





<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	CONDITIONS	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
Reverse voltage		$V_R$	3.0	V
DC forward current		$I_F$	25	mA
Surge forward current	$t_p \leq 1.0\text{ }\mu\text{s}$ , 300 pulses/s	$I_{FSM}$	1.0	A
Power dissipation		$P_{diss}$	45	mW
<b>OUTPUT</b>				
Supply voltage		$V_S$	-0.5 to +30	V
Output voltage		$V_O$	-0.5 to +20	V
Output current		$I_O$	8	mA
Power dissipation		$P_{diss}$	100	mW
<b>COUPLER</b>				
Storage temperature range		$T_{stg}$	-55 to +150	$^{\circ}\text{C}$
Ambient temperature range		$T_{amb}$	-55 to +100	$^{\circ}\text{C}$
Junction temperature		$T_j$	100	$^{\circ}\text{C}$
Soldering temperature	Max. 10 s, dip soldering: distance to seating plane $\geq 1.5\text{ mm}$	$T_{sld}$	260	$^{\circ}\text{C}$

**Note**

- 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.

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ unless otherwise specified, typ. values $T_{amb} = 25\text{ }^{\circ}\text{C}$ )						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>input</b>						
Forward voltage	$I_F = 16\text{ mA}$	$V_F$	-	1.5	1.8	V
Reverse current	$V_R = 3\text{ V}$	$I_R$	-	0.5	10	$\mu\text{A}$
Capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_O$	-	125	-	pF
Thermal resistance		$R_{thja}$	-	700	-	K/W
<b>output</b>						
Logic high supply current	$I_F = 0\text{ V}$ , $V_O$ (open), $V_{CC} = 15\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	$I_{CCH}$	-	0.01	1	$\mu\text{A}$
	$I_F = 0\text{ V}$ , $V_O$ (open), $V_{CC} = 15\text{ V}$	$I_{CCH}$	-	0.01	2	$\mu\text{A}$
Output current, output high	$I_F = 0\text{ V}$ , $V_O$ (open), $V_{CC} = 5.5\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	$I_{OH}$	-	0.003	0.5	$\mu\text{A}$
	$I_F = 0\text{ V}$ , $V_O$ (open), $V_{CC} = 15\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	$I_{OH}$	-	0.01	1	$\mu\text{A}$
	$I_F = 0\text{ V}$ , $V_O$ (open), $V_{CC} = 15\text{ V}$	$I_{OH}$	-		50	$\mu\text{A}$
Collector emitter capacitance	$V_{CE} = 5\text{ V}$ , $f = 1\text{ MHz}$	$C_{CE}$	-	3	-	pF
Thermal resistance		$R_{thja}$	-	300	-	K/W
<b>coupler</b>						
Coupling capacitance		$C_C$	-	0.6	-	pF
Collector emitter saturation voltage	$I_F = 16\text{ mA}$ , $I_O = 2.4\text{ mA}$ , $V_{CC} = 4.5\text{ V}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$	$V_{OL}$	-	0.1	0.4	V
Supply current, logic low	$I_F = 16\text{ mA}$ , $V_O$ open, $V_{CC} = 15\text{ V}$	$I_{DD}$	-	80	-	

