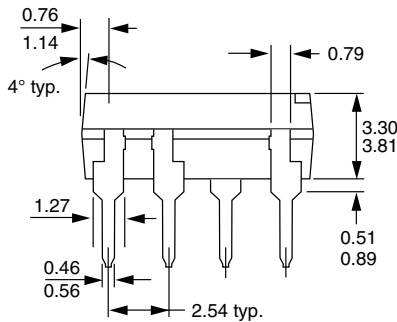
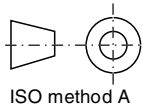
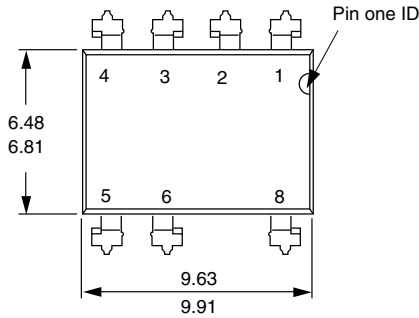
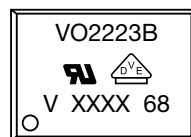


Fig. 12 - Trigger Input Current vs. Terminal Voltage

PACKAGE DIMENSIONS (in millimeters)



PACKAGE MARKING (Example of VO2223B-X001)



Notes

- XXXX = LMC (lot marking code)
- The VDE logo is only marked on option 1 parts. Option information is not marked on the part
- Tape and reel suffix (T) is not part of the package marking

PACKING INFORMATION

DEVICE PER TUBE			
TYPE	UNITS/TUBE	TUBES/BOX	UNITS/BOX
DIP-8	50	40	2000

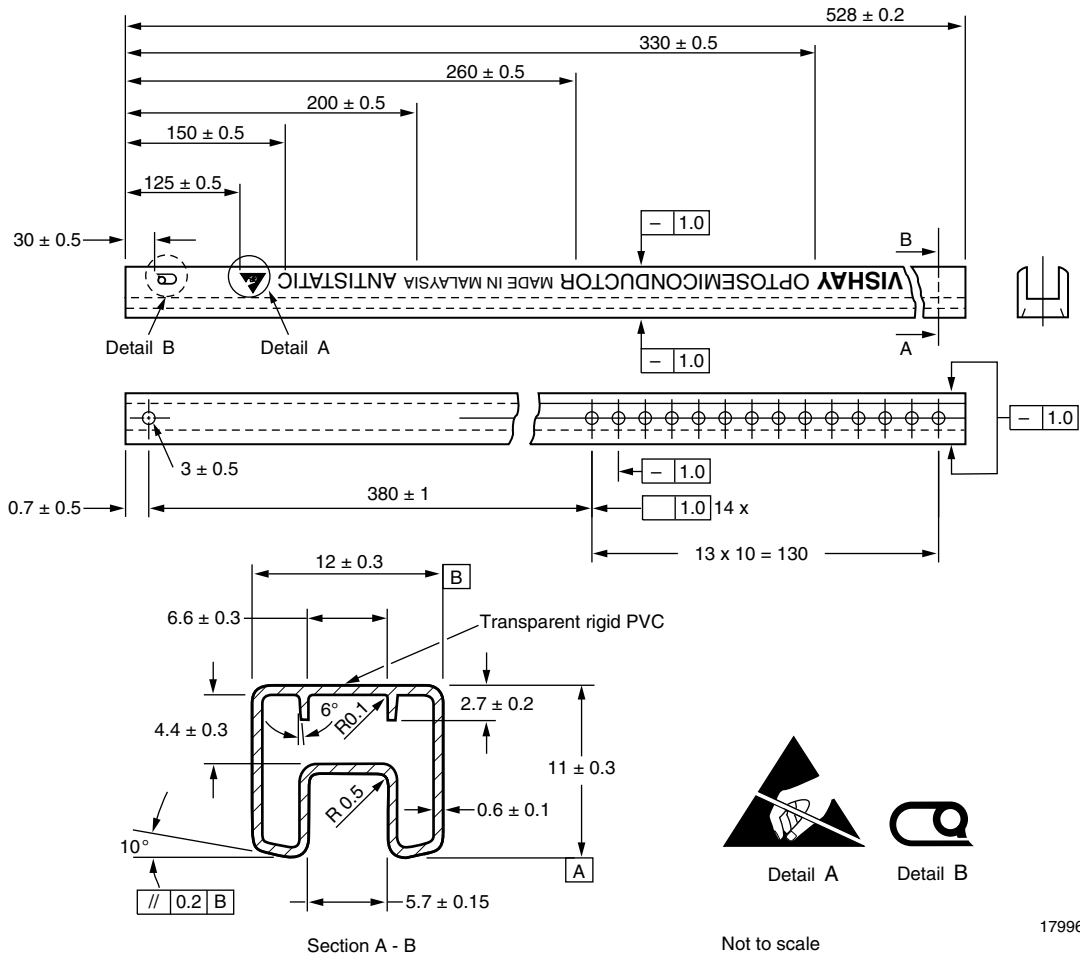
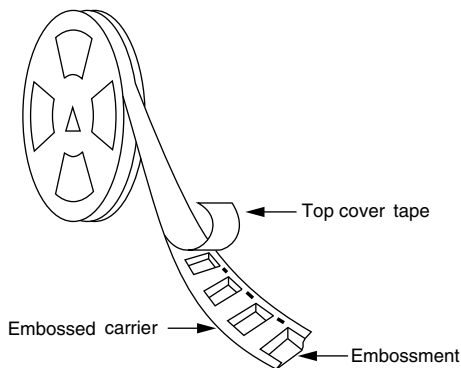
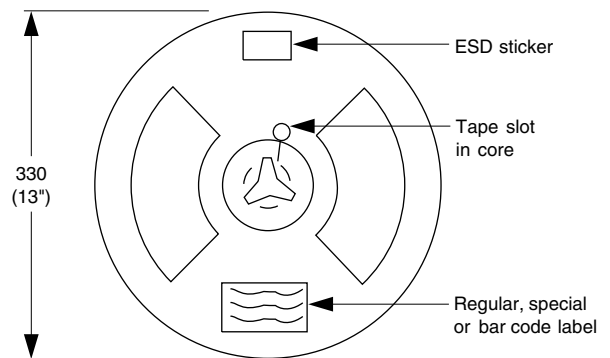


