



H11AAX

6Pin Phototransistor Coupler

Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- DC input with transistor output
- Temperature range - 55 °C to 110 °C

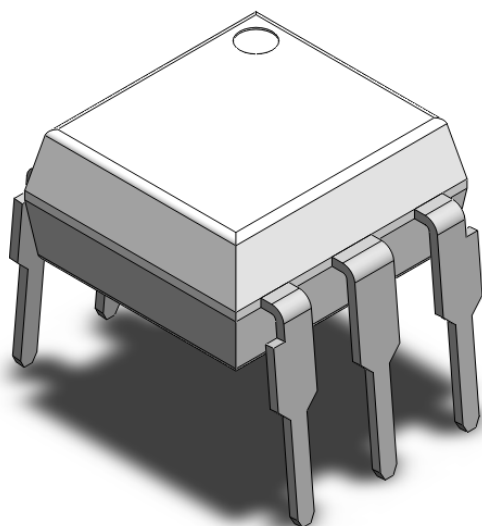
Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface
- AC Line Monitor

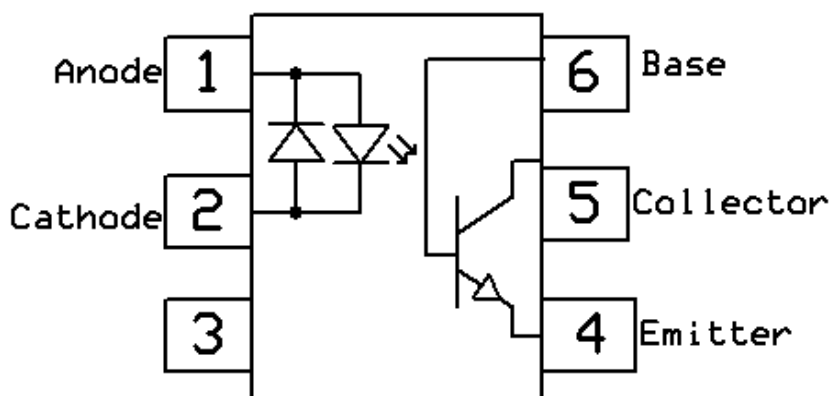
Description

The H11AAX series consists of a phototransistor optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with bending options.

Package Outline



Schematic



Note: Different bending options available. See package dimension.



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Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	5000	V _{RMS}	
T _{OPR}	Operating temperature	-55 ~ +110	°C	
T _{STG}	Storage temperature	-55 ~ +125	°C	
T _{SOL}	Soldering temperature	260	°C	
Emitter				
I _F	Forward current	60	mA	
I _{F(TRANS)}	Peak transient current (≤1μs P.W,300pps)	1	A	
V _R	Reverse voltage	6	V	
P _D	Power dissipation	100	mW	
Detector				
P _D	Power dissipation	150	mW	
B _{VCEO}	Collector-Emitter Breakdown Voltage	80	V	
B _{VCB0}	Collector-Base Breakdown Voltage	80	V	
B _{VECO}	Emitter-Collector Breakdown Voltage	7	V	
B _{VEBO}	Emitter-Base Breakdown Voltage	7	V	



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

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	$I_F=10\text{mA}$		1.2	1.4	V	
C_{IN}	Input Capacitance	$f=1\text{kHz}$	-	45	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C=100\mu\text{A}$	80	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E=1\text{mA}$	7	-	-	V	
$B_{V_{CBO}}$	Collector-Base Breakdown	$I_C=100\mu\text{A}$	80	-	-	V	
$B_{V_{EBO}}$	Emitter-Base Breakdown	$I_E=100\mu\text{A}$	7	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	$V_{CE}=10\text{V}, I_F=0\text{mA}$	-	-	45	nA	
I_{CBO}	Collector-Base Dark Current	$V_{CB}=10\text{V}, I_F=0\text{mA}$	-	-	20	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes	
CTR	Current Transfer Ratio	$I_F=\pm 10\text{mA}, V_{CE}=10\text{V}$	H11AA1	20	-	-	%	
			H11AA2	10	-	-		
			H11AA3	50	-	-		
			H11AA4	100	-	-		
$V_{CE(SAT)}$	Collector- Emitter Saturation Voltage	$I_F=\pm 10\text{mA}, I_C=0.5\text{mA}$	-	-	0.4	V		
	Symmetric CTR	$I_F=\pm 10\text{mA}, V_{CE}=10\text{V}$	0.5		2.0			
R_{IO}	Isolation Resistance	$V_{IO}=500V_{DC}$	1×10^{11}			Ω		
C_{IO}	Isolation Capacitance	$f=1\text{Mhz}$		0.25		pF		

