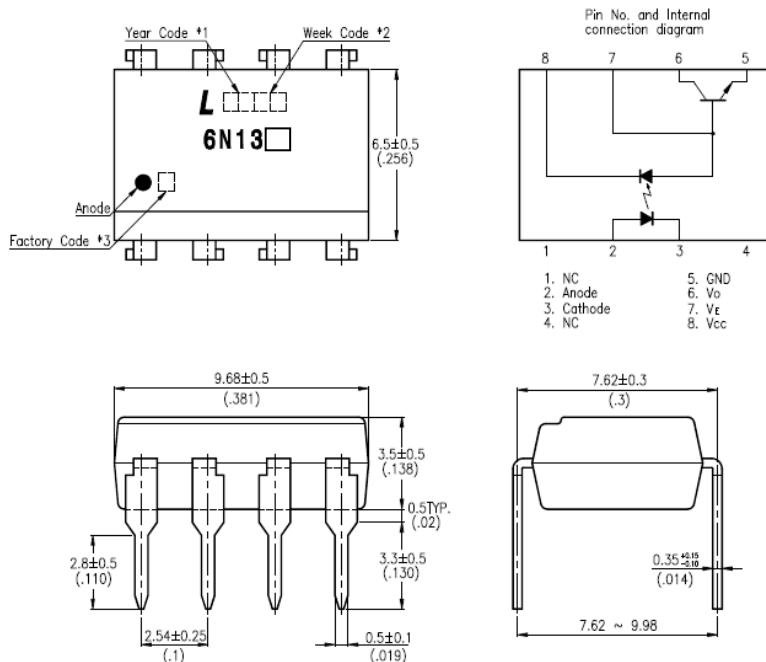
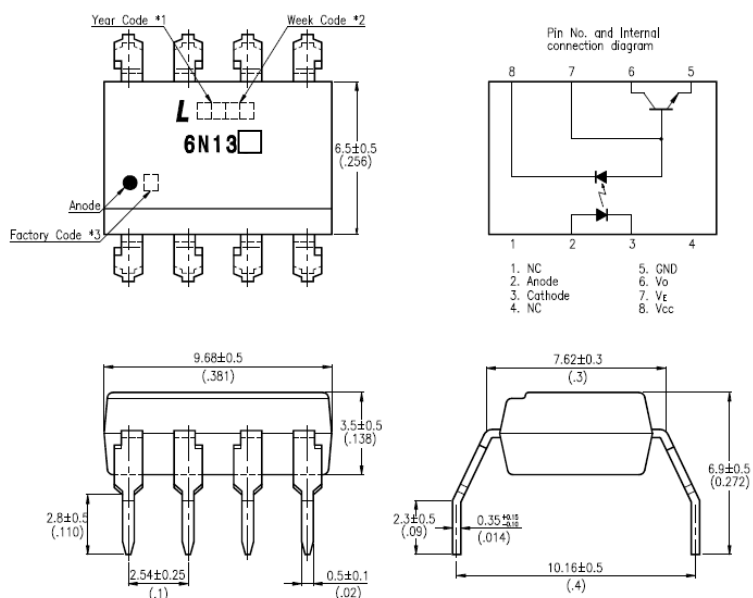


OUTLINE DIMENSIONS

6N135 / 6N136



6N135M / 6N136M



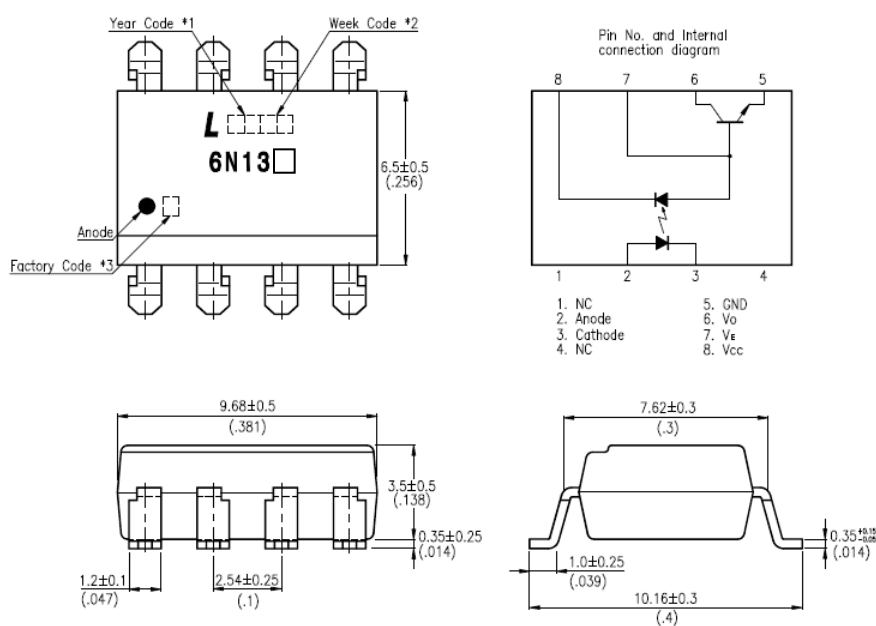
*1. Year date code.

