



CNY17F-X Series

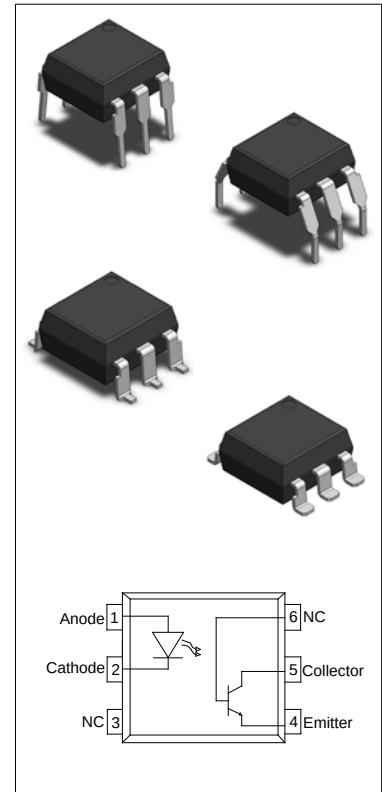
Rev.A.1.0

DESCRIPTION:

The CNY17F-X series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP6 package with different lead forming options. The products are widely used in switch mode power supplies, programmable controllers, household appliances and office equipment.

MAIN FEATURES

High isolation 5000 VRMS
CTR flexibility available see order information
DC input with transistor output
Operating temperature range -55°C to 110°C
REACH compliance
Halogen free
CQC approved
VDE approved
UL approved



ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
Input	Forward current	I_F	60	mA
	Peak forward current	I_{FP}	1 ^①	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	100	mW
Output	Collector-emitter Voltage	V_{CEO}	80	V
	Emitter-collector Voltage	V_{ECO}	7	V
	Collector current	I_C	50	mA
	Output power dissipation	P_O	150	mW
Total Power Dissipation		P_{tot}	250	mW
Isolation Voltage		V_{iso}	5000 ^②	Vrms
Operating Temperature		T_{opr}	-55~+110	°C
Storage Temperature		T_{stg}	-55~+150	°C

Soldering Temperature	T_{sol}	260	°C
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NOTE1: 100μs pulse, 100Hz frequency

NOTE2: AC for 1minute, R.H.=40~60%

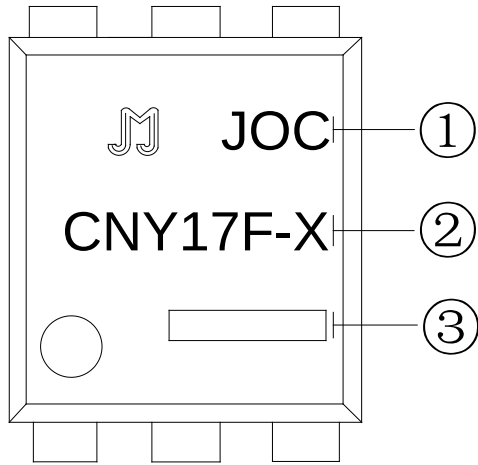
ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	$I_F=10mA$	-	1.27	1.4	V
			$I_F=20mA$	-	1.33	1.5	
	Reverse Current	I_R	$V_R=6V$	-	-	1	μA
	Input Capacitance	C_{in}	$V=0$, $f=1MHz$	-	10	-	pF
Output	Collector-Emitter dark current	I_{CEO}	$V_{CE}=20V$, $I_F=0$	-	-	100	nA
	Collector-Emitter breakdown voltage	BV_{CEO}	$I_C=0.1mA$ $I_F=0$	80	-	-	V
	Emitter-Collector breakdown voltage	BV_{ECO}	$I_E=0.1mA$ $I_F=0$	7	-	-	V
Transfer Characteristics	Current transfer ratio	CTR ^①	$I_F=10mA$ $V_{CE}=5V$	40	-	320	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=10mA$ $I_C=2.5mA$	-	-	0.3	V
	Isolation resistance	R_{IO}	DC500V 40~60%R.H.	10^{12}	10^{14}	-	Ω
	Floating Capacitance	C_{IO}	$V=0$, $f=1MHz$	-	0.5	1	pF
	Cut-off Frequency	f_c	$V_{CE}=5V$, $I_C=2mA$ $R_L=100Ω$, -3dB	-	80	-	kHz
	Rise Time	t_r	$V_{CC}=10V$, $I_C=2mA$ $R_L=100Ω$	-	3	10	μs
	Fall Time	t_f		-	4	10	μs
	Response Time	t_{on}		-	5	15	μs
		t_{off}		-	4	15	μs

NOTE1: Rank Table of Current Transfer Ratio (Temperature=25°C)

Grade Sign	Min. (%)	Max. (%)
1	40	80
2	63	125
3	100	200
4	160	320

ORDERING AND MARKING INFORMATION

MARKING INFORMATION			
		<p>① : Company Abbr. ② : Part Number & Rank ③ : Production Information Code</p>	
Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity –Outer box
DIP	60 Units/Tube	40 Tubes/Inner box	5 Inner box/Outer box =12k Units
SMD	1200 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box =12k Units

