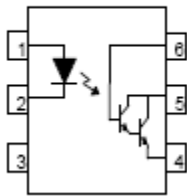


**Feature:**

- High Isolation voltage (Viso = 5000V rms)
- Creepage distance > 7.62mm
- Operating Temperature up to 100 °C
- Meets all JEDEC specifications
- Available in Tube or Tape and reel
- Available with standard DIP, Wide lead bend, and SMD lead bend options.
- Conventional black housing package

Schematic



Pin Configuration

1. Anode
2. Cathode
3. No Connection
4. Emitter
5. Collector
6. Base

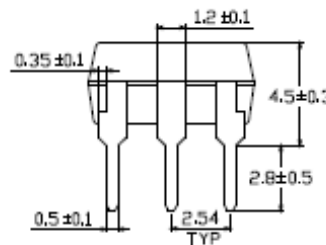
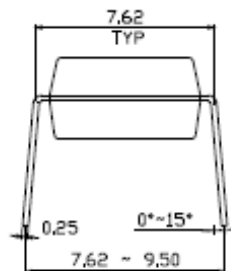
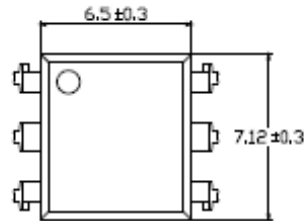
**Certification & Compliance:**

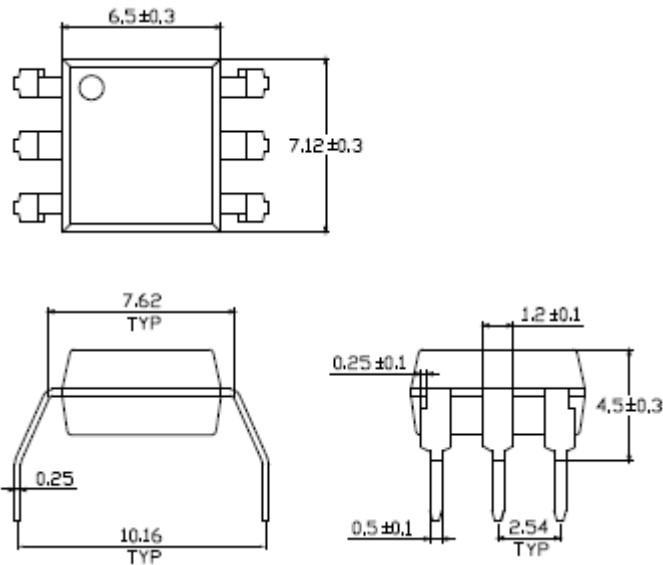
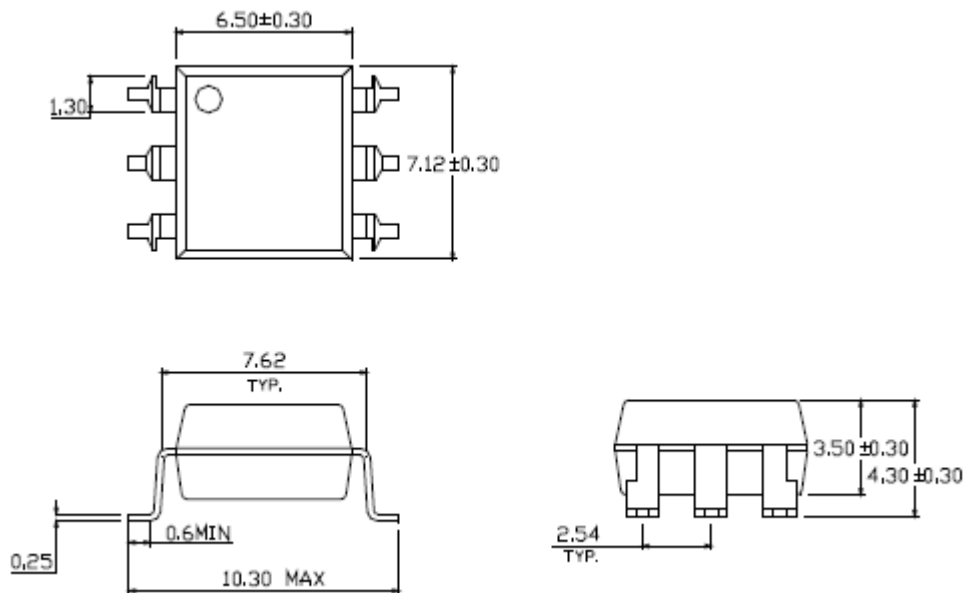
- Pb free and RoHS Compliant
- UL recognized (File # E338132)
- VDE recognized (File #40030457)



