



<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
IRED continuous forward current		$I_F$	50	mA
IRED reverse voltage		$V_R$	5	V
Input power dissipation		$P_{diss}$	80	mW
<b>OUTPUT</b>				
DC or peak AC load voltage		$V_L$	400	V
Continuous load current (AC/DC configuration)		$I_L$	140	mA
Continuous load current (DC only configuration)		$I_L$	270	mA
SSR output power dissipation (continuous)		$P_{diss}$	550	mW
<b>SSR</b>				
Ambient temperature range <sup>(1)</sup>		$T_{amb}$	-40 to +100	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	-40 to +150	$^{\circ}\text{C}$
Soldering temperature	$t = 10\text{ s max.}$	$T_{sld}$	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.
- <sup>(1)</sup> For continuous negative potential from output side to input side only  $85\text{ }^{\circ}\text{C}$  is allowed.

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>						
IRED forward current, switch turn-on	$I_L = 100\text{ mA}$ , $t = 10\text{ ms}$	$I_{Fon}$	-	0.27	2	mA
IRED forward current, switch turn-off	$V_L = 350\text{ V}$	$I_{Foff}$	0.05	0.15	-	mA
IRED forward voltage	$I_F = 10\text{ mA}$	$V_F$	-	1.36	1.5	V
IRED reverse current	$V_R = 5\text{ V}$	$I_R$	-	-	10	$\mu\text{A}$
<b>OUTPUT</b>						
On-resistance (AC/DC configuration)	$I_F = 5\text{ mA}$ , $I_L = 50\text{ mA}$	$R_{ON}$	-	22	27	$\Omega$
On-resistance (DC only configuration)	$I_F = 5\text{ mA}$ , $I_L = 100\text{ mA}$	$R_{ON}$	-	5.2	7	$\Omega$
Off-resistance	$I_F = 0\text{ mA}$ , $V_L = \pm 100\text{ V}$	$R_{OFF}$	0.5	5000	-	$\text{G}\Omega$
Off-state leakage current	$I_F = 0\text{ mA}$ , $V_L = \pm 100\text{ V}$	$I_O$	-	< 1	100	nA
	$I_F = 0\text{ mA}$ , $V_L = \pm 400\text{ V}$	$I_O$	-	6	500	nA
Output capacitance (AC/DC configuration)	$I_F = 0\text{ mA}$ , $V_L = 1\text{ V}$ , 1 MHz	$C_O$	-	39	-	pF
	$I_F = 0\text{ mA}$ , $V_L = 50\text{ V}$ , 1 MHz	$C_O$	-	6	-	pF
Current limit (AC/DC configuration)	$I_F = 5\text{ mA}$ , $t = 5\text{ ms}$ , $V_L = \pm 6\text{ V}$	$I_{limit}$	170	300	450	mA
<b>TRANSFER</b>						
Capacitance (input to output)	$V_{ISO} = 1\text{ V}$	$C_{IO}$	-	0.4	-	pF

**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.

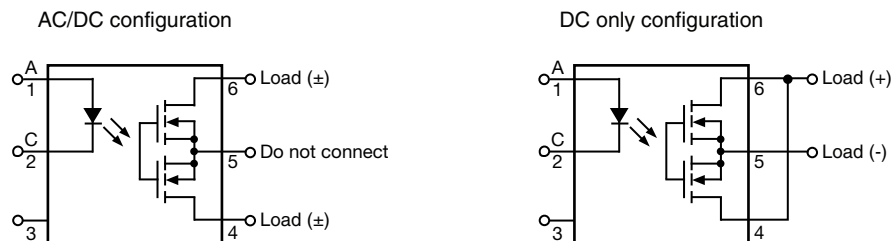
**PIN CONFIGURATION**


Fig. 1 - Pin Configuration

<b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	$I_F = 5\text{ mA}$ , $I_L = 50\text{ mA}$	$t_{on}$	-	0.13	0.5	ms
Turn-off time	$I_F = 5\text{ mA}$ , $I_L = 50\text{ mA}$	$t_{off}$	-	0.05	0.2	ms