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

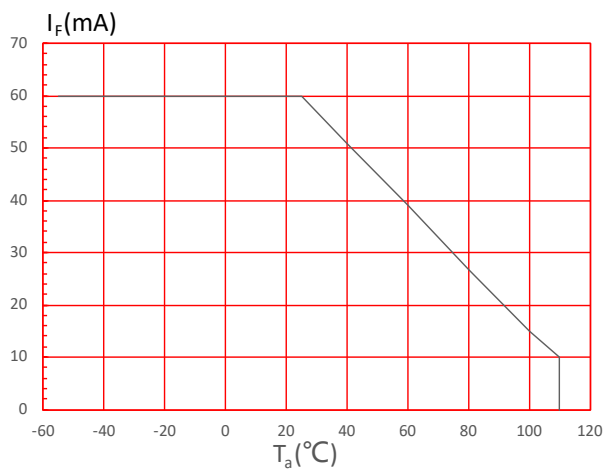


FIG.2: Collector Power Dissipation vs. Ambient Temperature

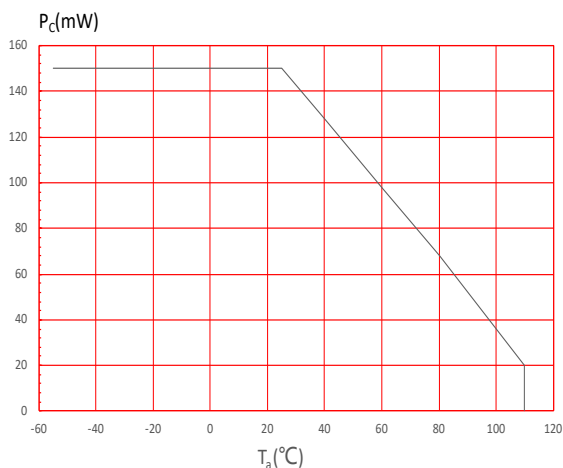


FIG.3: Forward Current vs. Forward Voltage

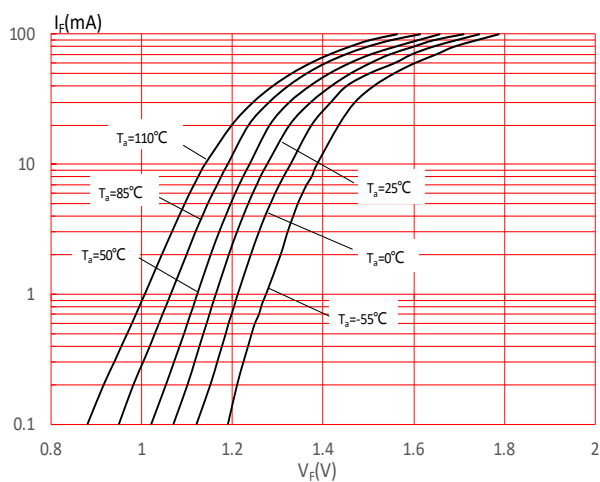


FIG.4: Normalized Collector Dark Current vs. Ambient Temperature

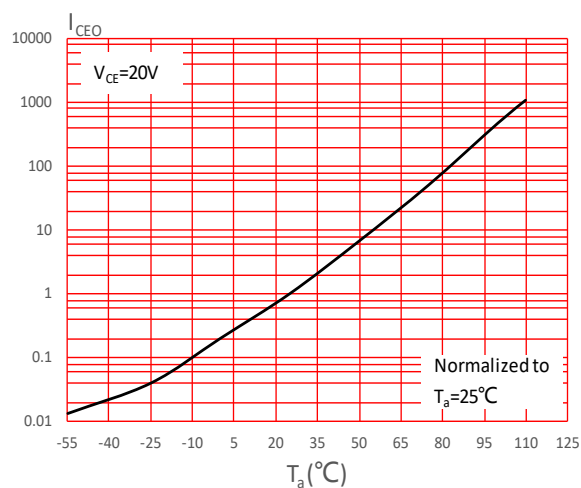


FIG.5: Collector Current vs. Collector-emitter Voltage

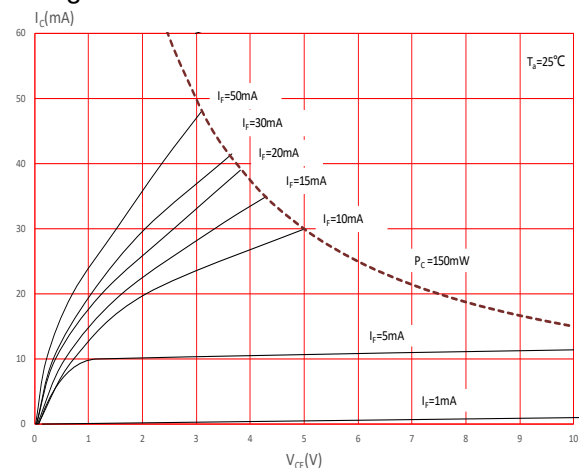