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
T_{ON}	Turn On Time	$I_F=10\text{mA}, V_{CE}=10\text{V}, R_L=100\Omega$	-	-	9.8	μs	
T_{OFF}	Turn Off Time		-	-	9.8		
t_r	Rise Time		-	-	9.8		
t_f	Fall Time		-	-	9.8		



Typical Characteristic Curves

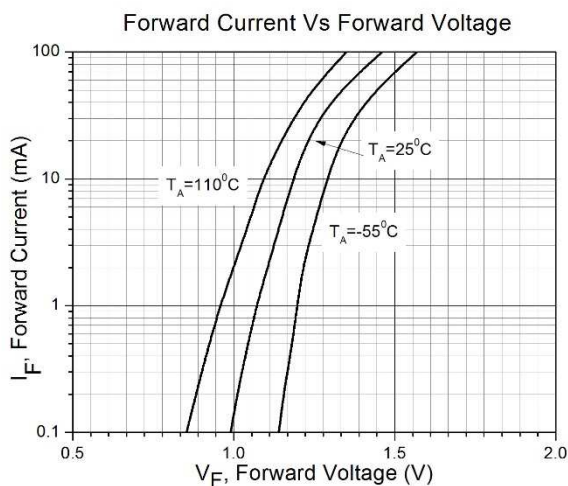


Figure 1

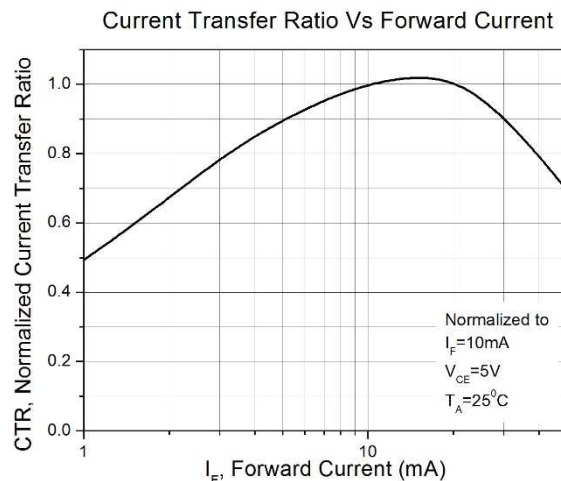


