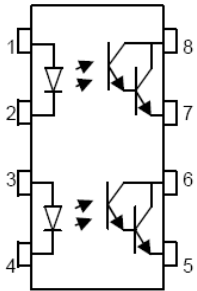


**Feature:**

- High Isolation voltage between input and output (Viso = 5000V rms)
- Creepage distance > 7.62mm
- Current transfer ratio (CTR: 600~7500% at  $I_F=1mA, V_{CE}=2V$ )
- Operating Temperature up to 100 °C
- Available in Tube or Tape and reel
- Available with standard DIP-8, Wide lead bend, and SMD lead bend options.
- Conventional black housing package

**Schematic:**



**Pin Configuration**

- 1, 3. Anode
- 2, 4. Cathode
- 5, 7. Emitter
- 6, 8. Collector

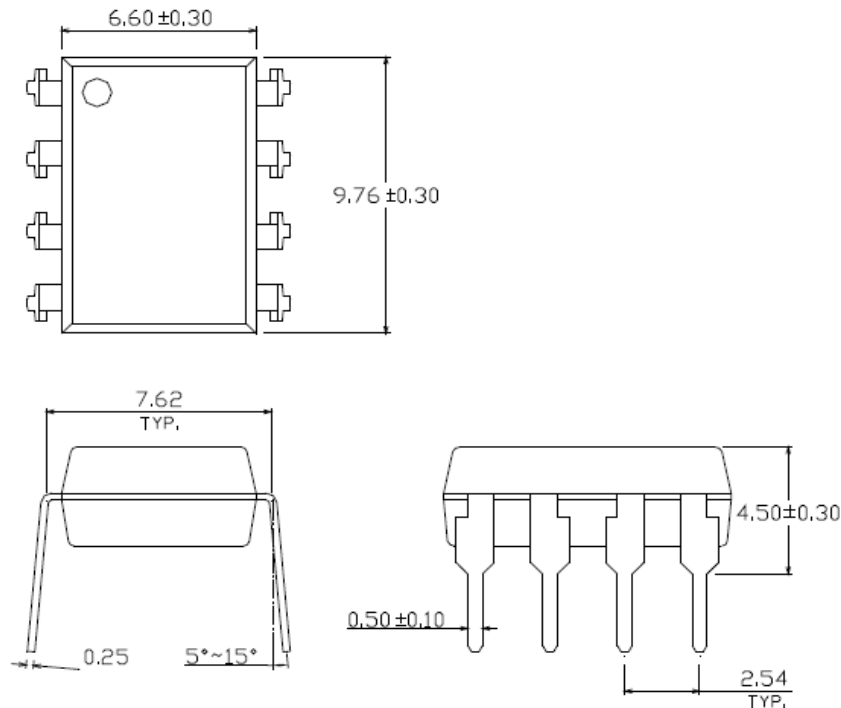