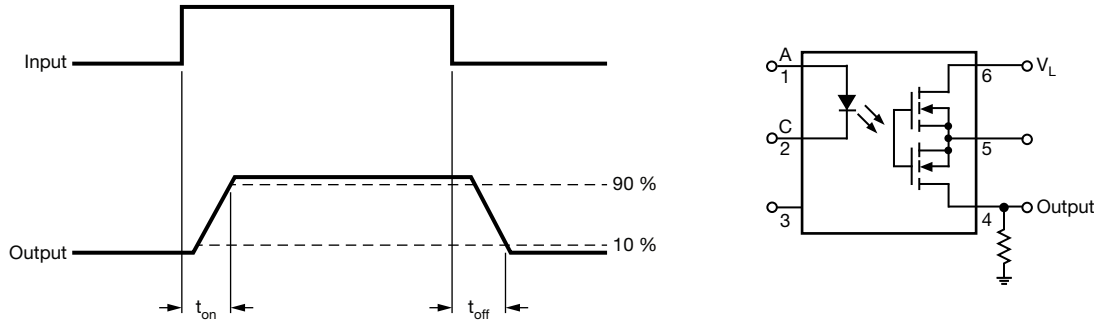


Fig. 2 - Timing Schematic

<b>SAFETY AND INSULATION RATINGS</b>				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		40/100/21	
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	$V_{IO} = 500\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	$R_{IO}$	$\geq 10^{12}$	$\Omega$
	$V_{IO} = 500\text{ V}$ , $T_{amb} = 100\text{ }^{\circ}\text{C}$	$R_{IO}$	$\geq 10^{11}$	$\Omega$
Output safety power		$P_{SO}$	720	mW
Input safety current		$I_{SI}$	240	mA
Safety temperature		$T_S$	175	$^{\circ}\text{C}$
Creepage distance	DIP-6		$\geq 7$	mm
Clearance distance	DIP-6		$\geq 7$	mm
Creepage distance	SMD-6		$\geq 8$	mm
Clearance distance	SMD-6		$\geq 8$	mm
Insulation thickness		DTI	$\geq 0.4$	mm
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 $< 5\text{ pC}$	$V_{PR}$	1669	$V_{peak}$
Input to output test voltage, method A	$V_{IORM} \times 1.6 = V_{PR}$ , 100 % sample test with $t_M = 10\text{ s}$ , partial discharge $< 5\text{ pC}$	$V_{PR}$	1424	$V_{peak}$

