ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
INPUT				
Reverse voltage		V_R	3.0	V
DC forward current		I_F	25	mA
Surge forward current	$t_P \leq 1.0$ µs, 300 pulses/s	I_{FSM}	1.0	A
Power dissipation		P_{diss}	45	mW
OUTPUT				
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
COUPLER				
Storage temperature range		T_{stg}	-55 to +150	°C
Ambient temperature range		T_{amb}	-55 to +100	°C
Junction temperature		T_j	100	°C
Soldering temperature	Max. 10 s, dip soldering: distance to seating plane ≥ 1.5 mm	T_{sld}	260	°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.

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

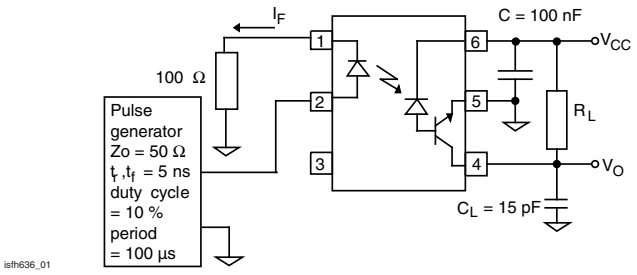


Fig. 1 - Test Setup

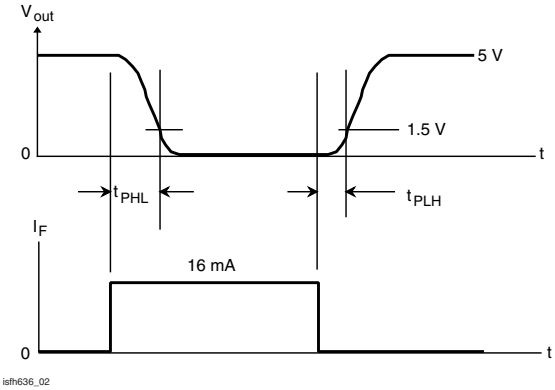


Fig. 2 - Switching Time Measurement

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

SWITCHING CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Propagation delay time (high to low)	I_F = 16 mA, V_{CC} = 5.0 V, R_L = 1.9 kΩ	t_{PHL}	-	0.3	0.8	µs
Propagation delay time (low to low)	I_F = 16 mA, V_{CC} = 5.0 V, R_L = 1.9 kΩ	t_{PLH}	-	0.3	0.8	µs