*2. 2-digit work week.

*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand).

OUTLINE DIMENSIONS

6N135S / 6N136S



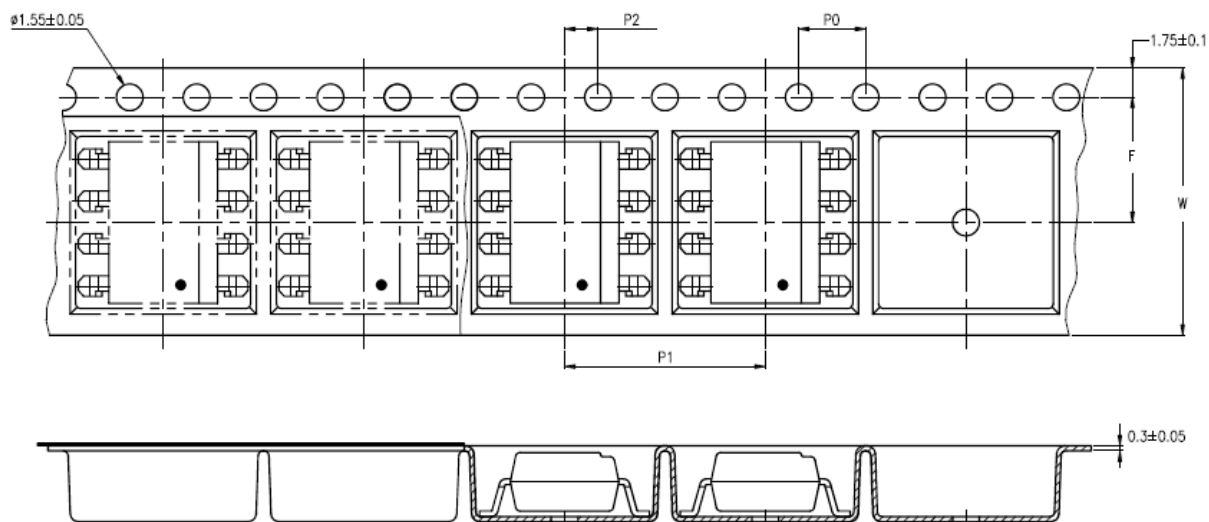
*1. Year date code.

*2. 2-digit work week.

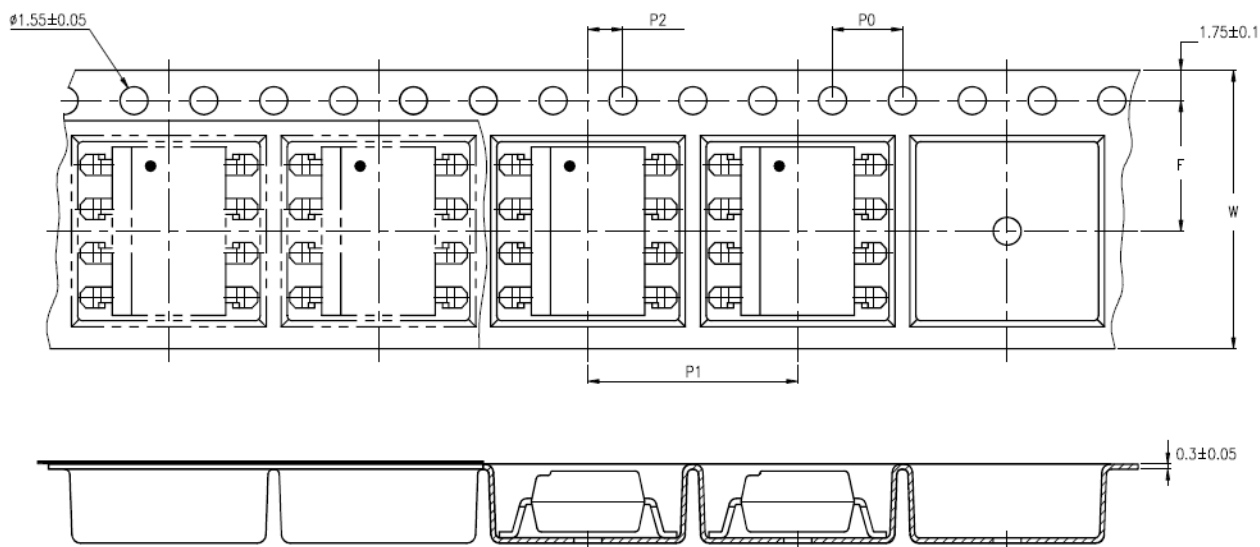
*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand).