**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.

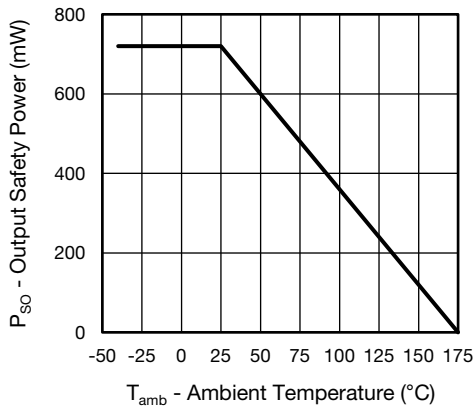


Fig. 3 - Safety Power Dissipation vs. Ambient Temperature

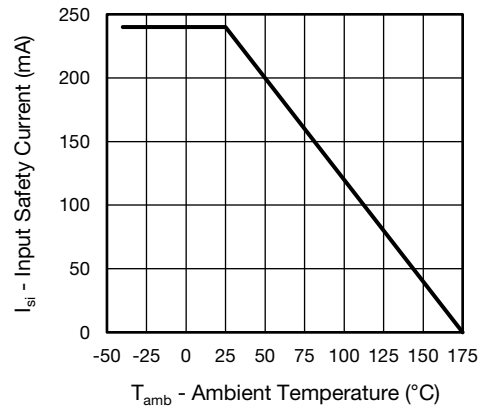


Fig. 4 - Safety Input Current vs. Ambient Temperature

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

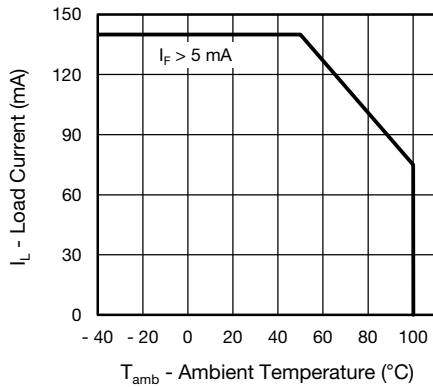


Fig. 5 - Maximum Load Current vs. Ambient Temperature

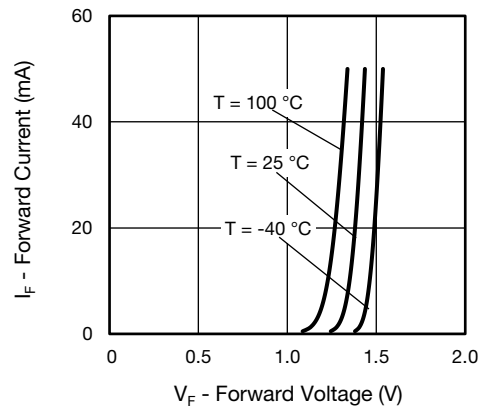