**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.

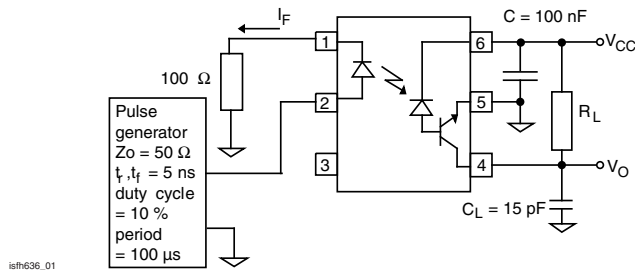


Fig. 1 - Test Setup

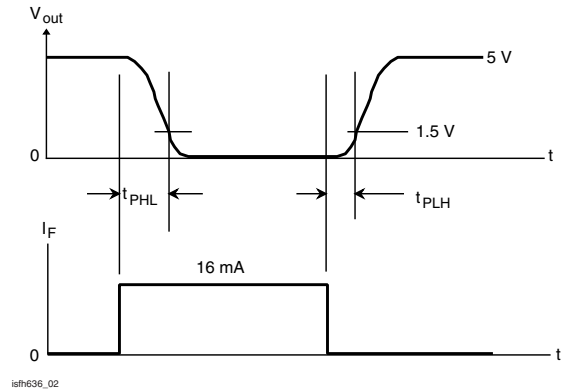


Fig. 2 - Switching Time Measurement

<b>CURRENT TRANSFER RATIO</b> ( $T_{amb} = 0\text{ }^{\circ}\text{C}$ to $70\text{ }^{\circ}\text{C}$ unless otherwise specified, typ. values $T_{amb} = 25\text{ }^{\circ}\text{C}$ )						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
$I_C/I_F$	$I_F = 16\text{ mA}$ , $V_O = 0.4\text{ V}$ , $V_{CC} = 4.5\text{ V}$ , $T_{amb} = 25\text{ }^{\circ}\text{C}$	CTR	19	30	-	%
	$I_F = 16\text{ mA}$ , $V_O = 0.5\text{ V}$ , $V_{CC} = 4.5\text{ V}$	CTR	15	-	-	%

<b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Propagation delay time (high to low)	$I_F = 16\text{ mA}$ , $V_{CC} = 5.0\text{ V}$ , $R_L = 1.9\text{ k}\Omega$	$t_{PHL}$	-	0.3	0.8	$\mu\text{s}$
Propagation delay time (low to low)	$I_F = 16\text{ mA}$ , $V_{CC} = 5.0\text{ V}$ , $R_L = 1.9\text{ k}\Omega$	$t_{PLH}$	-	0.3	0.8	$\mu\text{s}$

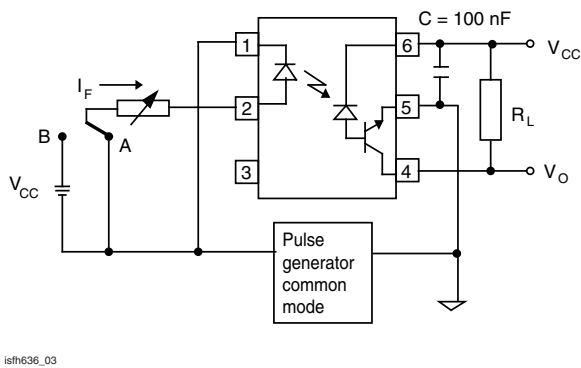


Fig. 3 - Common Mode Transient Test

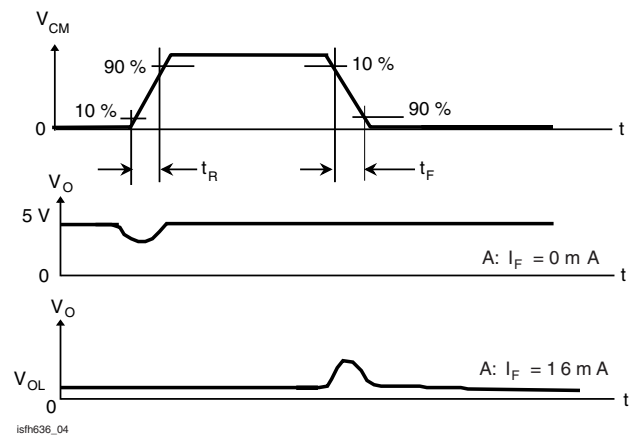


Fig. 4 - Measurement Waveform of CMR

<b>COMMON MODE TRANSIENT IMMUNITY</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Common mode transient immunity (high)	$I_O = 0\text{ mA}$ , $V_{CM} = 1500\text{ V}_{P-P}$ , $R_L = 1.9\text{ k}\Omega$ , $V_{CC} = 5.0\text{ V}$	$ CM_H $	-	10 000	-	$\text{V}/\mu\text{s}$
Common mode transient immunity (low)	$I_O = 16\text{ mA}$ , $V_{CM} = 1500\text{ V}_{P-P}$ , $R_L = 1.9\text{ k}\Omega$ , $V_{CC} = 5.0\text{ V}$	$ CM_L $	-	10 000	-	$\text{V}/\mu\text{s}$

SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		55/100/21	
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 min	$V_{ISO}$	4420	$V_{RMS}$
Tested withstanding isolation voltage	According to UL1577, t = 1 s	$V_{ISO}$	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	$T_{amb} = 25\text{ }^{\circ}\text{C}$ , $V_{IO} = 500\text{ V}$	$R_{IO}$	$\geq 10^{12}$	$\Omega$
	$T_{amb} = 100\text{ }^{\circ}\text{C}$ , $V_{IO} = 500\text{ V}$	$R_{IO}$	$\geq 10^{11}$	$\Omega$
Output safety power		$P_{SO}$	700	mW
Input safety current		$I_{SI}$	400	mA
Input safety temperature		$T_S$	175	$^{\circ}\text{C}$
Creepage distance	DIP-6		$\geq 7$	mm
Clearance distance	DIP-6		$\geq 7$	mm
Creepage distance	DIP-6, option 6		$\geq 8$	mm
Clearance distance	DIP-6, option 6		$\geq 8$	mm
Creepage distance	SMD-6, option 7		$\geq 7$	mm
Clearance distance	SMD-6, option 7		$\geq 7$	mm
Creepage distance	SMD-6, option 9		$\geq 7$	mm
Clearance distance	SMD-6, option 9		$\geq 7$	mm
Insulation thickness		DTI	$\geq 0.4$	mm

**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.

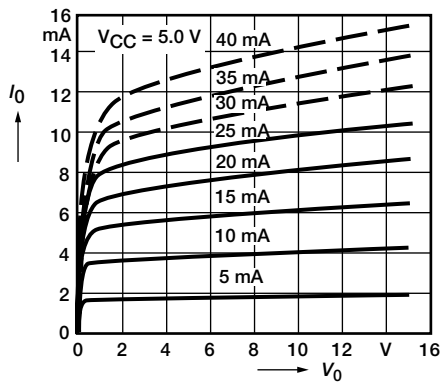
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 5 - Output Characteristics-Output Current vs. Output Voltage