Figure 2

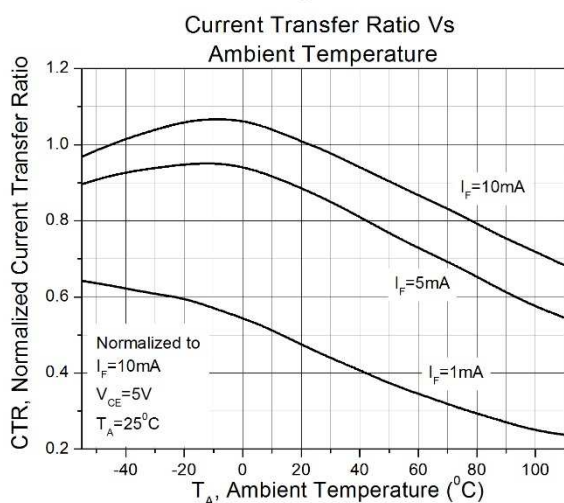


Figure 3

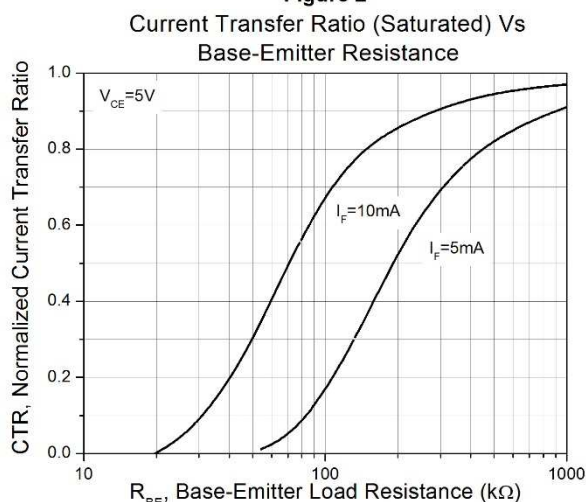


Figure 4

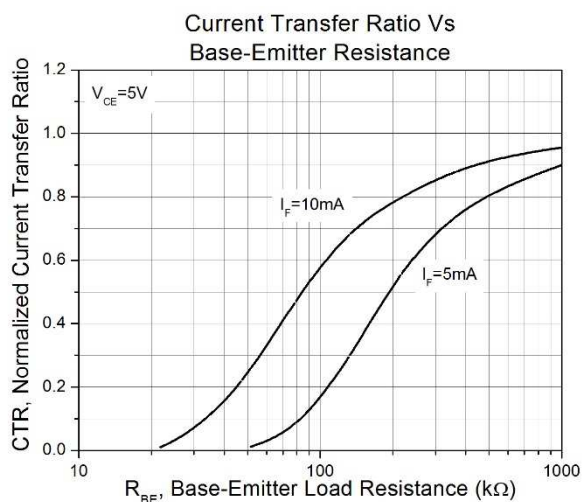


Figure 5

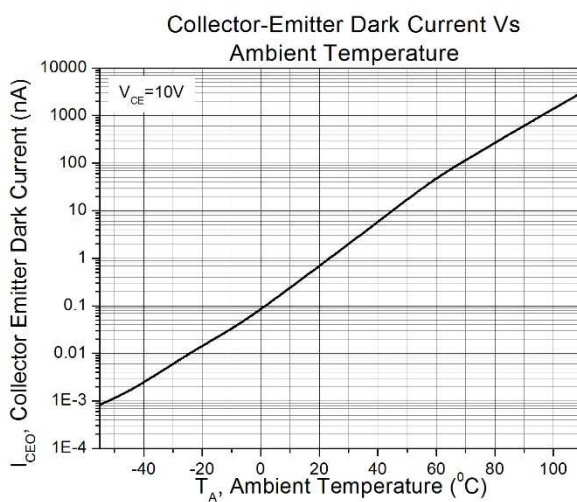


Figure 6



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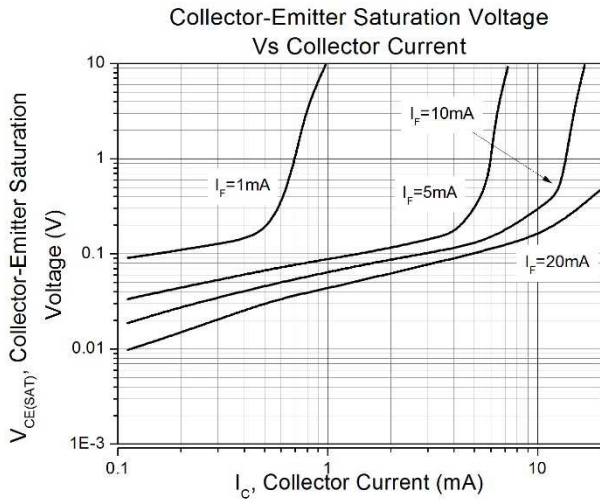