Fig. 7 - Forward Current vs. Forward Voltage

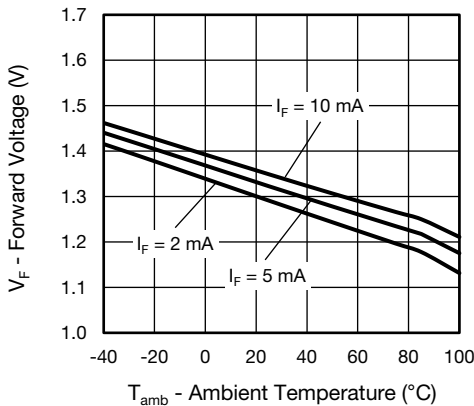


Fig. 6 - Forward Voltage vs. Ambient Temperature

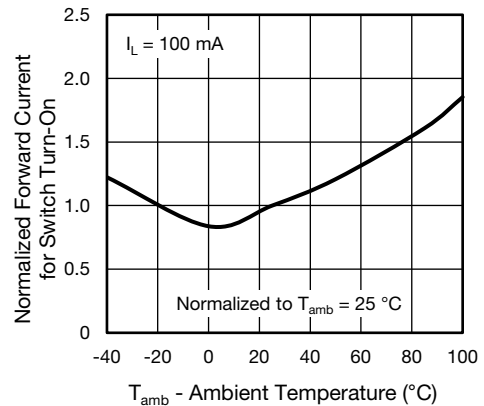


Fig. 8 - Normalized Forward Current for Switch Turn-On vs. Ambient Temperature

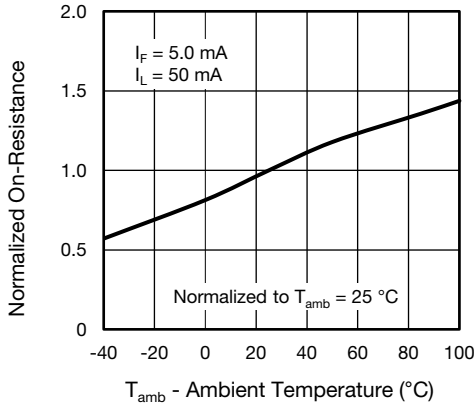


Fig. 9 - Normalized On-Resistance vs. Ambient Temperature

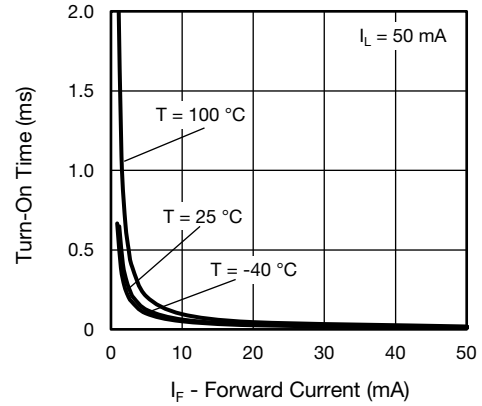


Fig. 12 - Turn-On Time vs. Forward Current