**Certification & Compliance:**

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

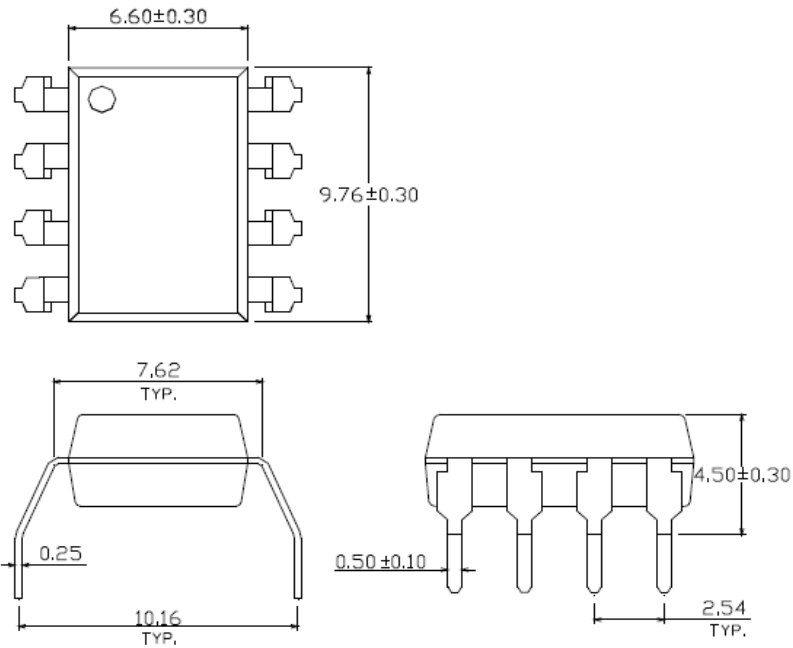


**Dimension: (Dot location indicates pin 1)**

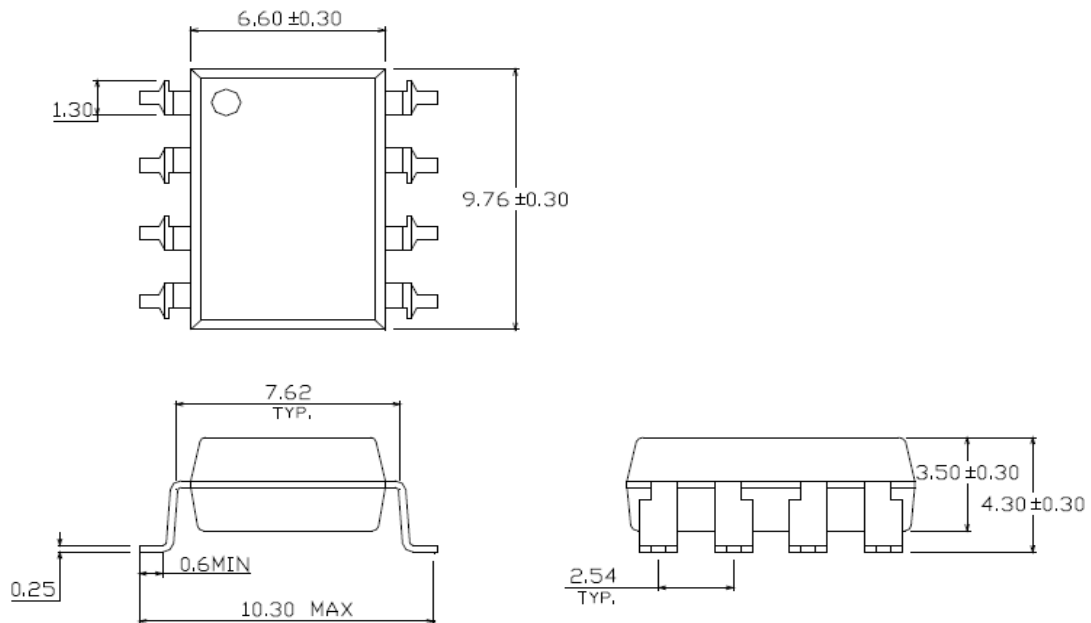
**8-Pin Dip (standard):**



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



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



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

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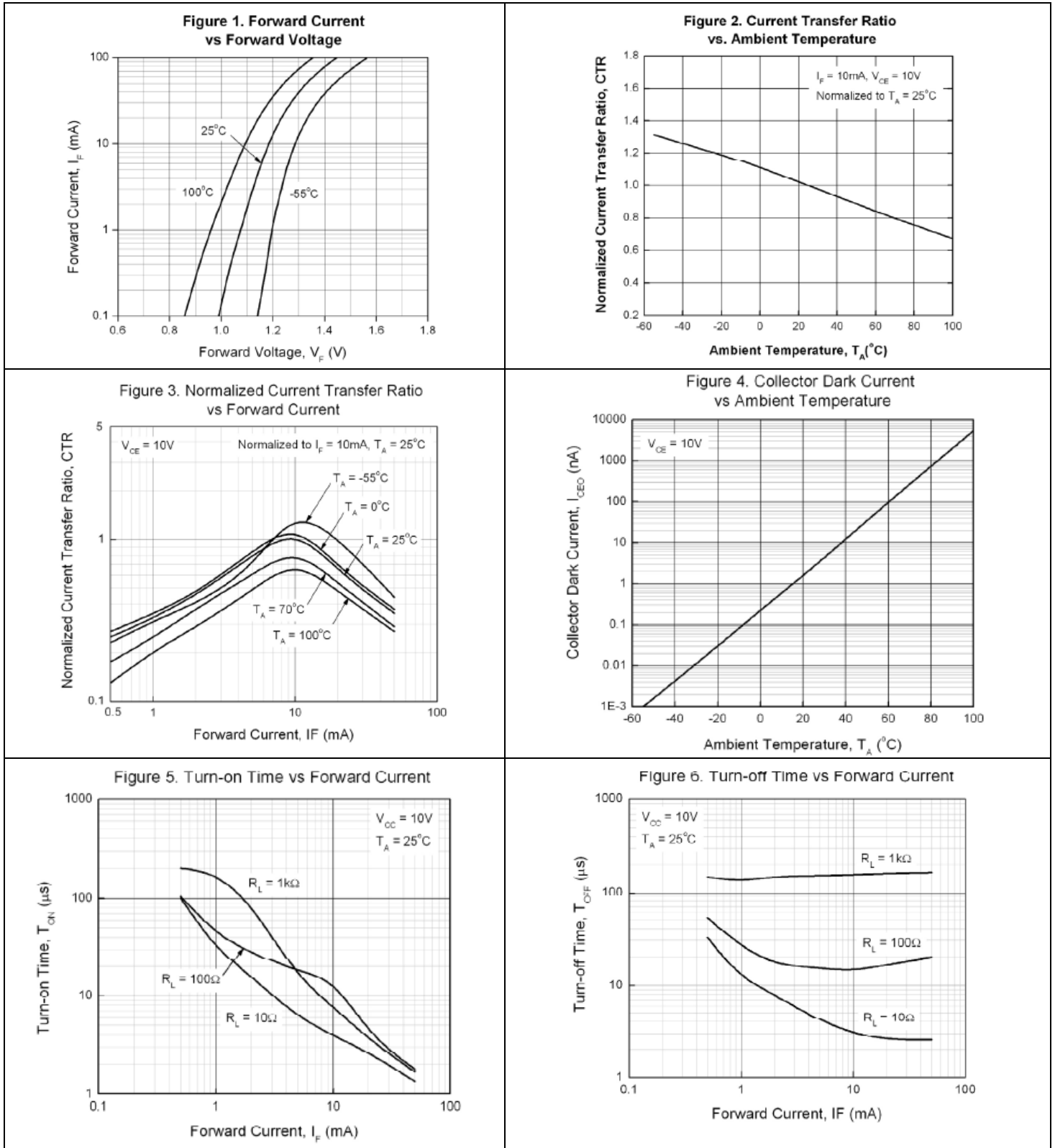
**Absolute Maximum Rating**