TAPING DIMENSIONS

6N135S-TA / 6N136S-TA



6N135S-TA1 / 6N136S-TA1



Description	Symbol	Dimensions in mm (inches)
Tape wide	W	16 ± 0.3 (.63)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F	7.5 ± 0.1 (.295)
Distance of compartment to compartment	P_1	2 ± 0.1 (.079)
		12 ± 0.1 (.472)

ABSOLUTE MAXIMUM RATING

(Ta = 25°C)

PARAMETER		SYMBOL	RATING	UNIT
INPUT	Forward Current	I _F	25	mA
	Reverse Voltage	V _R	5	V
	Power Dissipation	P	35	mW
OUTPUT	Supply Voltage	V _{CC}	-0.5 ~ +30	V
	Output Voltage	V _O	-0.5 ~ +20	V
	Emitter-base Reverse Voltage	V _{EBR}	0.5	V
	Average Output Current	I _O	8	mA
	Power Dissipation	P _O	100	mW
1	Isolation Voltage	V _{iso}	5000	V _{rms}
	Operating Temperature	T _{opr}	-40 ~ +100	°C
	Storage Temperature	T _{stg}	-55 ~ +125	°C
2	Soldering Temperature	T _{sol}	260	°C

Notes:

1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

2. For 10 Seconds

ELECTRICAL - OPTICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
	Input Forward Voltage	V_F	—	1.45	1.7	V	$T_A=25^\circ\text{C}$, $I_F=1.6\text{mA}$
	Input Forward Voltage Temperature Coefficient	$\Delta V_F / \Delta T_A$	—	-1.6	—	mV/ $^\circ\text{C}$	$I_F=16\text{mA}$
	Input Reverse Voltage	BV_R	5.0	—	—	V	$T_A=25^\circ\text{C}$, $I_R=10\mu\text{A}$
3	Current Transfer Ratio	CTR	7	—	50	%	$I_F=16\text{mA}$, $V_O=0.4\text{V}$, $V_{CC}=4.5\text{V}$
	6N135 6N136		19	—	50		
	Logic Low (0) Output Voltage	V_{OL}	—	—	0.4	V	$I_F=16\text{mA}$, $I_O=1.1\text{mA}$, $V_{CC}=4.5\text{V}$
				—	0.5		$I_F=16\text{mA}$, $I_O=0.8\text{mA}$, $V_{CC}=4.5\text{V}$
				—	0.4		$I_F=16\text{mA}$, $I_O=3\text{mA}$, $V_{CC}=4.5\text{V}$
	Logic High (1) Output Current	I_{OH}	—	—	0.5	μA	$I_F=0$, $V_{CC}=V_O=5.5\text{V}$, $T_A = 25^\circ\text{C}$
				—	1		$I_F=0$, $V_{CC}=V_O=15\text{V}$ $T_A = 25^\circ\text{C}$
				—	50		$I_F=0$, $V_{CC}=V_O=15\text{V}$
4	Logic Low (0) Supply Current	I_{CCL}	—	—	200	μA	$I_F=16\text{mA}$, $V_{CC}=15\text{V}$ $V_O=\text{open}$
4	Logic High (1) Supply Current	I_{CCH}	—	—	1	μA	$I_F=0$, $V_{CC}=15\text{V}$, $V_O=\text{open}$, $T_A = 25^\circ\text{C}$
			—	—	2		$I_F=0$, $V_{CC}=15\text{V}$, $V_O=\text{open}$

** All typical at $T_A = 25^\circ\text{C}$

SWITCHING SPECIFICATIONS (AC)

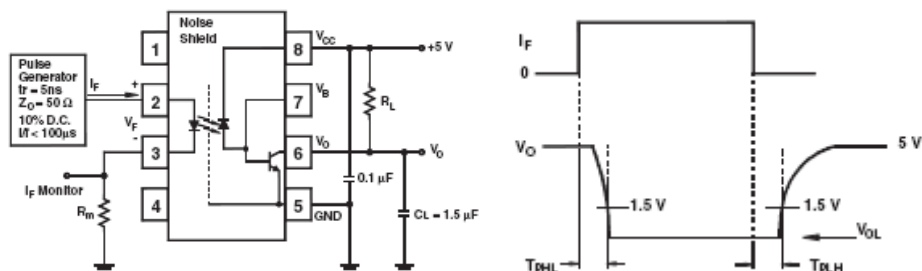
 ($T_A = 0 \sim 70^\circ\text{C}$, $V_{CC} = 5\text{V}$, unless otherwise specified)