Figure 7

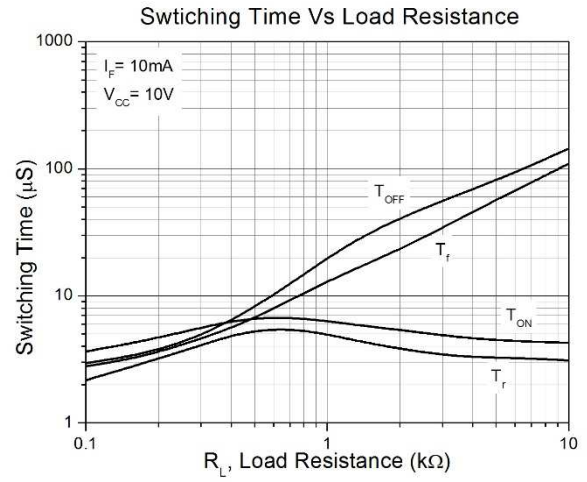


Figure 8

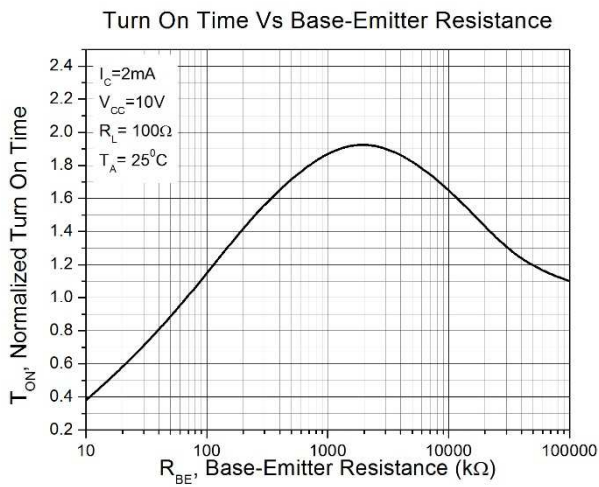


Figure 9

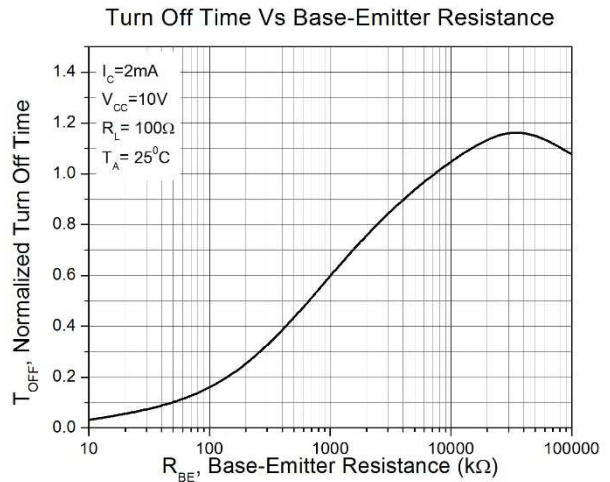


Figure 10

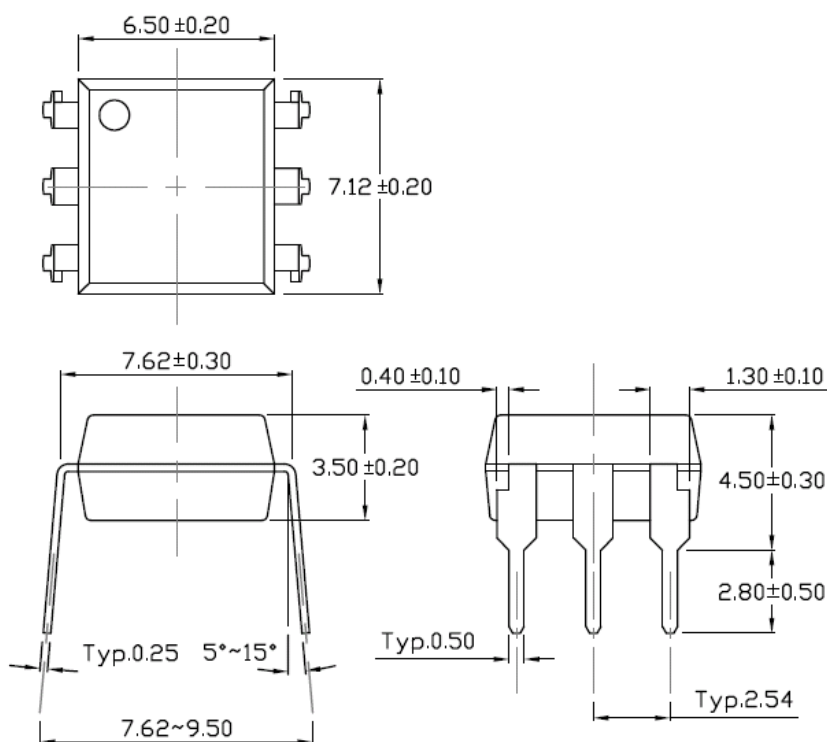