**Dimension: (Dot location indicates pin 1)**

**6-Pin Dip (standard):**



**Wide lead bend (Option W):****SMD lead bend (Option S):**

All Dimensions are in mm  
Tolerance = +/- 0.1mm

**Absolute Maximum Rating:**

<b>Symbol</b>	<b>Parameter</b>	<b>Rating</b>	<b>Units</b>
T <sub>STG</sub>	Storage Temperature	-55 ~ +150	°C
T <sub>OPR</sub>	Operating Temperature	-55 ~ +100	°C
T <sub>SOL</sub>	Lead Solder Temperature	260 for 10 sec	°C
P <sub>TOT</sub>	Total Power Dissipation	200	mW
<b>EMITTER</b>			
I <sub>F</sub>	Continuous Forward Current	60	mA
I <sub>FM</sub>	Peak Forward Current	1	A
V <sub>R</sub>	Reverse Voltage	6	V
P <sub>D</sub>	Power Dissipation	120	mW
	Power Dissipation Derated above 25°C	2	mW/°C
<b>DETECTOR</b>			
V <sub>CEO</sub>	Collector–Emitter Voltage	55	V
V <sub>CBO</sub>	Collector-Base Voltage	55	V
V <sub>ECO</sub>	Emitter-Collector Voltage	7	V
V <sub>EBO</sub>	Emitter-Base Voltage	7	V
P <sub>C</sub>	Collector Power Dissipation	150	mW
	Collector Power Dissipation Derated above 25 °C	2	.mW/°C

**Electrical Characteristic (T=25 °C)**
**Emitter**

Symbol	Characteristics	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$V_F$	Forward Voltage	H11B1 H11B2 H11B3 TIL113	$I_F = 10\text{mA}$	-	1.2	1.5	V
$I_R$	Reverse Current		$V_R = 6\text{V}$	-	-	10	$\mu\text{A}$
$C_t$	Input Capacitance		$V = 0,$ $f = 1\text{MHz}$	-	50	-	pF

**Detector**

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$I_{CEO}$	Collector-Emitter dark current	H11B1 H11B2 H11B3 TIL113	$V_{CE} = 10\text{V}$	-	-	100	nA
$BV_{CEO}$	Collector-Emitter breakdown voltage		$I_C = 1\text{mA}$	55	-	-	V
$BV_{CBO}$	Collector-Base breakdown voltage		$I_C = 0.1\text{mA}$	55	-	-	V
$BV_{ECO}$	Emitter-Collector breakdown voltage		$I_E = 0.1\text{mA}$	7	-	-	V

**DC Transfer Characteristic**

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
CTR	Current Transfer Ratio	H11B1	$I_F = 1\text{mA}$ , $V_{CE} = 5\text{V}$	500	-	-	%
		H11B2		200			
		H11B3		100	-	-	
		TIL113	$I_F = 10\text{mA}$ , $V_{CE} = 1\text{V}$	300	-	-	
$V_{CE(\text{Sat})}$	Collector-Emitter saturation voltage	H11B1 H11B2 H11B3	$I_F = 8\text{mA}$ , $I_c = 1\text{mA}$	-	-	1.0	V
		TIL113	$I_F = 8\text{mA}$ , $I_c = 2\text{mA}$	-	-	1.2	