FIG.6: Normalized Current Transfer Ratio vs. Forward Current

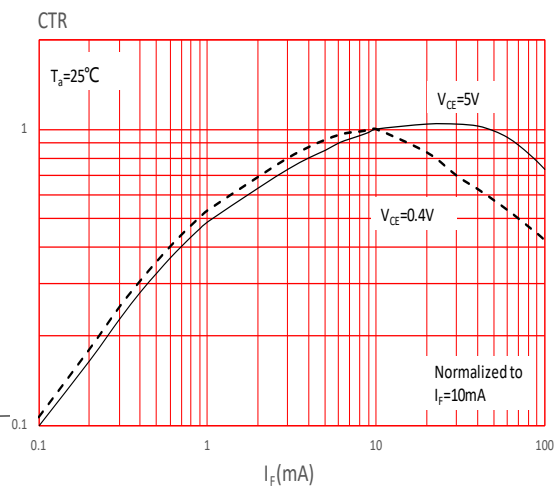


FIG.7: Normalized Current Transfer Ratio vs. Ambient Temperature

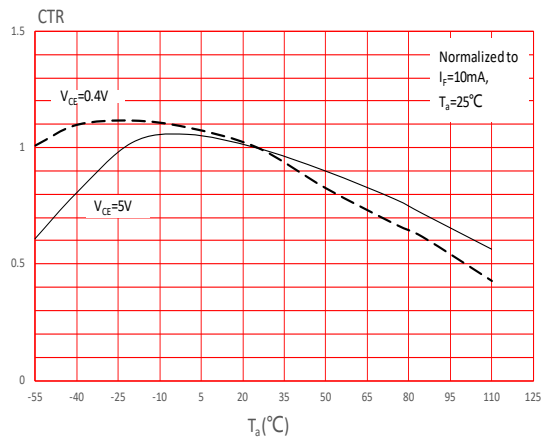


FIG.8: Normalized Collector-emitter Saturation Voltage vs. Ambient Temperature

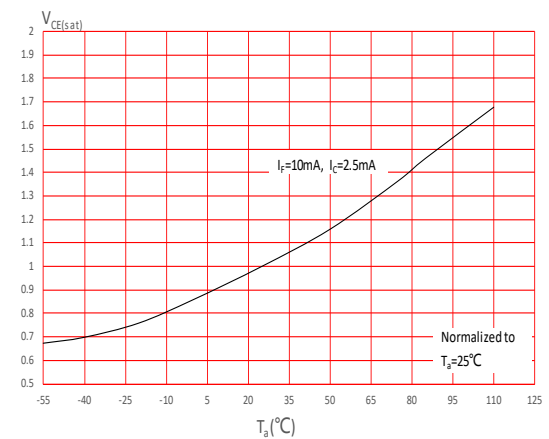


FIG.9: Response Time vs. Load Resistance

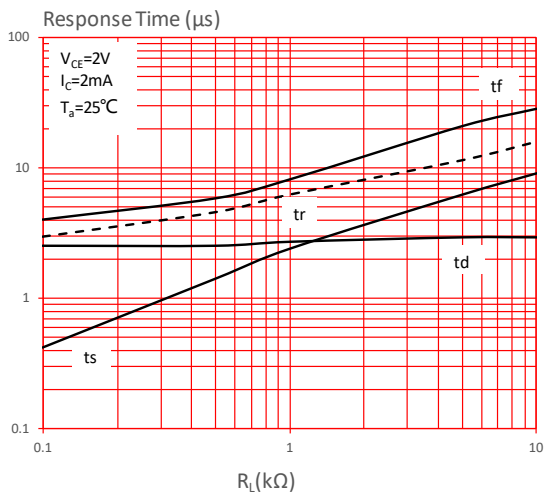
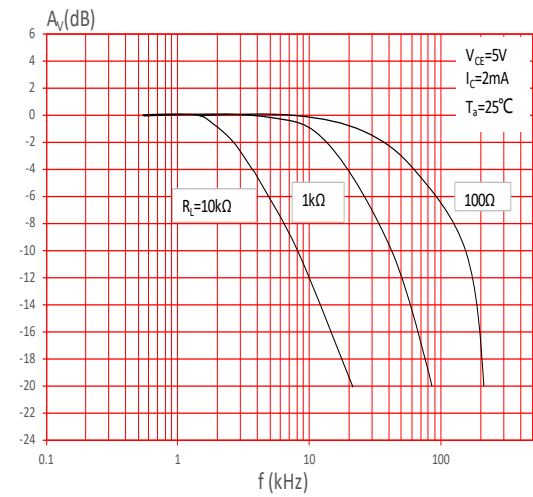