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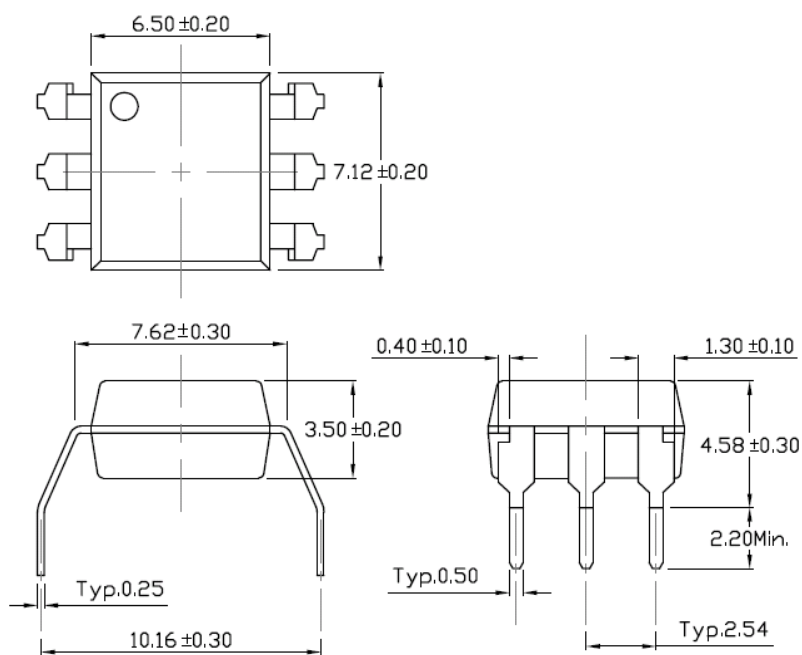
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Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