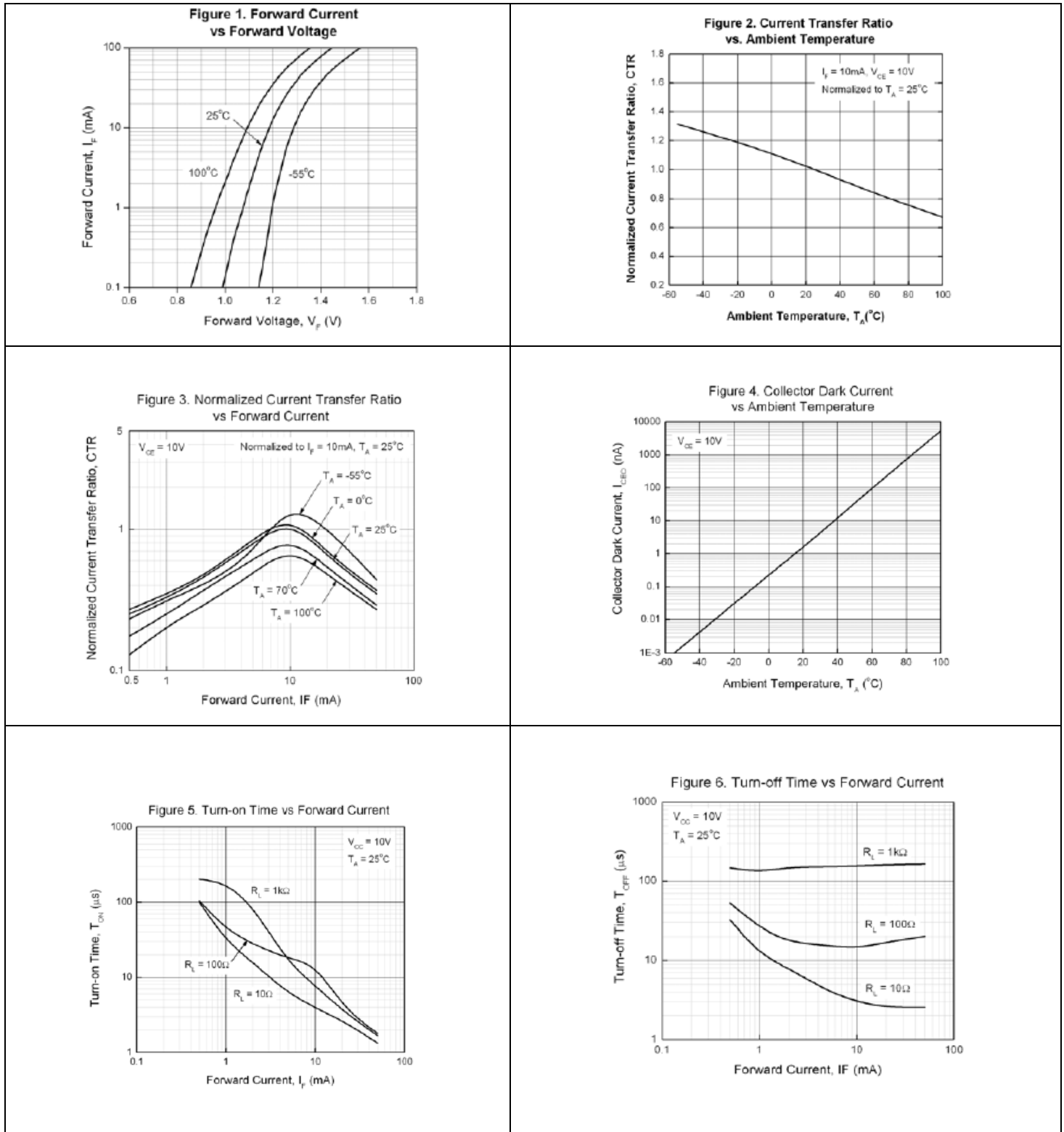
**Isolation Characteristic**

$V_{\text{ISO}}$	Isolation Voltage	-	-	5000	-	-	$V_{\text{rms}}$
$R_{\text{ISO}}$	Isolation Resistance	-	$V_{\text{IO}} = 500\text{Vdc}$	-	$10^{11}$	-	$\Omega$
$C_{\text{ISO}}$	Isolation Capacitance	-	$V_{\text{IO}} = 0$ , $f = 1\text{MHz}$	-	0.8	-	pF