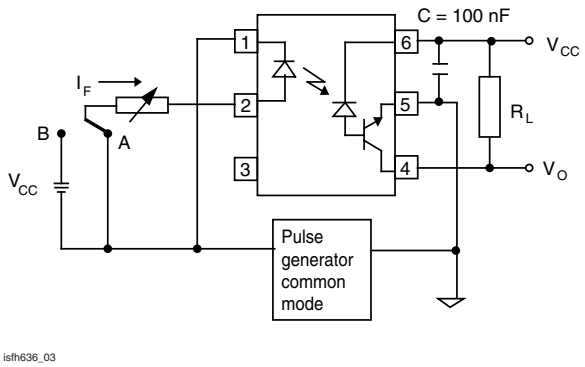


Fig. 3 - Common Mode Transient Test

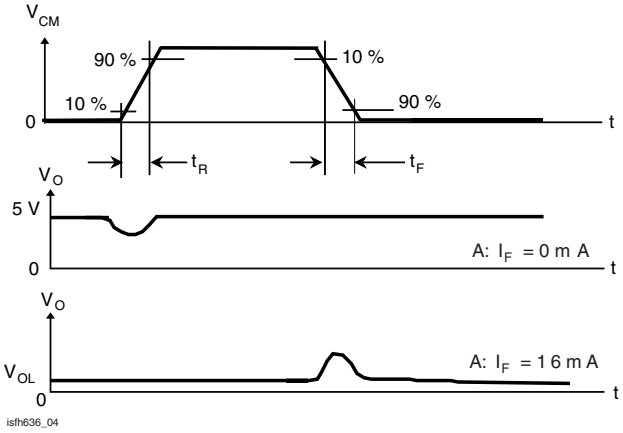


Fig. 4 - Measurement Waveform of CMR

COMMON MODE TRANSIENT IMMUNITY (T_{amb} = 25 °C unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Common mode transient immunity (high)	I_O = 0 mA, V_{CM} = 1500 V_{P-P}, R_L = 1.9 kΩ, V_{CC} = 5.0 V	$\|CM_H\|$	-	10 000	-	V/µs
Common mode transient immunity (low)	I_O = 16 mA, V_{CM} = 1500 V_{P-P}, R_L = 1.9 kΩ, V_{CC} = 5.0 V	$\|CM_L\|$	-	10 000	-	V/µs

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 °C, V_{IO} = 500 V	R_{IO}	$\geq 10^{12}$	Ω
	T_{amb} = 100 °C, V_{IO} = 500 V	R_{IO}	$\geq 10^{11}$	Ω
Output safety power		P_{SO}	700	mW
Input safety current		I_{SI}	400	mA
Input safety temperature		T_S	175	°C
Creepage distance	DIP-6		≥ 7	mm
Clearance distance	DIP-6		≥ 7	mm
Creepage distance	DIP-6, option 6		≥ 8	mm
Clearance distance	DIP-6, option 6		≥ 8	mm
Creepage distance	SMD-6, option 7		≥ 7	mm
Clearance distance	SMD-6, option 7		≥ 7	mm
Creepage distance	SMD-6, option 9		≥ 7	mm
Clearance distance	SMD-6, option 9		≥ 7	mm
Insulation thickness		DTI	≥ 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 °C, unless otherwise specified)