Fig. 13 - Shipping Tube Specifications for DIP Packages



17998

Fig. 14 - Tape and Reel Shipping Medium



17999

Fig. 15 - Tape and Reel Shipping Medium

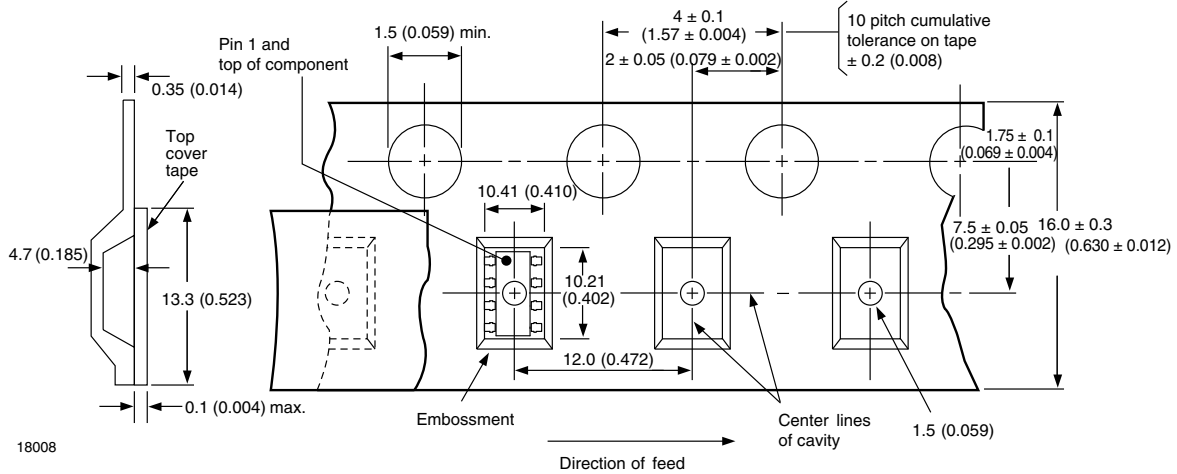
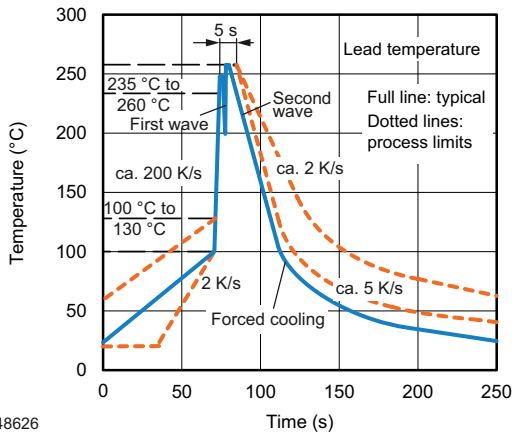


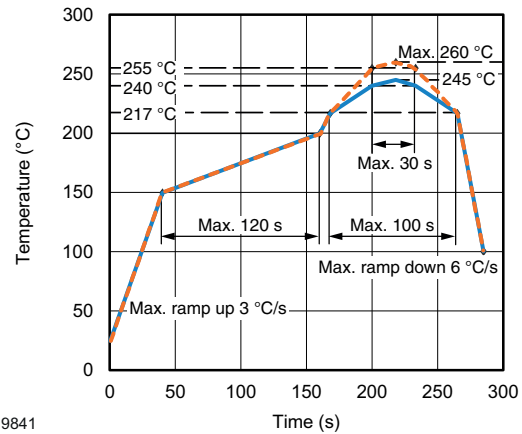
Fig. 16 - Tape and Packing (1000 pieces on reel)

SOLDER PROFILES



948626

Fig. 17 - Recommended Wave Soldering Double Wave Profile for DIP Devices



19841

Fig. 18 - Recommended Lead (Pb)-free Reflow Solder Profile for SMD Devices

HANDLING AND STORAGE CONDITIONS

ESD level: HBM class 2

Floor life: unlimited

Conditions: $T_{amb} < 30\text{ °C}$, RH < 85 %

Moisture sensitivity level 1, according to J-STD-020



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