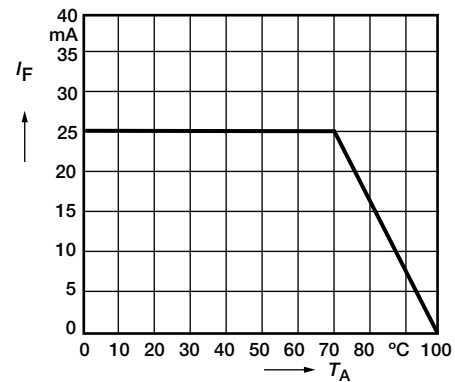


Fig. 6 - Permissible Forward Current of Emitting Diode vs. Ambient Temperature

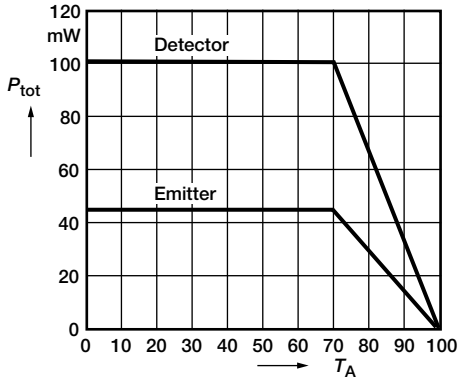


Fig. 7 - Permissible Total Power Dissipation vs. Ambient Temperature

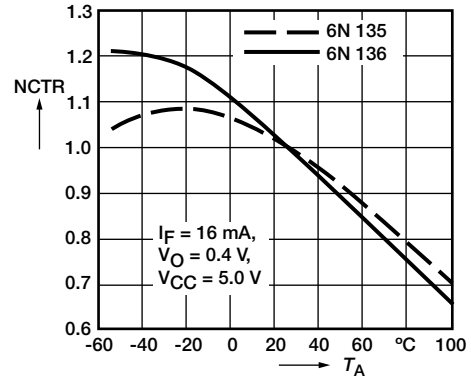


Fig. 10 - Current Transfer Ratio (Normalized) vs. Ambient Temperature

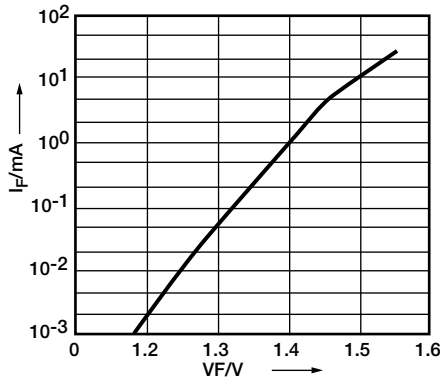


Fig. 8 - Forward Current of Emitting Diode vs. Forward Voltage

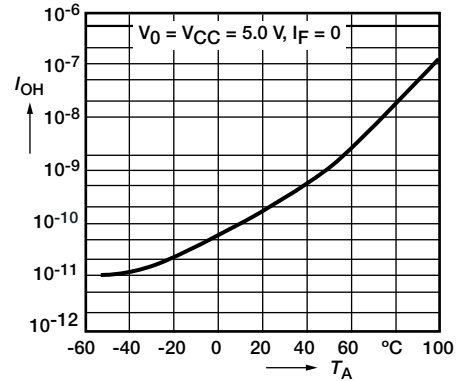