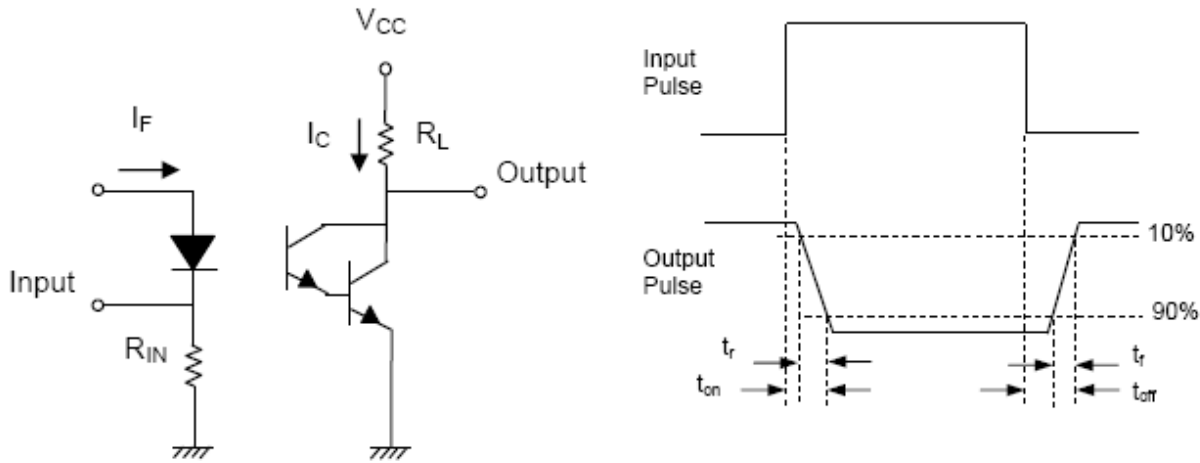
**AC Characteristic**

$T_{\text{on}}$	Turn on time	H11B1 H11B2 H11B3	$V_{\text{CC}} = 10\text{V}$ , $I_F = 10\text{mA}$ , $R_L = 100\Omega$	-	25	-	us
		TIL113	$V_{\text{CC}} = 10\text{V}$ , $I_c = 50\text{mA}$ , $I_F = 200\text{mA}$	-	-	5	
$T_{\text{off}}$	Turn off time	H11B1 H11B2 H11B3	$V_{\text{CC}} = 10\text{V}$ , $I_c = 10\text{mA}$ , $R_L = 100\Omega$	-	18	-	us
		TIL113	$V_{\text{CC}} = 10\text{V}$ , $I_c = 10\text{mA}$ , $I_F = 200\text{mA}$	-	-	100	