PARAMETER		SYM.	MIN.	TYP.	MAX.		UNIT	CONDITIONS	
					T _A =25°C				
4	Propagation Delay time to Logic Low Output (1)→(0)	t _{PHL}	6N135	—	—	1.5		μs	IF = 16mA, R _L = 4.1kΩ (7)
				—	—		2		
			6N136	—	—	0.8		μs	IF = 16mA, R _L = 1.9kΩ (8)
				—	—		1.0		
4	Propagation Delay time to Logic High Output (0)→(1)	t _{PLH}	6N135	—	—	1.5		us	IF = 16mA, R _L = 4.1kΩ (7)
				—	—		2		
			6N136	—	—	0.8		us	IF = 16mA, R _L = 1.9kΩ (8)
				—	—		1		
5	Instantaneous common mode rejection at high logic output (1)	CM _{Hi}	—	1000	—		V / μs	I _F =0, V _{CM} =10V _{P-P} , RL=4.1kΩ RL=1.9kΩ	
5	Instantaneous common mode rejection at low logic output (0)	CM _L	—	1000	—		V / μs	I _F =16mA V _{CM} =10 _{P-P} , RL=4.1kΩ RL=1.9kΩ	

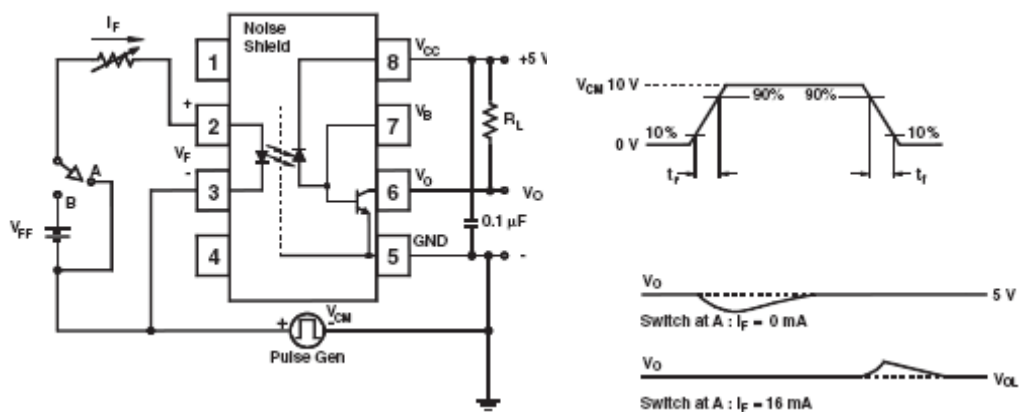
 ** All typical at $T_A = 25^\circ\text{C}$

SWITCHING TEST CIRCUITS (AC)

Switching Time Test Circuit



Common Mode Immunity Test Circuit



ISOLATION CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
6 Isolation Resistance (Input-output)	R_{I-O}	—	10^{12}	—		$T_a=25^{\circ}\text{C}$, $RH<45\%$, $V_{I-O}=500\text{V DC}$
6 Capacitance (Input-output)	C_{I-O}	—	0.6	—	pF	$f=1\text{MHz}$

** All typical at $T_A = 25^{\circ}\text{C}$

Notes,

1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.

- (2) The isolation voltage tester with zero-cross circuit shall be used.

- (3) The waveform of applied voltage shall be a sine wave.

2. For 10 Seconds

3. Current Transfer Ratio (CTR) is defined as the ration of output collector current, I_o , to the forward LED input current, I_F , times 100%.

4. Add a 0.1 μF bypass capacitor connected between pin5 and pin8 is recommended.

5. Common transient immunity in logic high level is the maximum tolerance (positive) dV_{CM}/dt on the leading edge of the common mode pulse signal, V_{CM} , to assure that the output will remain in a logic high state (i.e., $V_o>2.0\text{V}$). Common mode transient immunity in a logic low level is the maximum tolerance (negative) dV_{CM}/dt on the teailing edge of the common mode pulse signal, V_{CM} , to assure that the output will remain in a logic low state (i.e., $V_o<0.8\text{V}$).

6. Device considered a two terminal device. Pins 1, 2, 3 and 4 shorted together and Pins 5, 6, 7 and 8 shorted together.

7. The 4.1 $\text{k}\Omega$ load represents 1 LSTTL unit load of 0.36mA and 6.1 $\text{k}\Omega$ pull up resistor.

8. The 1.9 $\text{k}\Omega$ load represents 1 TTL unit load of 1.6mA and 5.6 $\text{k}\Omega$ pull up resistor.

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- Do not immerse unit's body in solder paste.