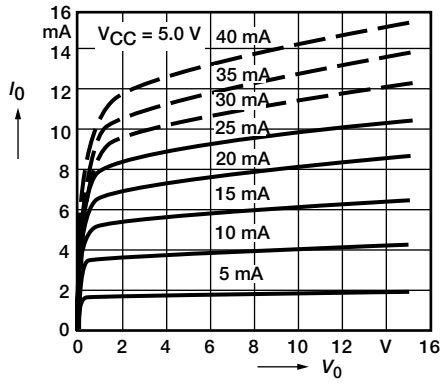


Fig. 5 - Output Characteristics-Output Current vs. Output Voltage

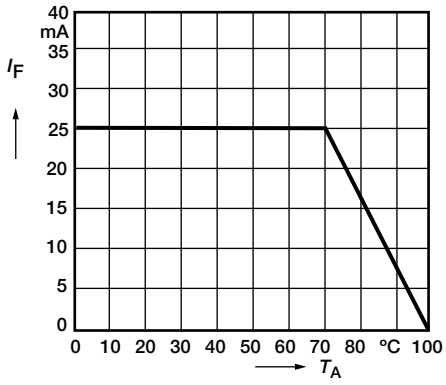


Fig. 6 - Permissible Forward Current of Emitting Diode vs. Ambient Temperature

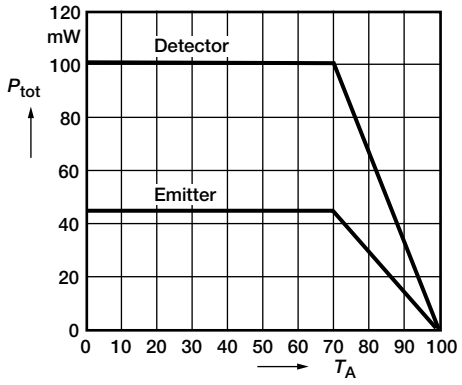


Fig. 7 - Permissible Total Power Dissipation vs. Ambient Temperature

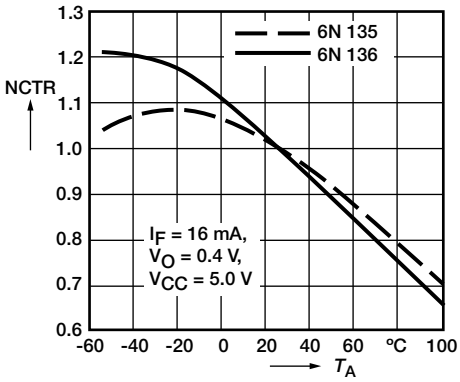


Fig. 10 - Current Transfer Ratio (Normalized) vs. Ambient Temperature