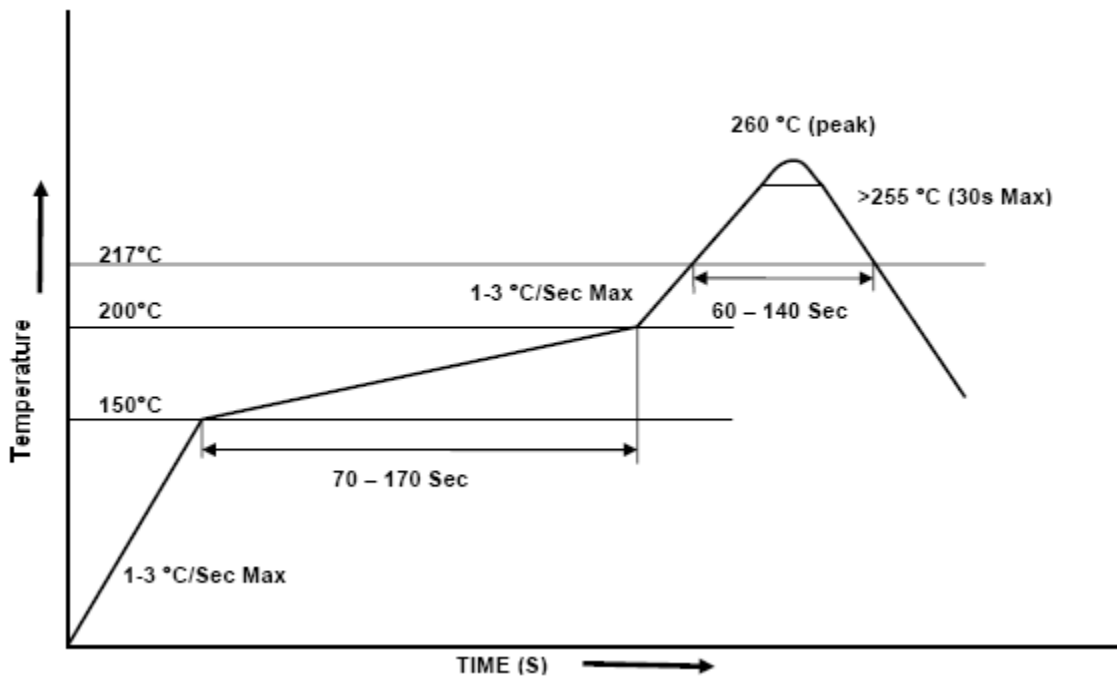
**Characteristic Curves:**

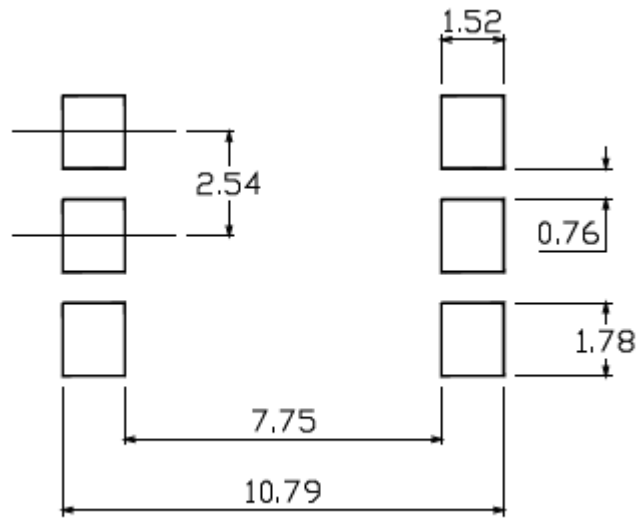


**Test Circuit for Response Time**



**Solder Profile & Footprint:**

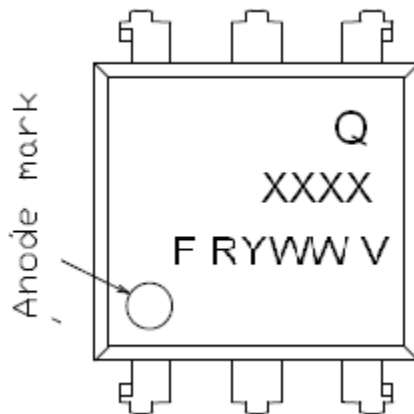




Recommended Solder Footprint for SMD Leadform

Units: mm

tolerance: +/- 0.1mm

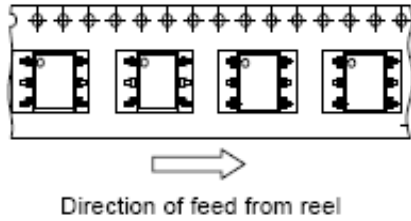
**Device Marking:**

Q = QT-Brighttek Corporation  
 XXXX = H11B1, H11B2, H11B3, or TIL113  
 F = Country of Origin  
 R = Binning Option  
 Y = Year  
 WW = Week  
 V = VDE Option