Fig. 11 - Output Current (High) vs. Ambient Temperature

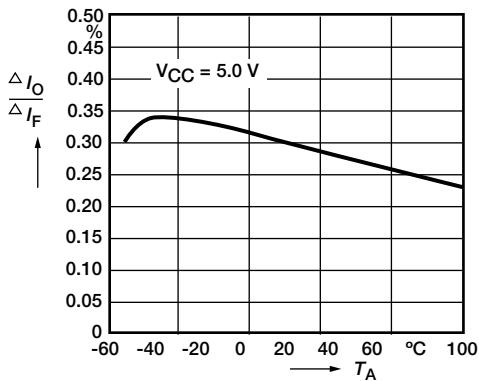


Fig. 9 - Small Signal Transfer Ratio vs. Forward Current

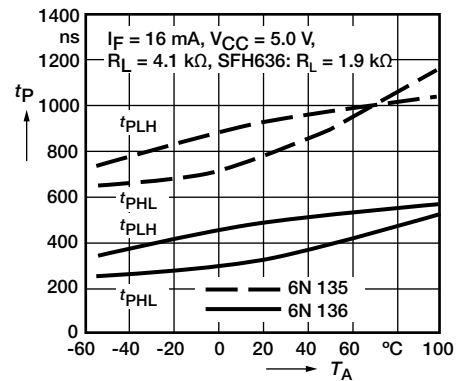


Fig. 12 - Delay Times vs. Ambient Temperature

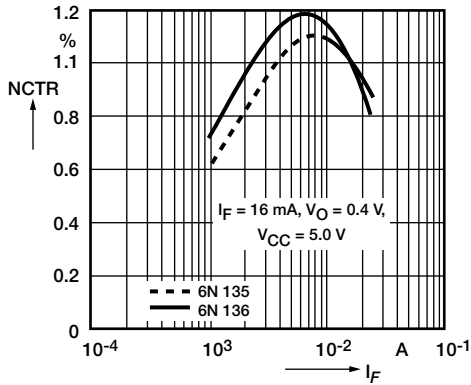
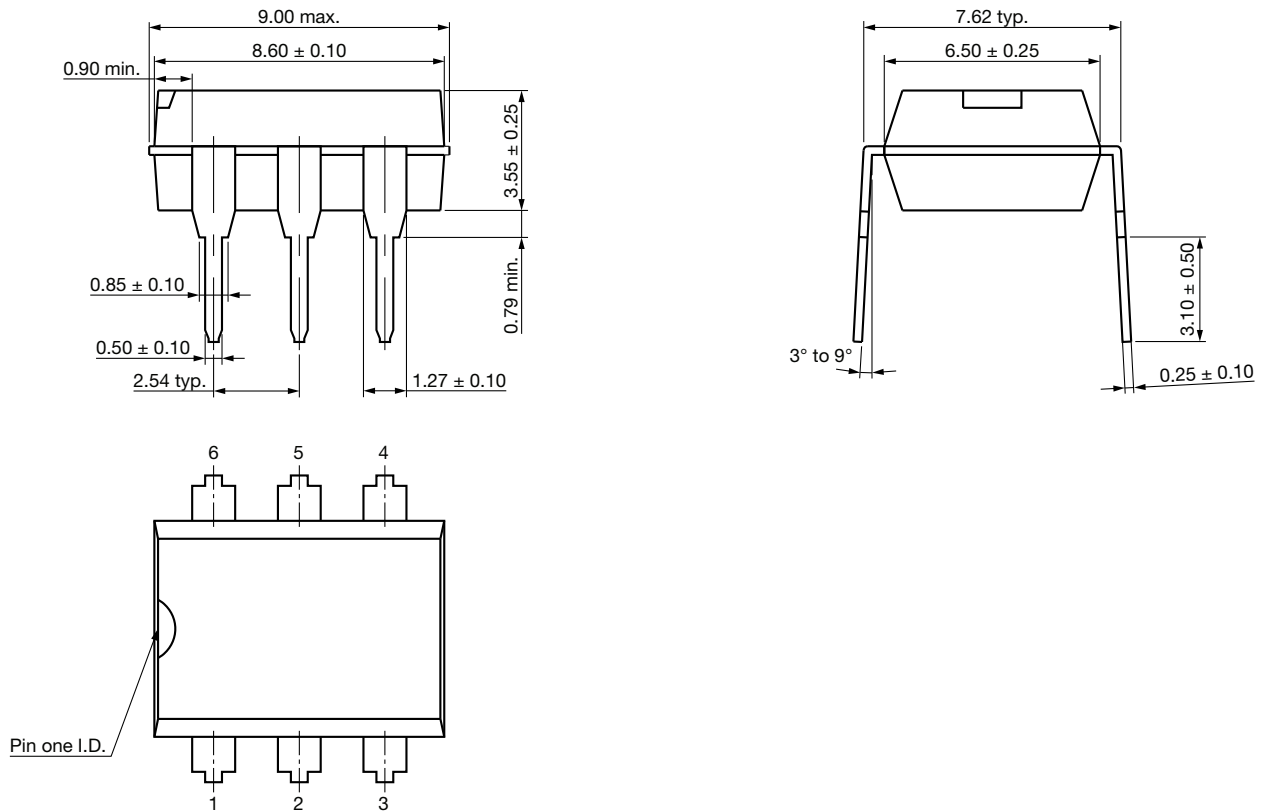


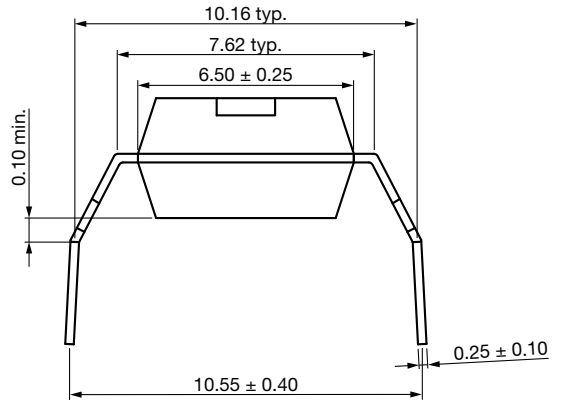
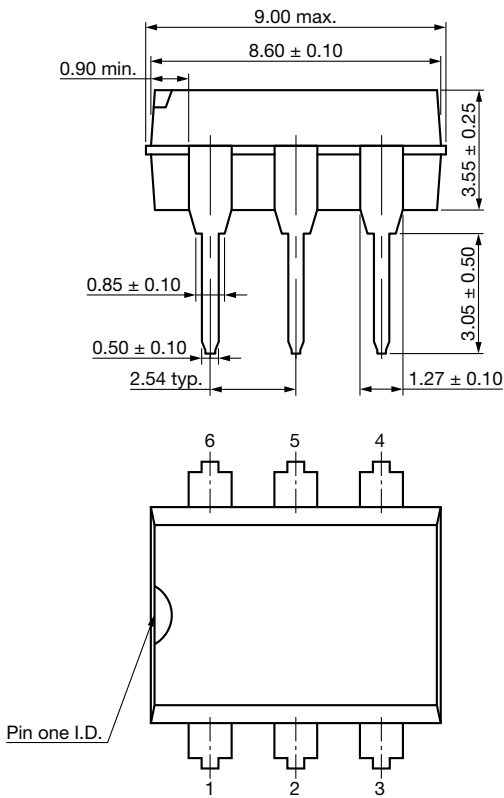
Fig. 13 - Current Transfer Ratio (Normalized) vs. Forward Current