FIG.10: Frequency Response



Test Circuits

FIG.11: Test Circuits of Response Time

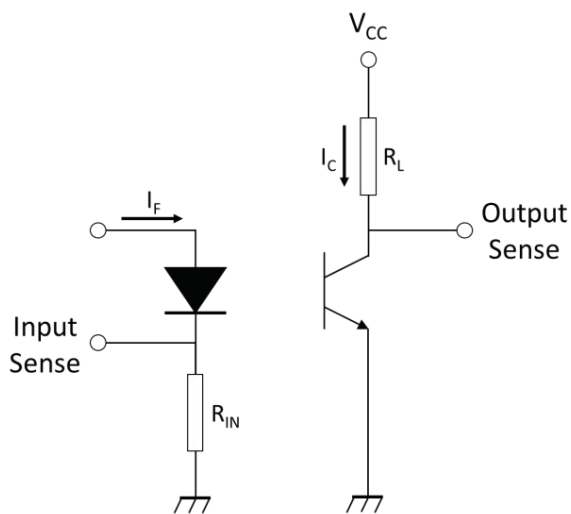


FIG.12: Curves of Response Time

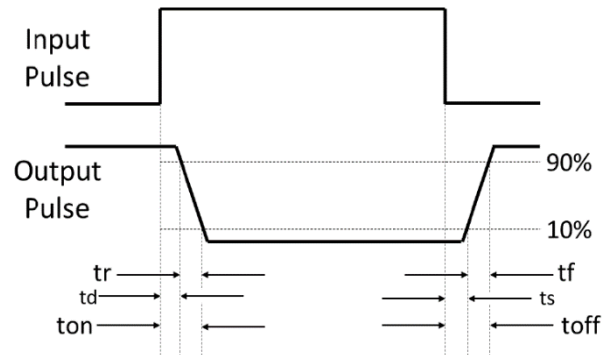
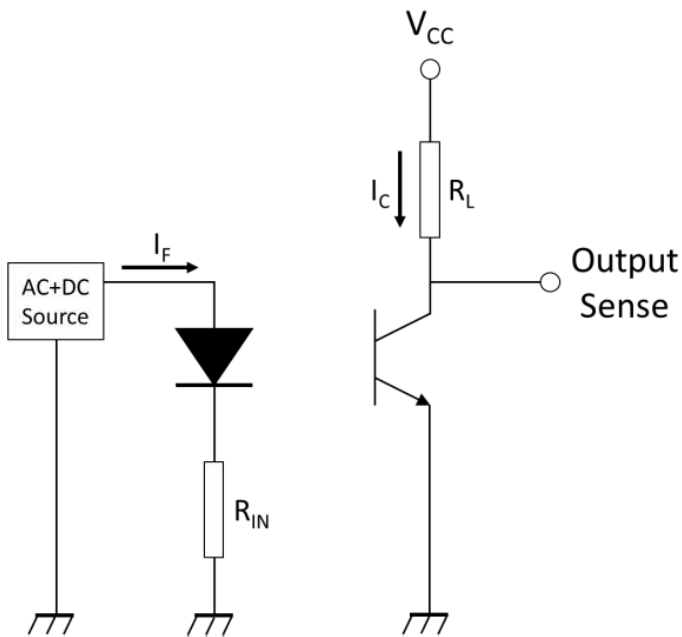
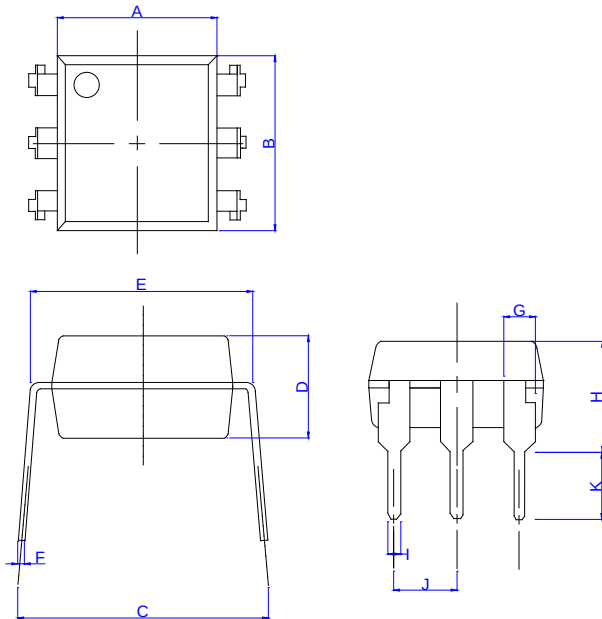


FIG.13: Test Circuits of Frequency Response



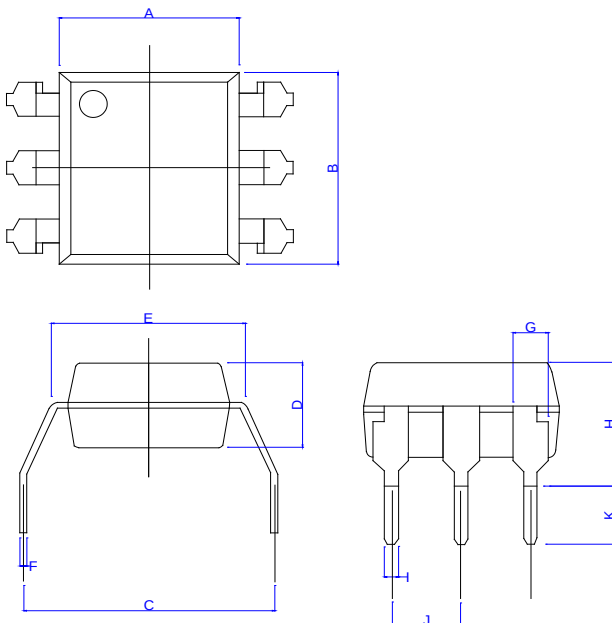
Package Dimension (Unit: mm)

Standard DIP Type:



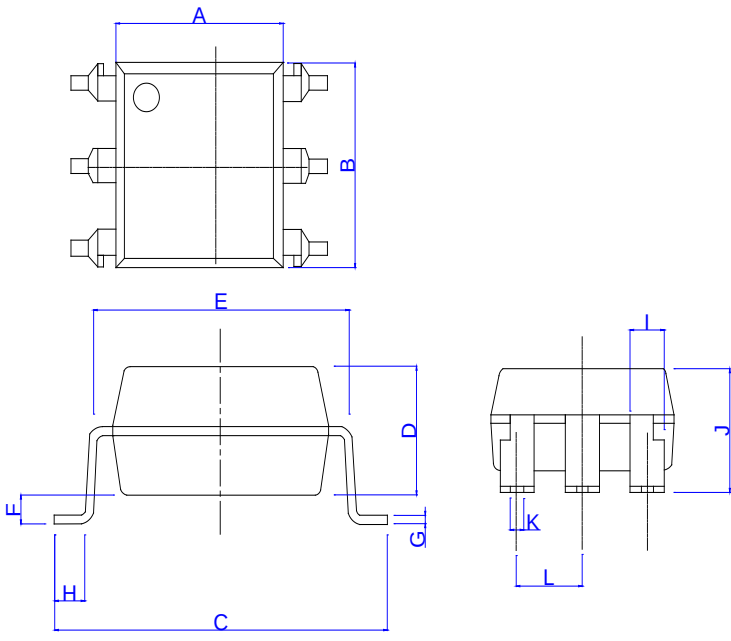
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.00		7.00	0.237		0.277
B	6.62		7.62	0.262		0.301
C	7.10		10.16	0.281		0.402
D	3.00		4.00	0.119		0.158
E	7.32		7.92	0.289		0.313
F	0.16		0.36	0.006		0.014
G	0.90		1.50	0.036		0.059
H	3.50		4.80	0.138		0.190
I	0.40		0.60	0.016		0.024
J	2.29		2.79	0.091		0.110
K	2.40		3.40	0.095		0.134