Symbol	Parameter	Rating	Units
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C
T <sub>OPR</sub>	Operating Temperature	-55 to +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>FP</sub>	Peak Forward Current (1us, pulse)	1	A
V <sub>R</sub>	Reverse Voltage	6	V
P <sub>D</sub>	Power Dissipation	100	mW
	Power Dissipation Derated above 100°C	-	mW/°C
<b>DETECTOR</b>			
V <sub>CEO</sub>	Collector–Emitter Voltage	40	V
V <sub>ECO</sub>	Emitter-Collector Voltage	7	V
I <sub>C</sub>	Continuous Collector Current	80	mA
P <sub>C</sub>	Collector Power Dissipation	150	mW
	Collector Power Dissipation Derated above 100°C	5.8	mW/°C

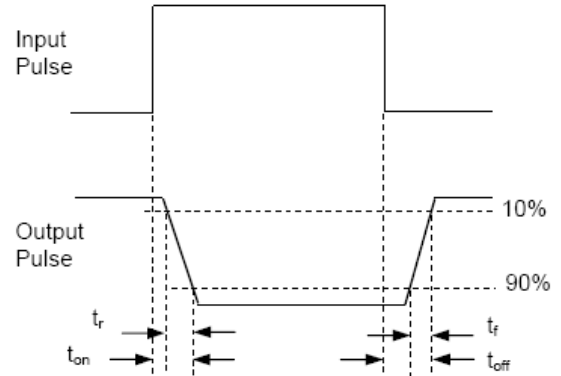
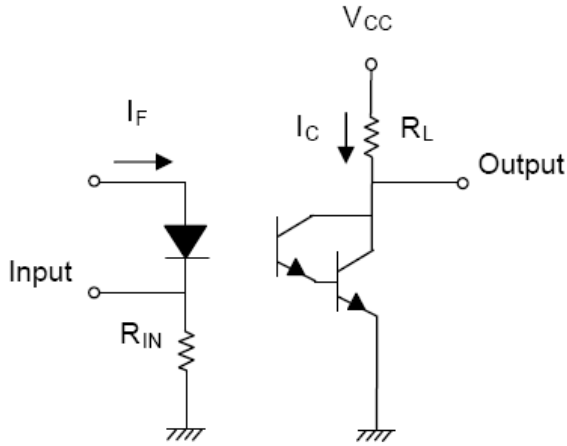
**Electrical Characteristic** ( $T_A=25\text{ }^\circ\text{C}$ )