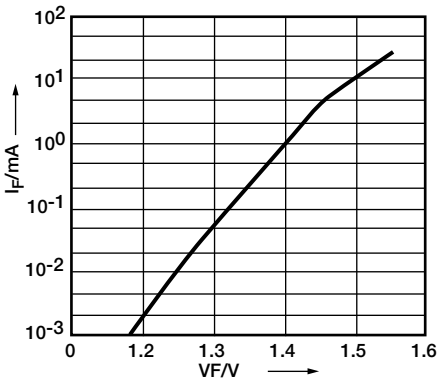


Fig. 8 - Forward Current of Emitting Diode vs. Forward Voltage

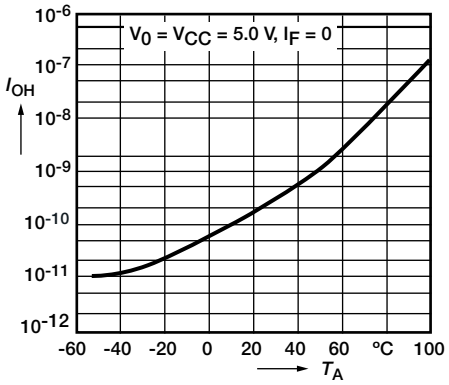


Fig. 11 - Output Current (High) vs. Ambient Temperature

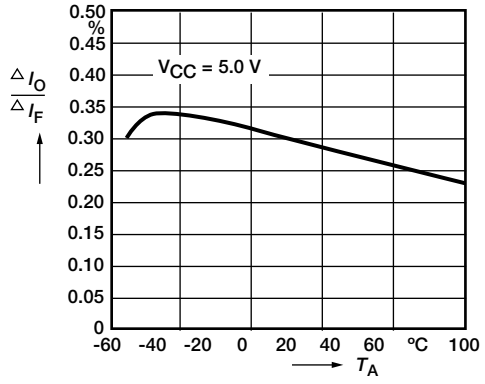


Fig. 9 - Small Signal Transfer Ratio vs. Forward Current

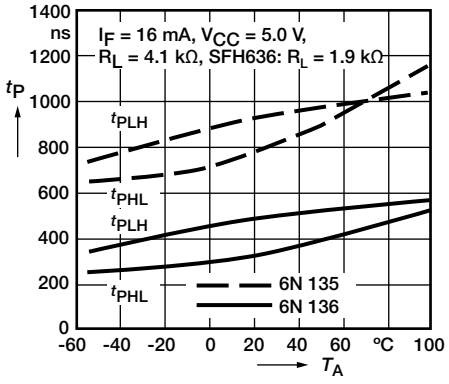


Fig. 12 - Delay Times vs. Ambient Temperature

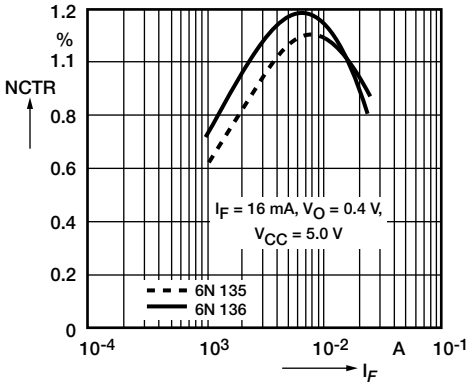
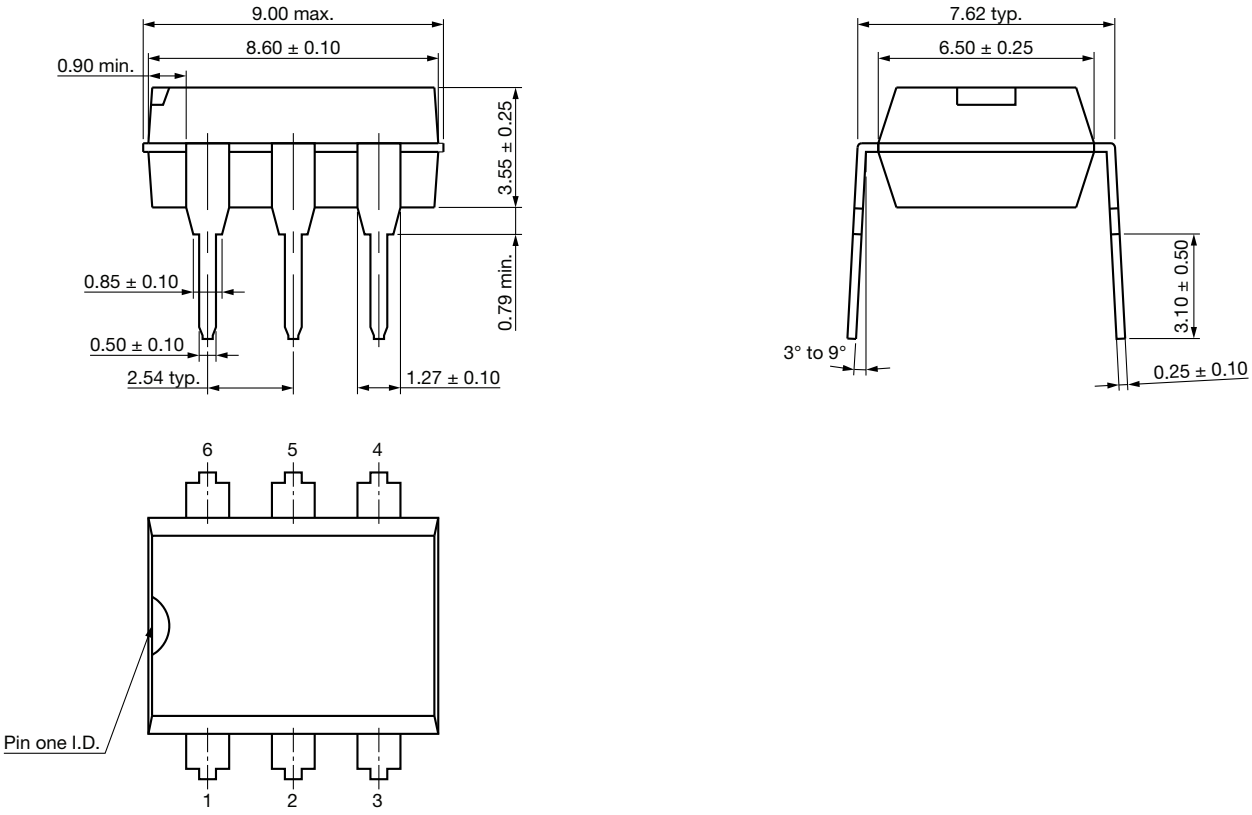