Option M Type:



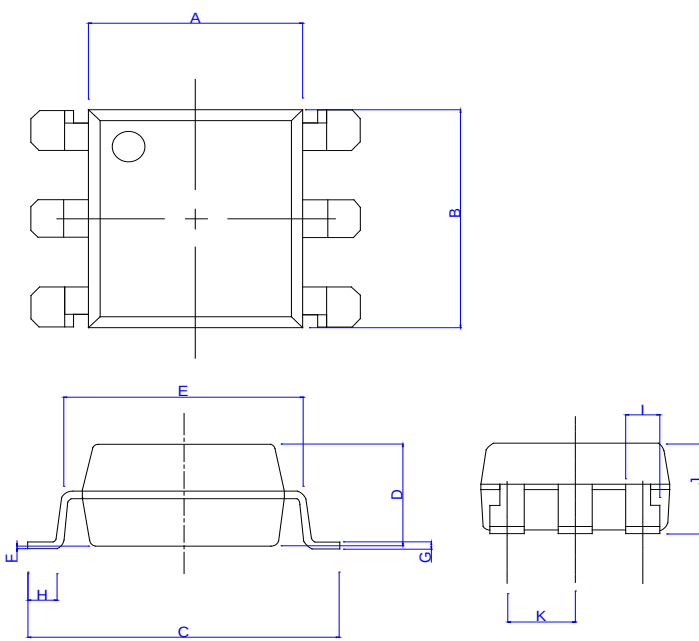
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.00		7.00	0.237		0.277
B	6.82		7.42	0.270		0.293
C	9.66		10.66	0.382		0.421
D	3.00		4.00	0.119		0.158
E	7.32		7.92	0.289		0.313
F	0.16		0.36	0.006		0.014
G	0.90		1.50	0.036		0.059
H	4.28		4.88	0.169		0.193
I	0.40		0.60	0.016		0.024
J	2.29		2.79	0.091		0.110
K	2.00		2.60	0.079		0.103

Option S Type:



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.30		6.70	0.249		0.265
B	6.92		7.32	0.274		0.289
C	9.85		10.45	0.389		0.413
D	3.30		3.70	0.130		0.146
E	7.32		7.92	0.289		0.313
F		0.80			0.032	
G		0.25			0.010	
H		0.80			0.032	
I	1.20		1.40	0.047		0.055
J	4.00		4.60	0.158		0.182
K		0.50			0.020	
L		2.54			0.100	

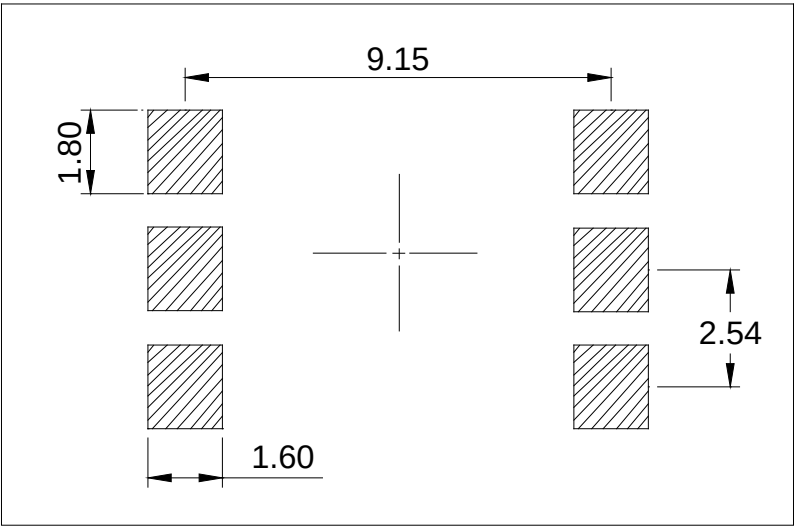
Option SL Type:



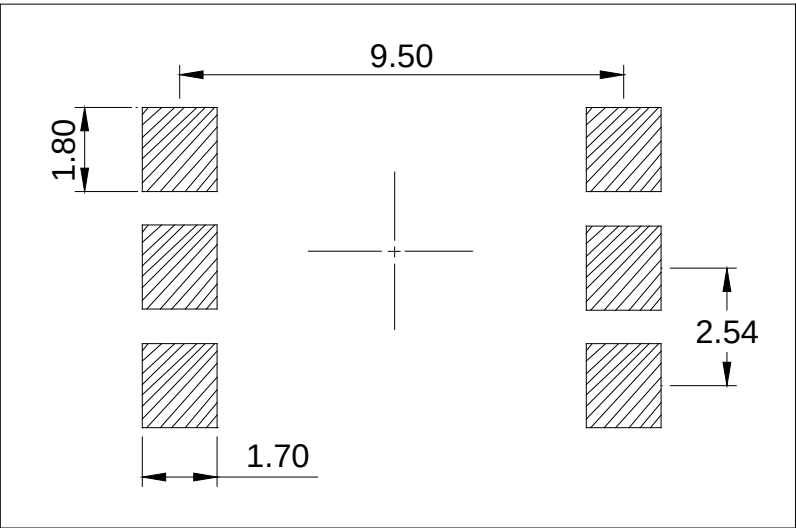
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.00		7.00	0.237		0.277
B	6.62		7.62	0.262		0.301
C	9.50		10.45	0.375		0.413
D	3.00		4.00	0.119		0.158
E	7.32		7.92	0.289		0.313
F	0.00		0.65	0.000		0.026
G	0.16		0.36	0.006		0.014
H	0.60		1.40	0.024		0.055
I	0.90		1.50	0.036		0.059
J	3.30		4.35	0.130		0.172
K	0.40		0.60	0.016		0.024
L	2.29		2.79	0.091		0.110