**PACKAGE DIMENSIONS** in inches (millimeters)

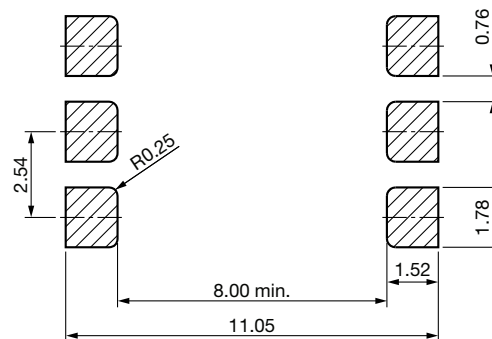
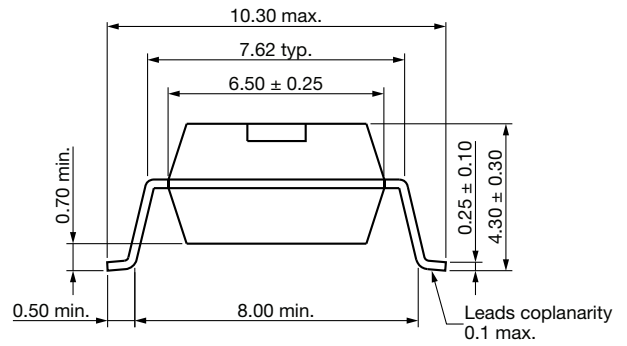
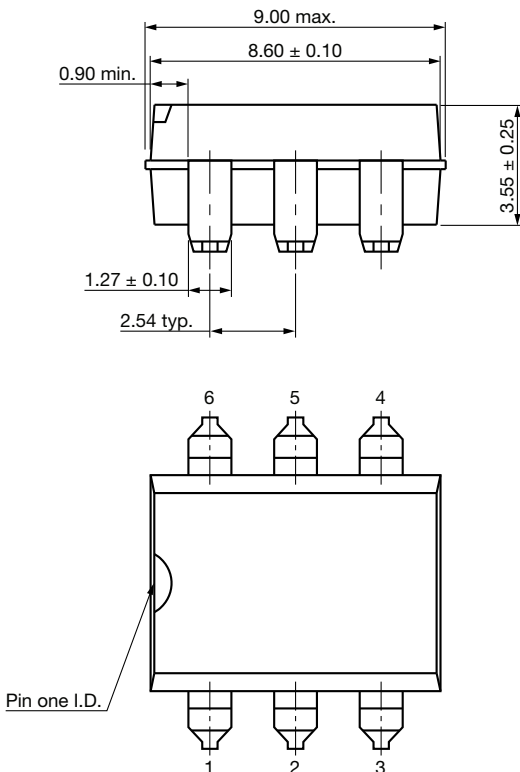
**DIP-6**