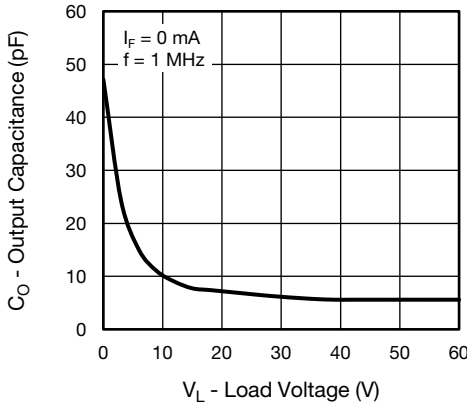


Fig. 10 - Output Capacitance vs. Load Voltage

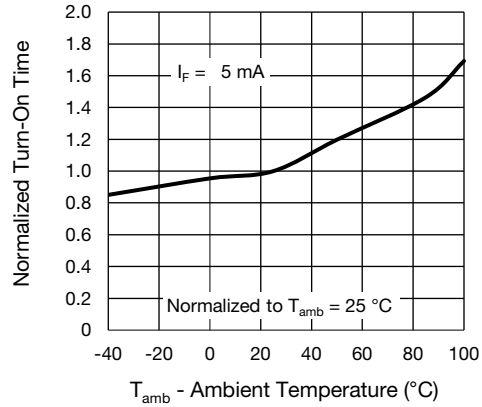


Fig. 13 - Normalized Turn-On Time vs. Ambient Temperature

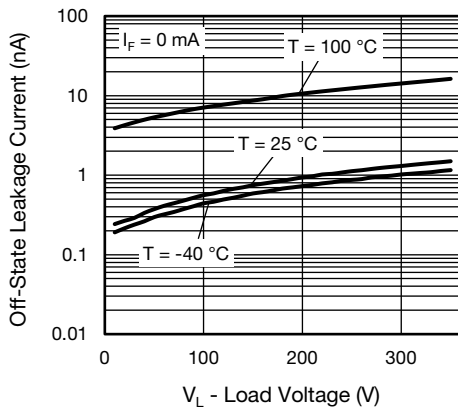


Fig. 11 - Off-State Leakage Current vs. Load Voltage

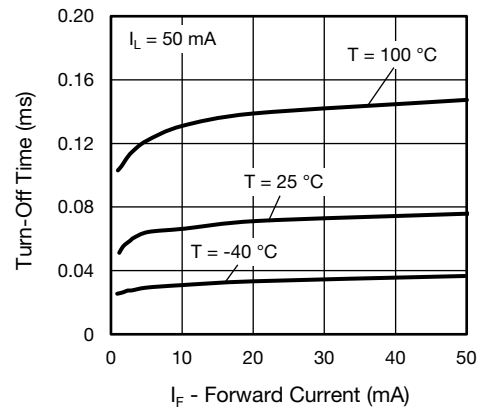


Fig. 14 - Turn-Off Time vs. Forward Current

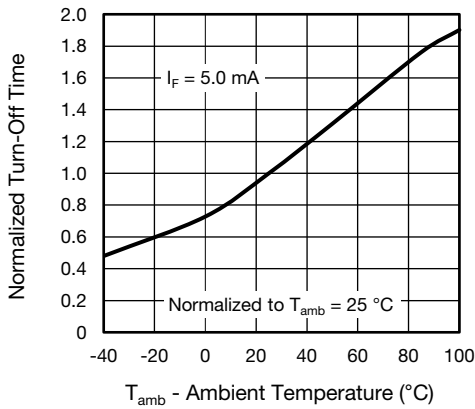
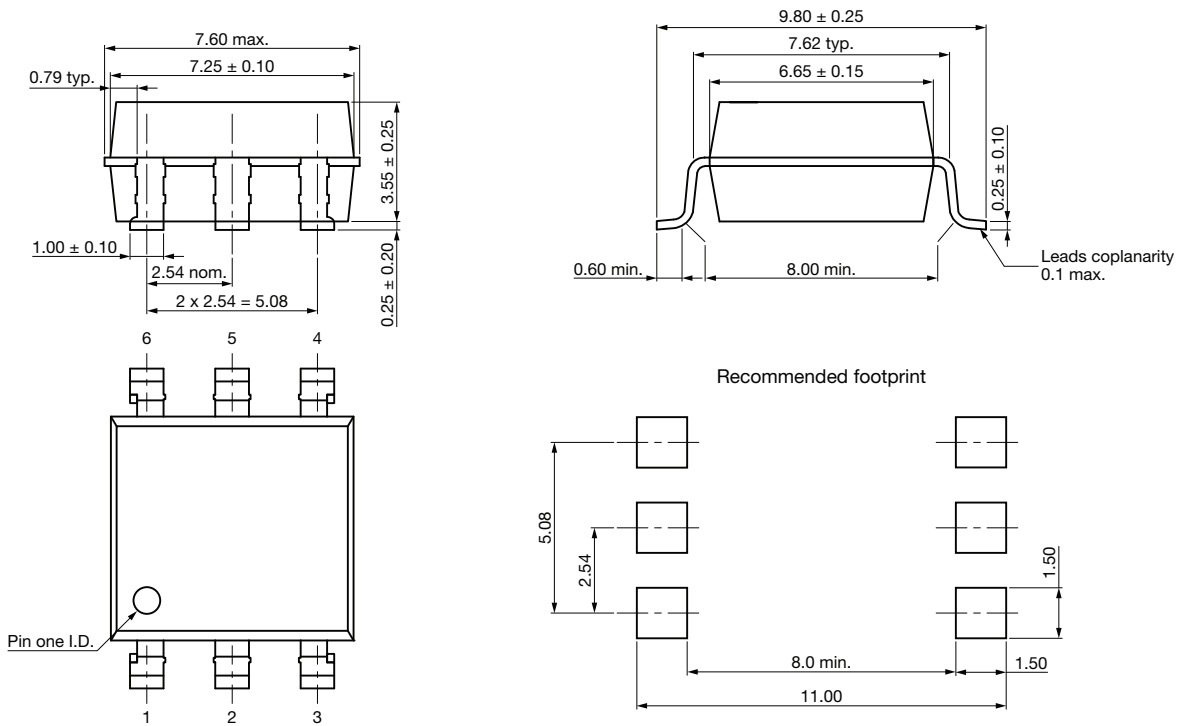