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

Option S

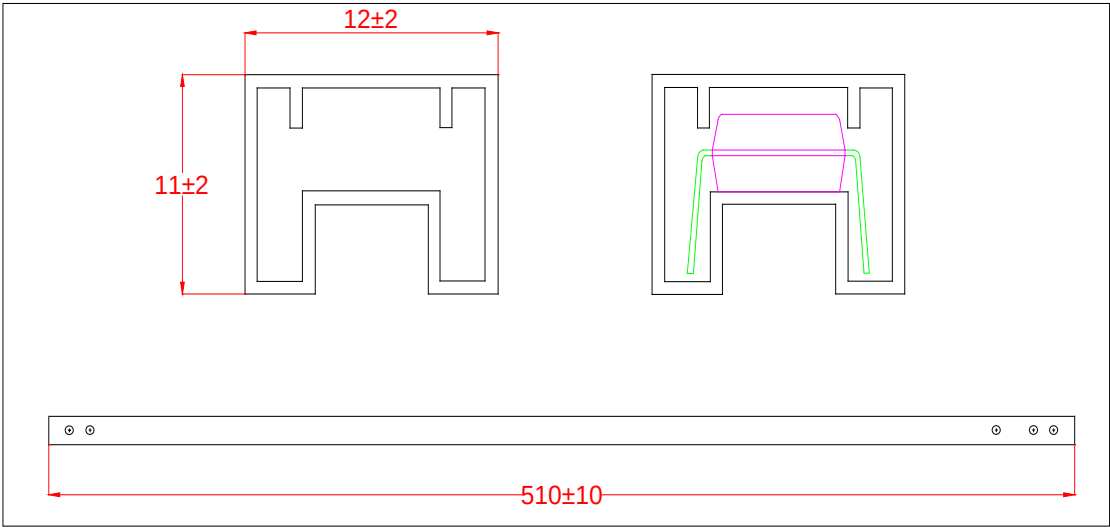


Option SL

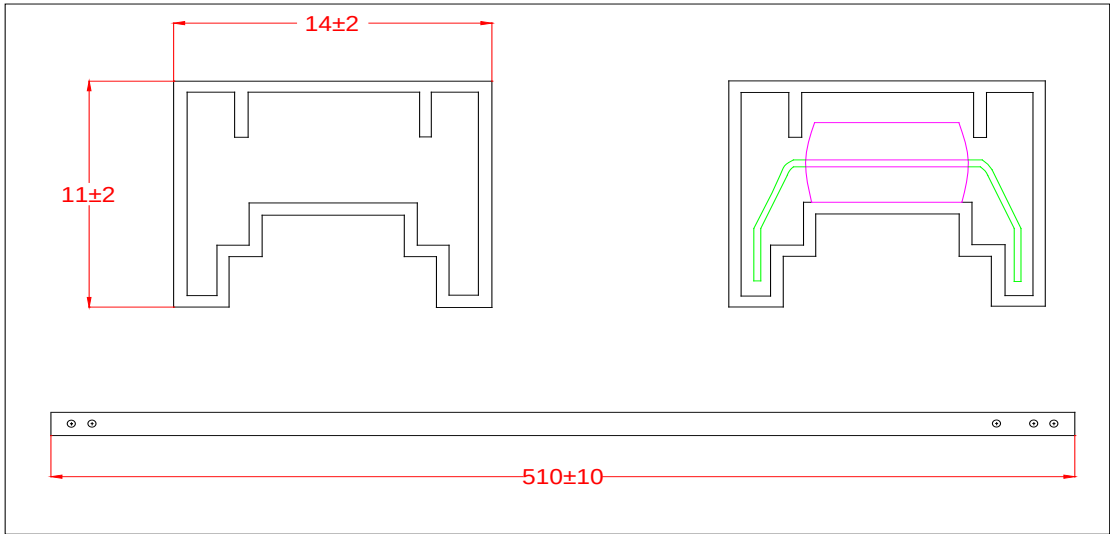


TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP

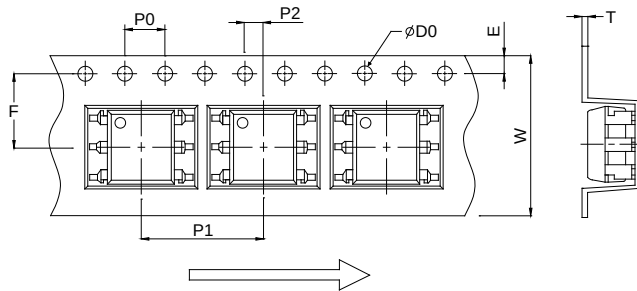


Option M

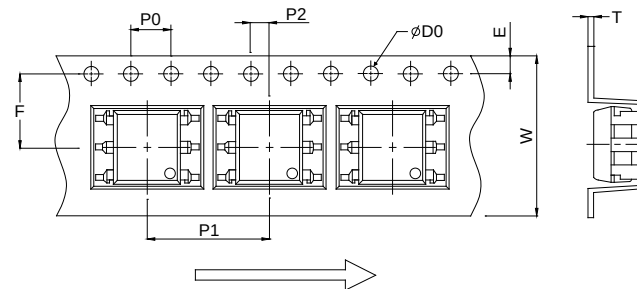


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S(T1)