Wide Lead Forming – Through Hole

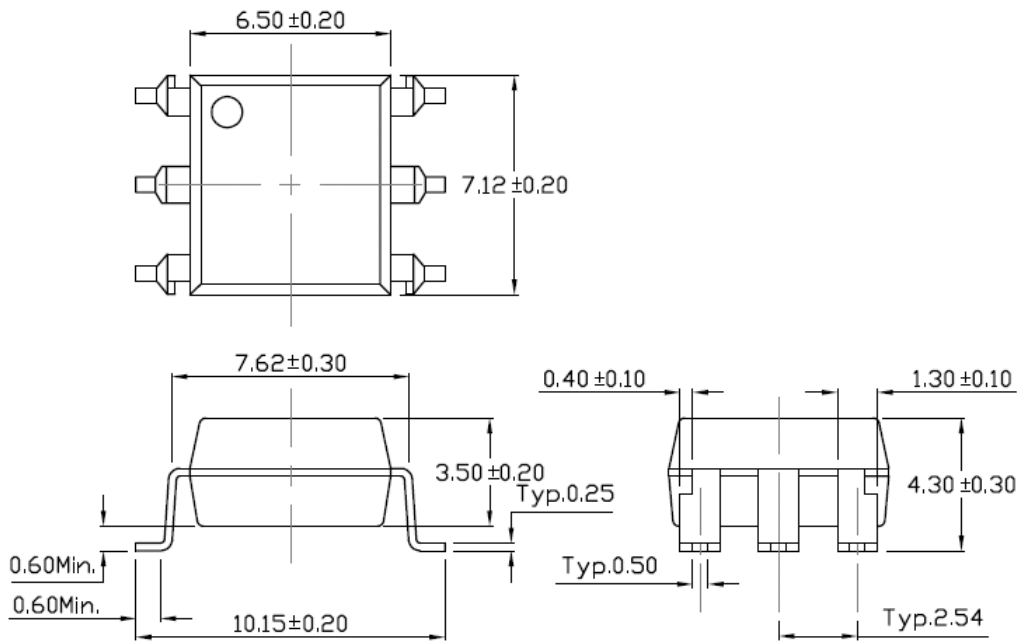




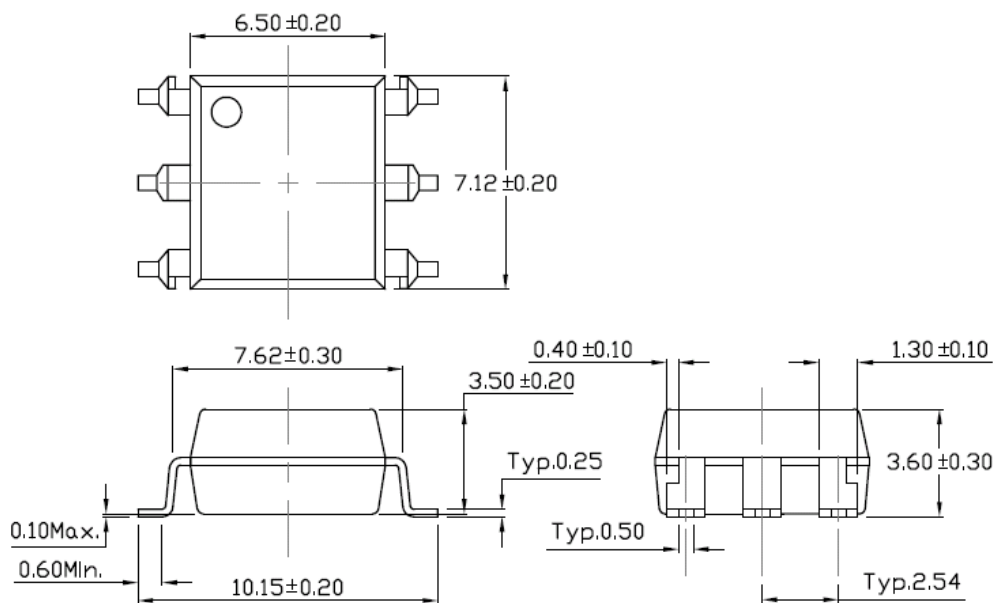
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Surface Mount Forming



Surface Mount Forming (Low Profile)

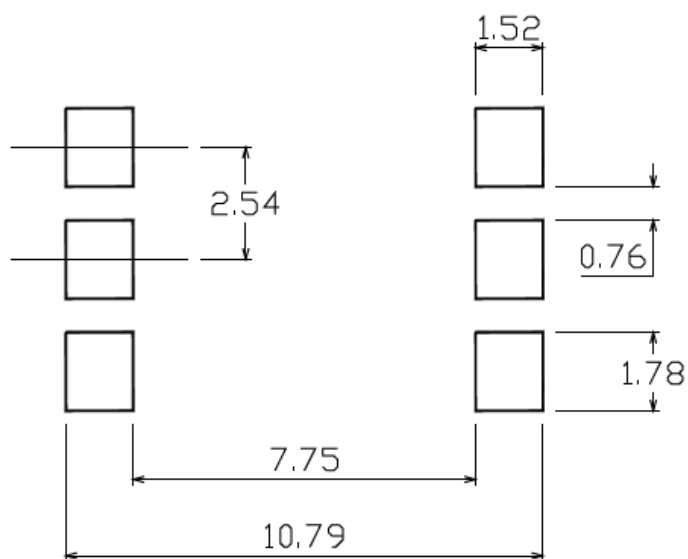




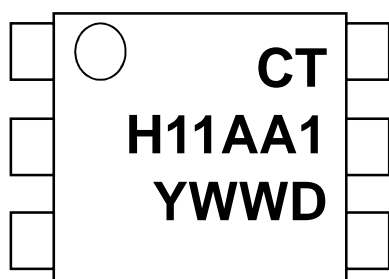
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Recommended Solder Mask Dimensions in mm unless otherwise stated



Marking Information



Note:

- CT : Logo
- H11AA1 : Product Number
- Y : Fiscal Year
- WW : Work Week
- D : Production Code



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Ordering Information

H11AAX(Y)(Z)

X = (1, 2, 3, 4)

Y = Lead form option (S, S1, M or none)

Z = Tape and reel option (TA, TB or none)