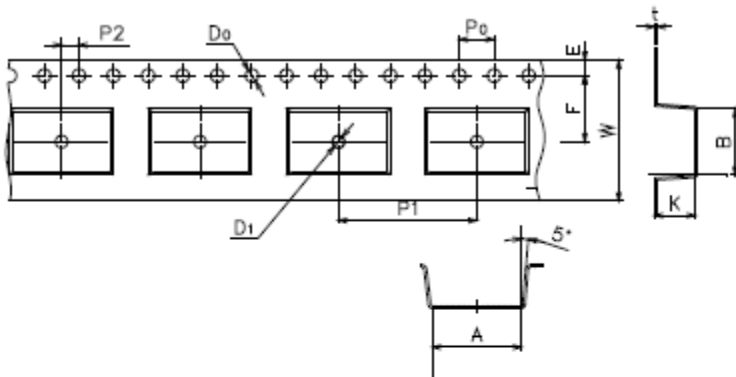
Product: H11B1 H11B2 H11B3 TIL113series	Date: February 1, 2011	Page 8 of 12
	Version# 1.1	



**Pack and Reel Specification:**



**Tape Dimension**



Dimension No.	A	B	Do	D1	E	F
Dimension (mm)	10.4±0.1	7.52±0.1	1.5±0.1	1.5+0.1/-0	1.75±0.1	7.5±0.1

Dimension No.	Po	P1	P2	t	W	K
Dimension (mm)	4.0±0.15	16.0±0.1	2.0±0.1	0.35±0.03	16.0±0.2	4.5±0.1

## Ordering Information:

Part Number	Orderable Part Number	Options	Description	Quantity per packing
H11B1	H11B1	None	Standard 6pin DIP	60pcs / Tube
	H11B1V	None	With VDE marking	60pcs / Tube
	H11B1W	W	Wide lead bend (0.4 inch spacing)	60pcs / Tube
	H11B1WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	60pcs / Tube
	H11B1STA	S	SMD lead form with tape and reel option	1000pcs / reel
	H11B1STAV	S	SMD lead form with tape and reel option + VDE marking	1000pcs / reel
H11B2	H11B2	None	Standard 6pin DIP	60pcs / Tube
	H11B2V	None	With VDE marking	60pcs / Tube
	H11B2W	W	Wide lead bend (0.4 inch spacing)	60pcs / Tube
	H11B2WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	60pcs / Tube
	H11B2STA	S	SMD lead form with tape and reel option	1000pcs / reel
	H11B2STAV	S	SMD lead form with tape and reel option + VDE marking	1000pcs / reel
H11B3	H11B3	None	Standard 6pin DIP	60pcs / Tube
	H11B3V	None	With VDE marking	60pcs / Tube
	H11B3W	W	Wide lead bend (0.4 inch spacing)	60pcs / Tube
	H11B3WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	60pcs / Tube
	H11B3STA	S	SMD lead form with tape and reel option	1000pcs / reel
	H11B3STAV	S	SMD lead form with tape and reel option + VDE marking	1000pcs / reel

TIL113	TIL113	None	Standard 6pin DIP	60pcs / Tube
	TIL113V	None	With VDE marking	60pcs / Tube
	TIL113W	W	Wide lead bend (0.4 inch spacing)	60pcs / Tube
	TIL113WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	60pcs / Tube
	TIL113STA	S	SMD lead form with tape and reel option	1000pcs / reel
	TIL113STAV	S	SMD lead form with tape and reel option + VDE marking	1000pcs / reel

## Revision History:

Description:	Revision #	Revision Date
Initial release of H11B1/H11B2/H11B3/TIL113 series	1.0	4/22/2010
Feature, certification & compliance and ordering information updates	1.1	02/01/2011

## Disclaimer

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.