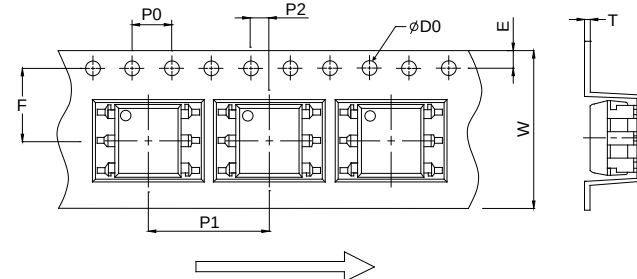


Option S(T2)

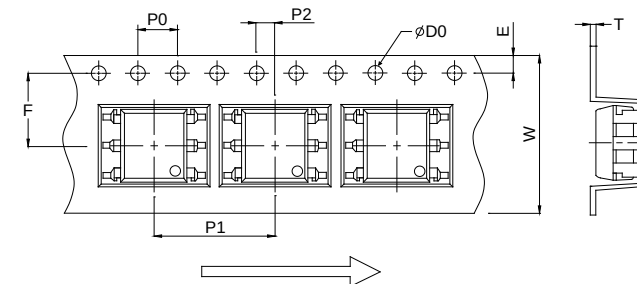


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.65		0.059	0.065
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.25	0.35	0.45	0.010	0.014	0.018
W	15.70	16.00	16.30	0.618	0.630	0.642

Option SL(T1)

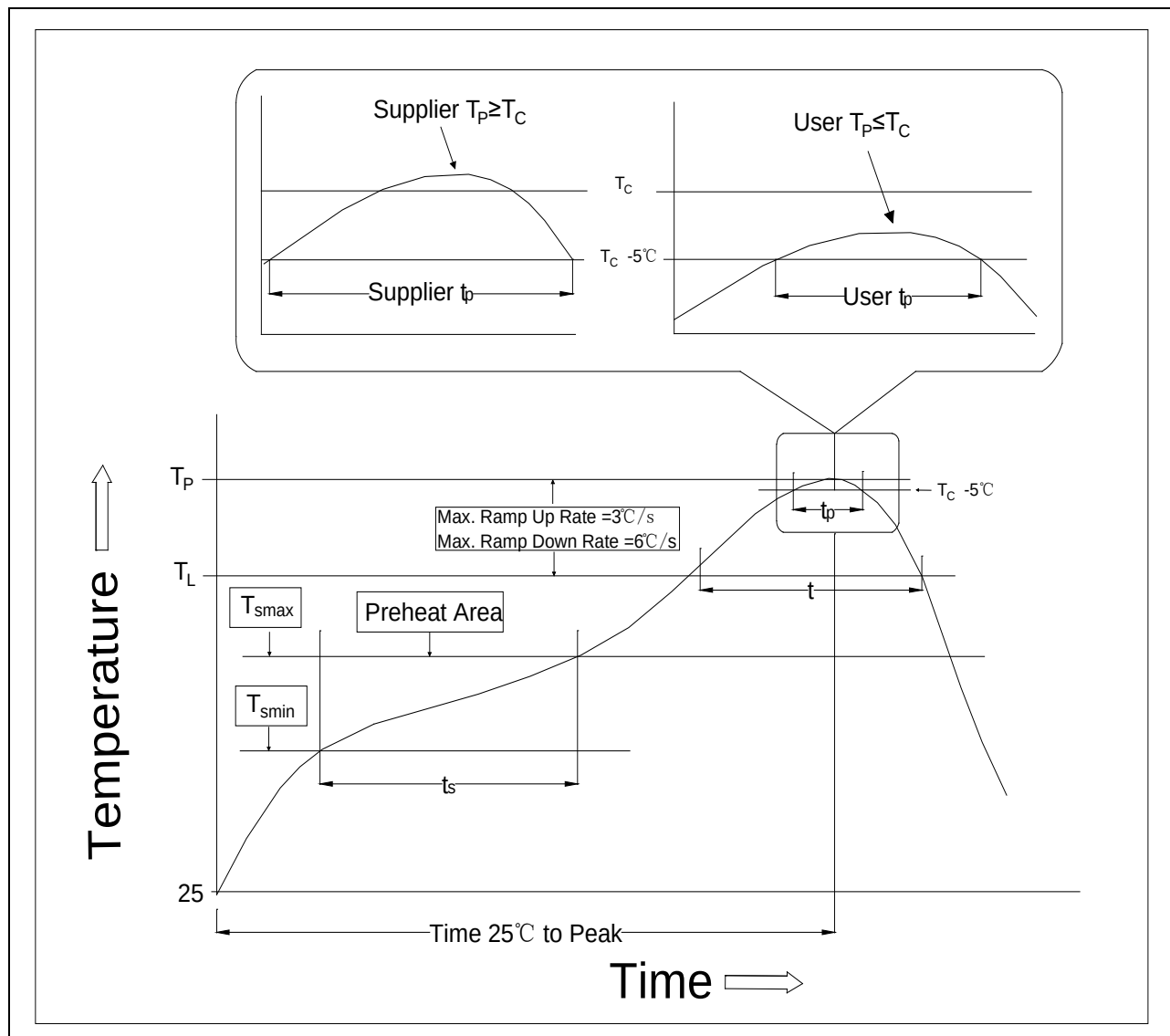


Option SL(T2)