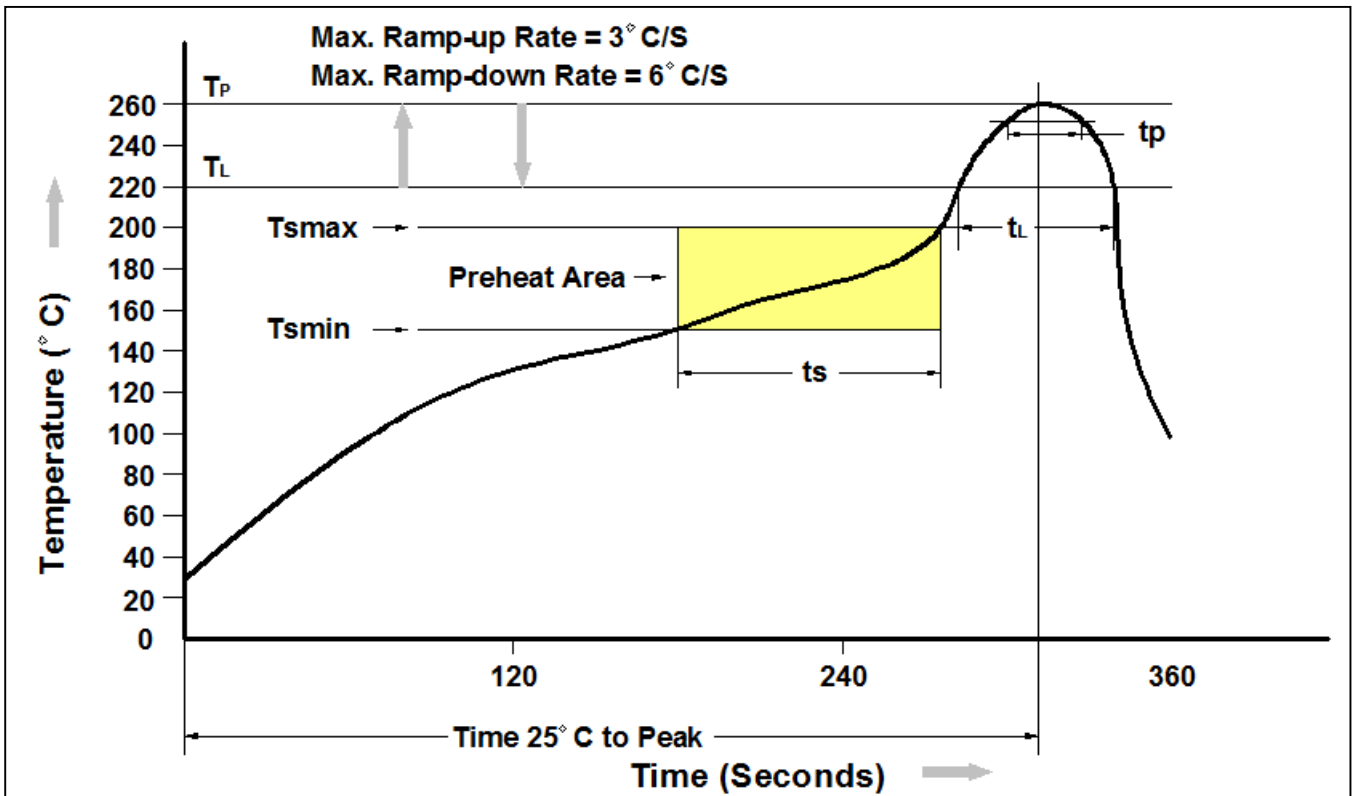
Option	Description	Quantity
None	Standard 6 Pin Dip	50Units/Tube
M	Wide Lead Forming	50Units/Tube
S(TA)	Surface Mount Lead Forming – With Option A Taping	1000 Units/Reel
S(TB)	Surface Mount Lead Forming – With Option B Taping	1000 Units/Reel
S1(TA)	Surface Mount Lead Forming(Low Profile) – With Option A Taping	1000 Units/Reel
S1(TB)	Surface Mount Lead Forming(Low Profile) – With Option B Taping	1000 Units/Reel



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Reflow Profile





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	Profile Feature	Pb-Free Assembly Profile	
or (c)	Temperature Min. (T _{min})	150°C	the life
whose	Temperature Max. (T _{max})	200°C	support
failure to	Time (t _s) from (T _{min} to T _{max})	60-120 seconds	device or
perform	Ramp-up Rate (t _L to t _P)	3°C/second max.	system, or to
when	Liquidous Temperature (T _L)	217°C	affect its
properly	Time (t _L) Maintained Above (T _L)	60 – 150 seconds	safety or
used in	Peak Body Package Temperature	260°C +0°C / -5°C	effectiveness.
	Time (t _P) within 5°C of 260°C	30 seconds	
	Ramp-down Rate (T _P to T _L)	6°C/second max	
	Time 25°C to Peak Temperature	8 minutes max.	

accordance with instruction for use provided in the labelling, can be reasonably expected to result in significant injury to the user.



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