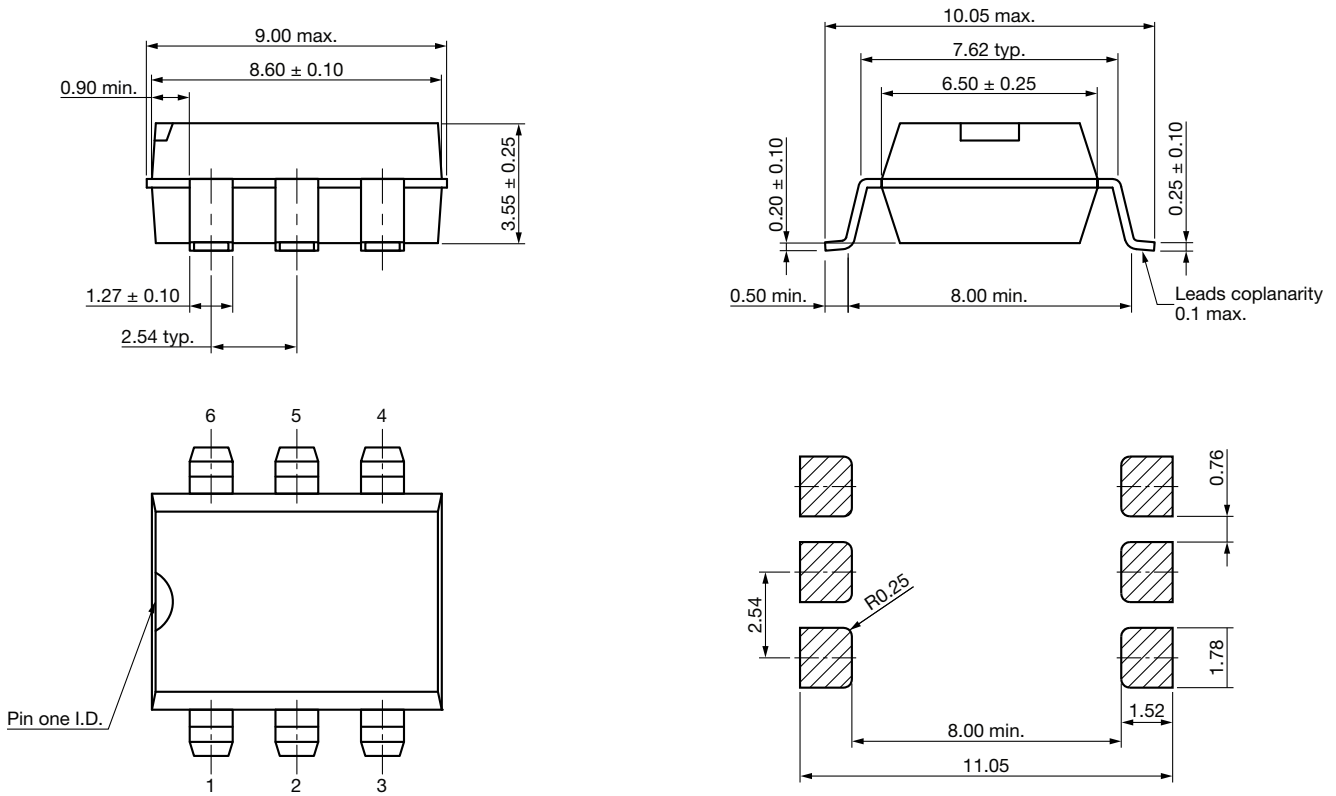
DIP-6, Option 6



SMD-6, Option 7



SMD-6, Option 9



SOLDER PROFILES

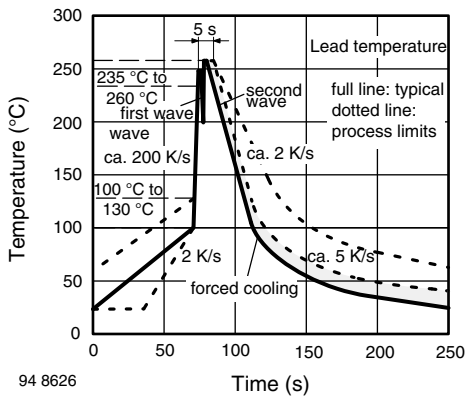


Fig. 14 - Wave Soldering Double Wave Profile According to J-STD-020 for DIP Devices

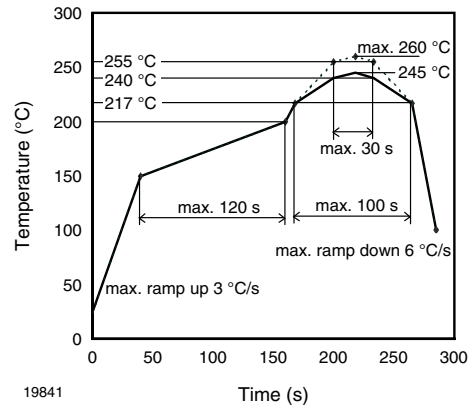


Fig. 15 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020 for SMD Devices

HANDLING AND STORAGE CONDITIONS

- ESD level: HBM class 2
- Floor life: unlimited
- Conditions:  $T_{amb} < 30\text{ }^{\circ}\text{C}$ ,  $\text{RH} < 85\%$
- Moisture sensitivity level 1, according to J-STD-020





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