Fig. 15 - Normalized Turn-Off Time vs. Ambient Temperature

**PACKAGE DIMENSIONS** (in millimeters)

**SMD-6**



DIP-6

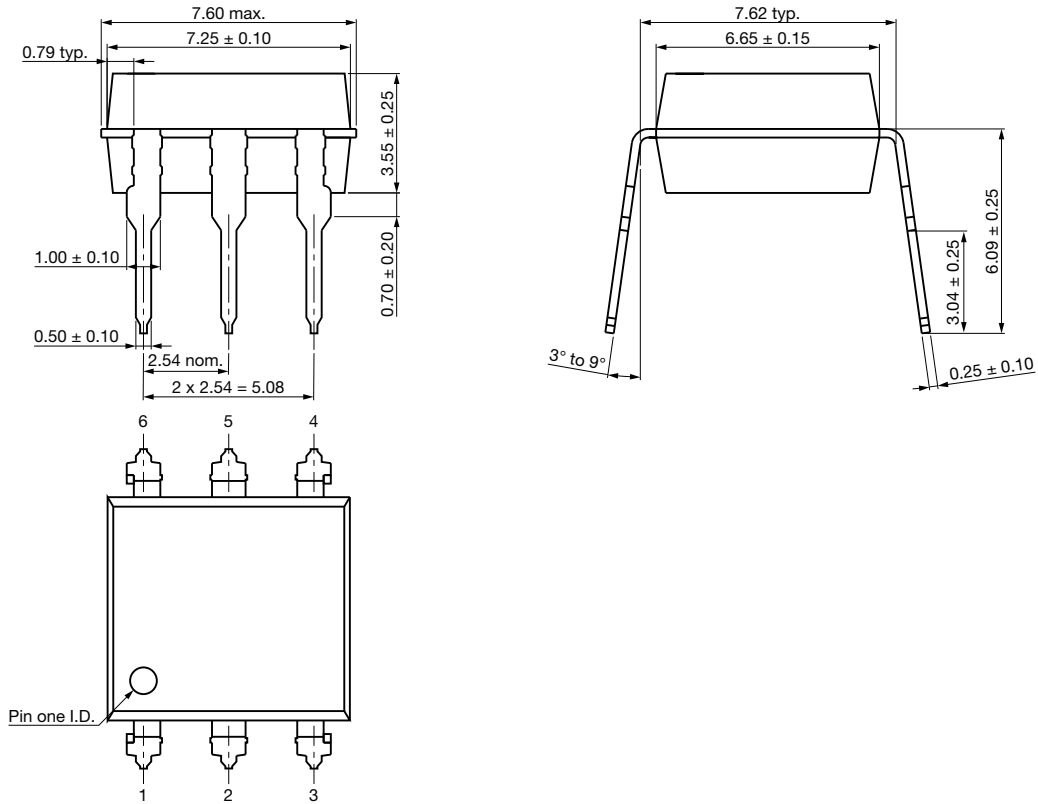


Fig. 16 - Package Drawings

PACKAGE MARKING

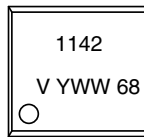
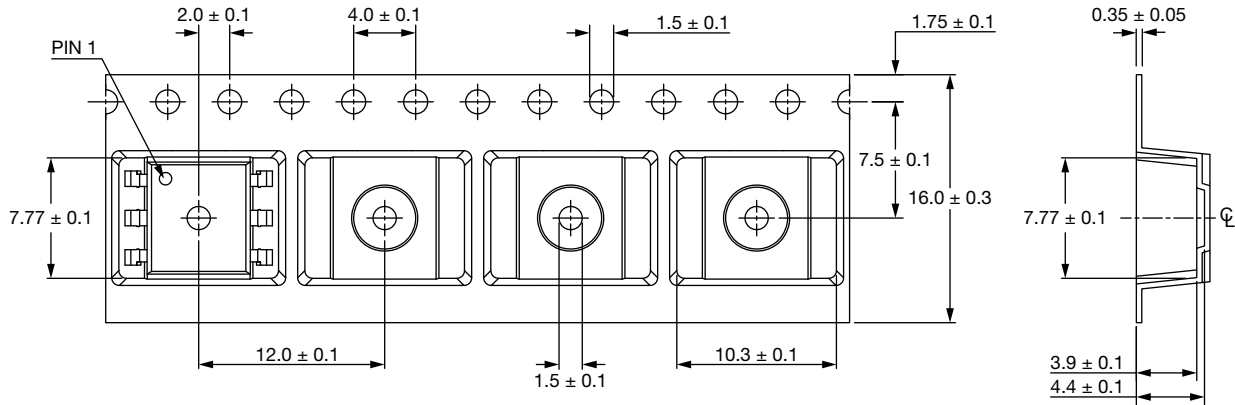


Fig. 17 - VOR1142

Note

- Package configuration (T, A, B) are not part of the package marking.

**PACKING INFORMATION** (in millimeters)



**Note:**

- Cumulative tolerance of 10 spocket holes is 0.20 mm

Fig. 18 - Tape and Reel Packing (1000 pieces on reel)

DEVICE PER TUBE			
TYPE	UNITS/TUBE	TUBES/BOX	UNITS/BOX
SMD-6	50	40	2000
DIP-6	50	40	2000

**SOLDER PROFILES**

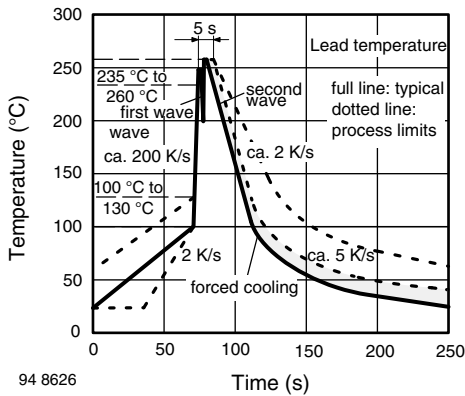


Fig. 19 - Wave Soldering Double Wave Profile According to J-STD-020 for DIP Devices

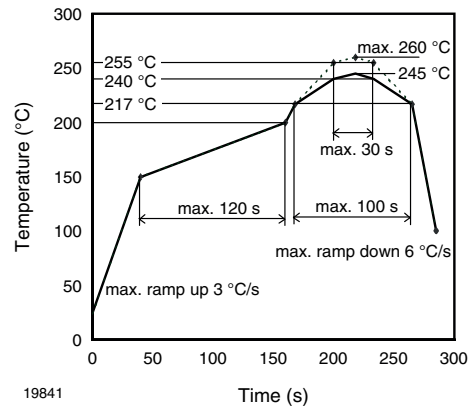


Fig. 20 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020 for SMD Devices

**HANDLING AND STORAGE CONDITIONS**

ESD level: HBM class 2

Floor life: unlimited

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

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





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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

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