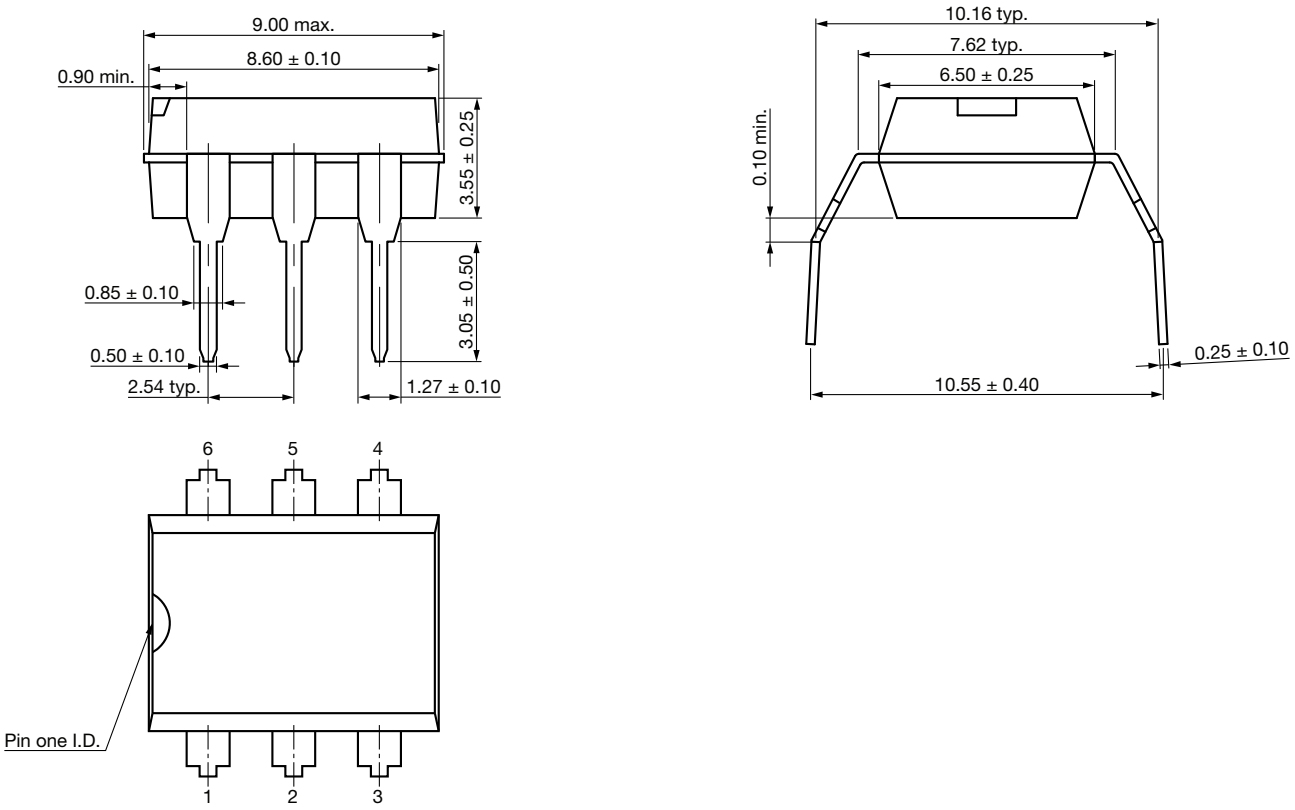
Fig. 13 - Current Transfer Ratio (Normalized) vs. Forward Current

PACKAGE DIMENSIONS in inches (millimeters)