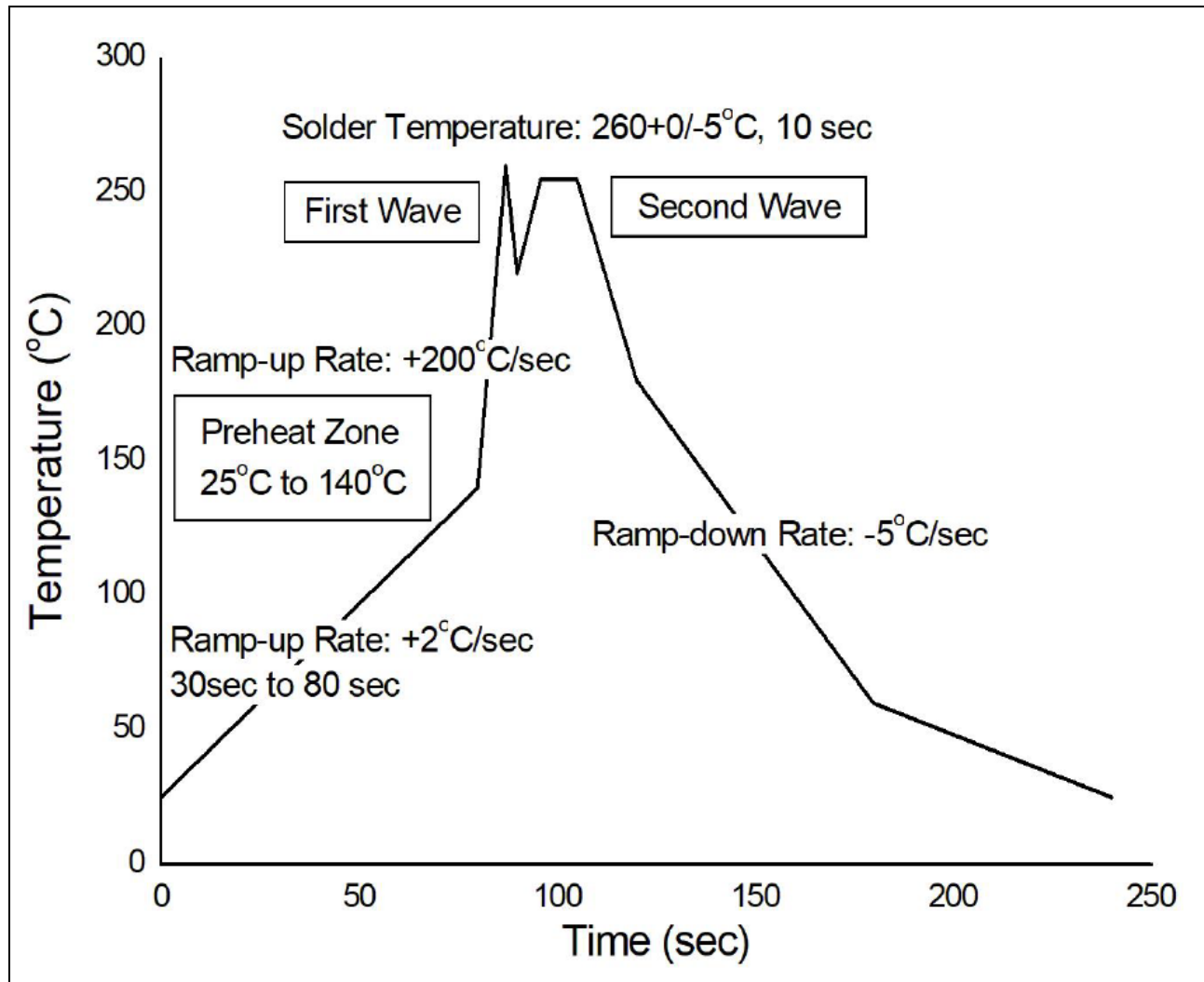
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.35	0.40	0.45	0.014	0.016	0.018
W	15.70	16.00	16.30	0.618	0.630	0.642

REFLOW INFORMATION



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	100°C	150°C
Temperature Max. (T_{smax})	150°C	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidus Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C+0°C/-5°C	260°C+0°C/-5°C
Time (t_P) within 5°C of 260°C	10 seconds	10 seconds
Ramp-down Rate (T_P to T_L)	3-6°C/second	3-6°C/second
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

WAVE SOLDERING



HAND SOLDERING BY SOLDERING IRON

Soldering Temperature	360±5°C
Soldering Time	3s max.

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.
2. Avoid direct contact between the epoxy body and any tools or surfaces exceeding its maximum storage temperature.
3. Application of pressure on the epoxy body is prohibited at elevated temperatures. In specific scenarios, any applied force must not exceed 2.5N.
4. Ensure the component has cooled to ambient temperature before proceeding with any subsequent manufacturing steps.
5. The component has a shelf life of one year when stored under standard conditions.
6. Recommend storage Temp.: 0~40°C;
Recommend storage humidity: <60%;
MSL level: MSL 1

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