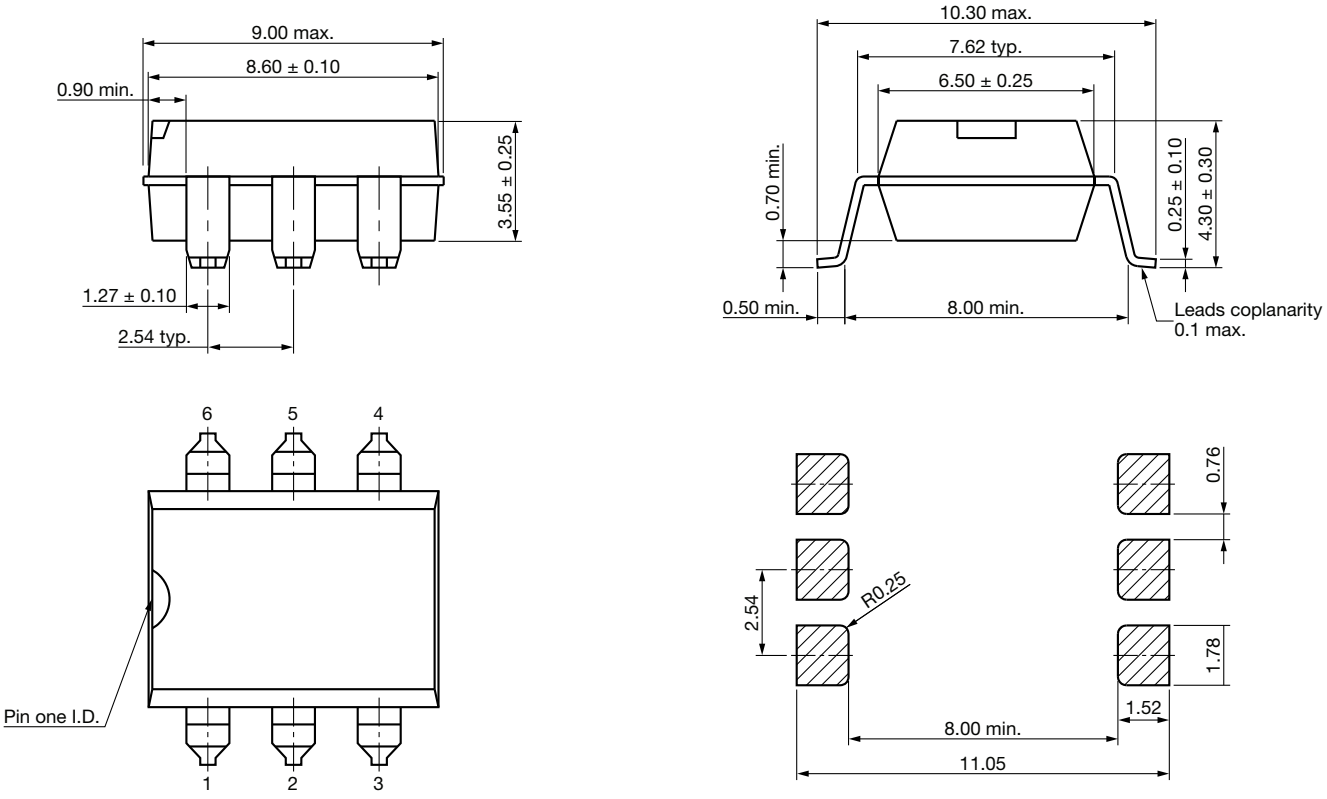
DIP-6



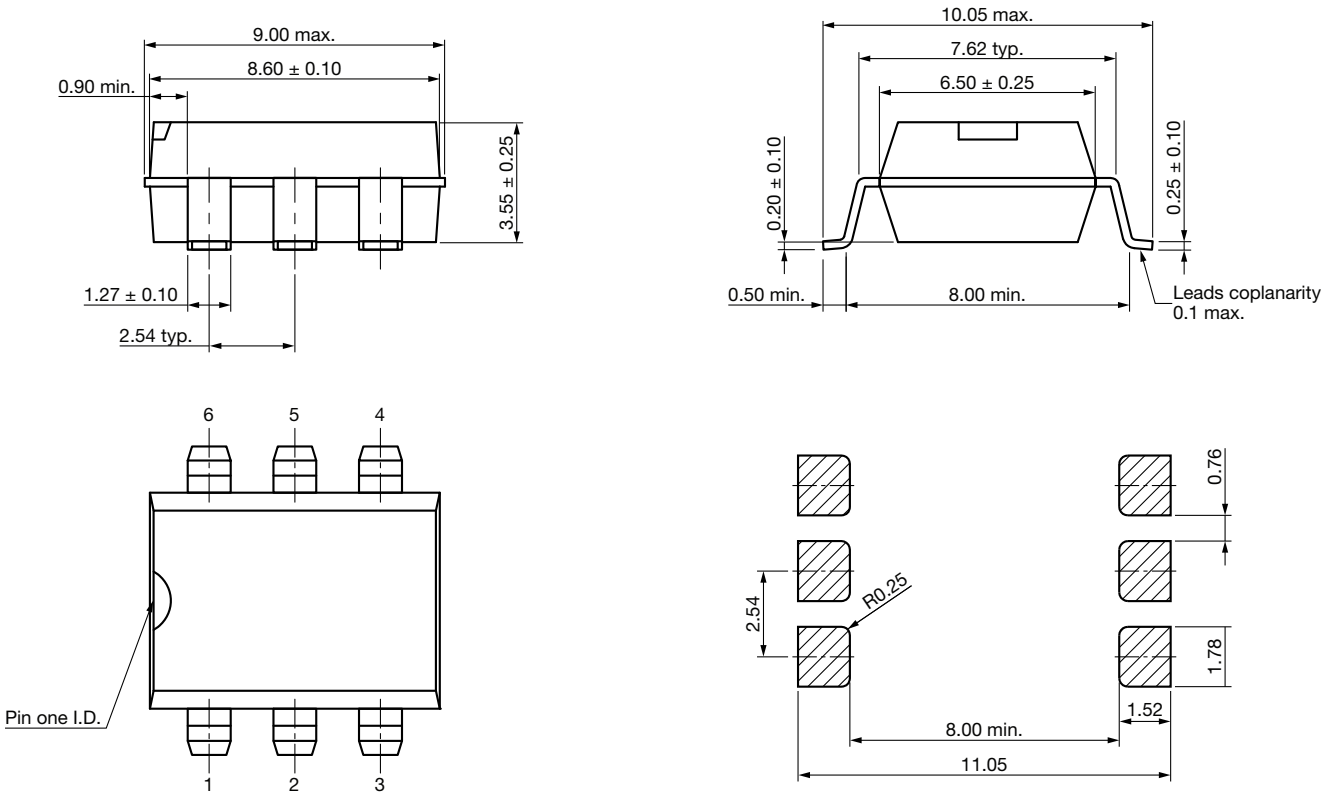
DIP-6, Option 6



SMD-6, Option 7



SMD-6, Option 9



SOLDER PROFILES

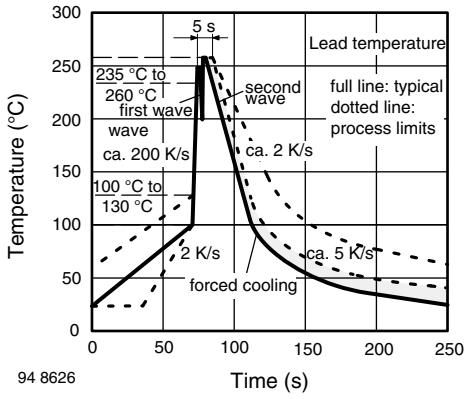


Fig. 14 - Wave Soldering Double Wave Profile According to J.STD-020 for DIP Devices

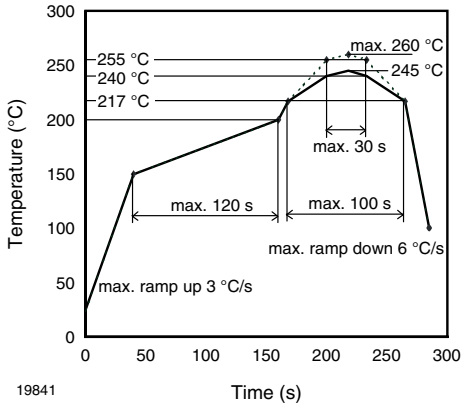


Fig. 15 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020 for SMD Devices

HANDLING AND STORAGE CONDITIONS

ESD level: HBM class 2

Floor life: unlimited

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

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

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