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
<b>Emitter</b>				Min	Typ	Max	
$V_F$	Forward Voltage	Q825	$I_f = 20\text{mA}$	-	1.2	1.4	V
$I_R$	Reverse Current		$V_R = 4\text{V}$	-	-	10	$\mu\text{A}$
$C_{in}$	Input Capacitance		$V = 0, f = 1\text{kHz}$	-	30	250	pF
<b>Detector</b>				Min	Typ	Max	
$I_{CEO}$	Collector-Emitter Dark Current	Q825	$V_{CE} = 10\text{V},$ $I_F = 0\text{mA}$	-	-	1	$\mu\text{A}$
$BV_{CEO}$	Collector-Emitter Breakdown Voltage		$I_C = 0.1\text{mA}$	40	-	-	V
$BV_{ECO}$	Emitter-Collector Breakdown Voltage		$I_E = 0.01\text{mA}$	7	-	-	V
<b>DC Transfer Characteristic</b>				Min	Typ	Max	
CTR	Current Transfer Ratio	Q825	$V_{CE} = 2\text{V}, I_F = 1\text{mA}$	600	-	7500	%
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		$I_C = 5\text{mA}, I_F = 20\text{mA}$	-	0.8	1.0	V
<b>Isolation Characteristic</b>							
$V_{ISO}$	Isolation Voltage	Q825	-	5000			Vrms
$R_{IO}$	Isolation Resistance		$V_{IO} = 500\text{Vdc},$ $40\sim 60\% \text{ R.H.}$	$5 \times 10^{10}$	-	-	$\Omega$
$C_{IO}$	Floating Capacitance		$V_{IO} = 0, f = 1\text{MHz}$	-	0.6	1.0	pF
<b>AC Characteristic</b>				Min	Typ	Max	
$f_c$	Cut-Off Frequency	Q825	$V_{CE} = 5\text{V}, I_C = 2\text{mA},$ $R_L = 100\ \Omega, -3\text{dB}$	-	6	-	kHz
$t_r$	Rise Time		$V_{CE} = 2\text{V},$ $I_C = 10\text{mA},$ $R_L = 100\ \Omega$	-	60	300	$\mu\text{s}$
$t_f$	Fall Time			-	53	250	$\mu\text{s}$

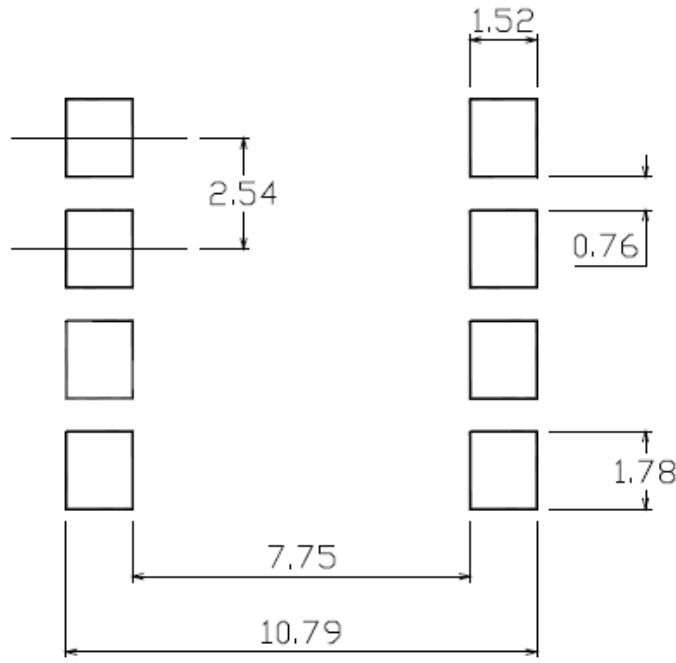
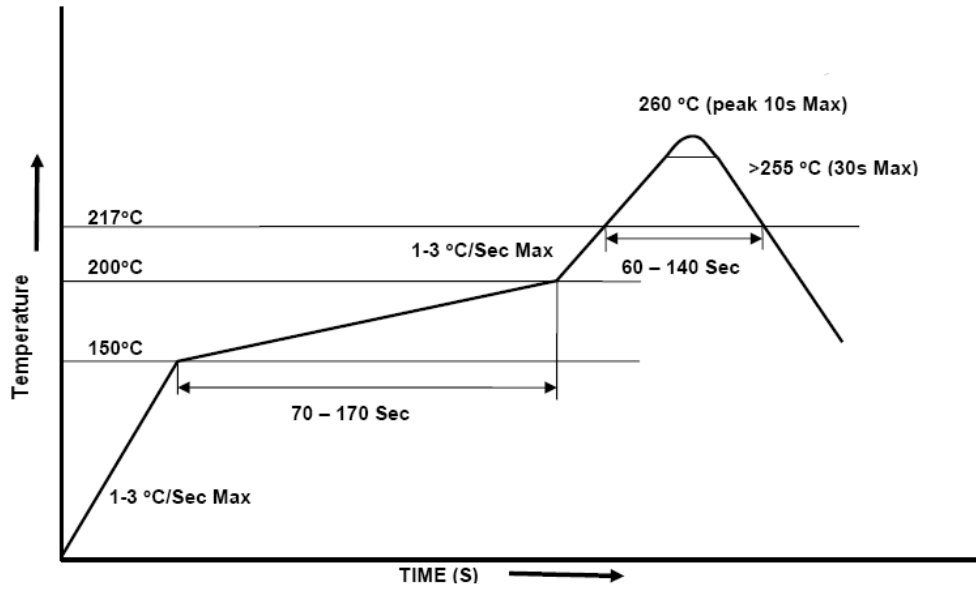
**Characteristic Curves:**



### Test Circuit for Response Time



**Solder Profile & Footprint:**



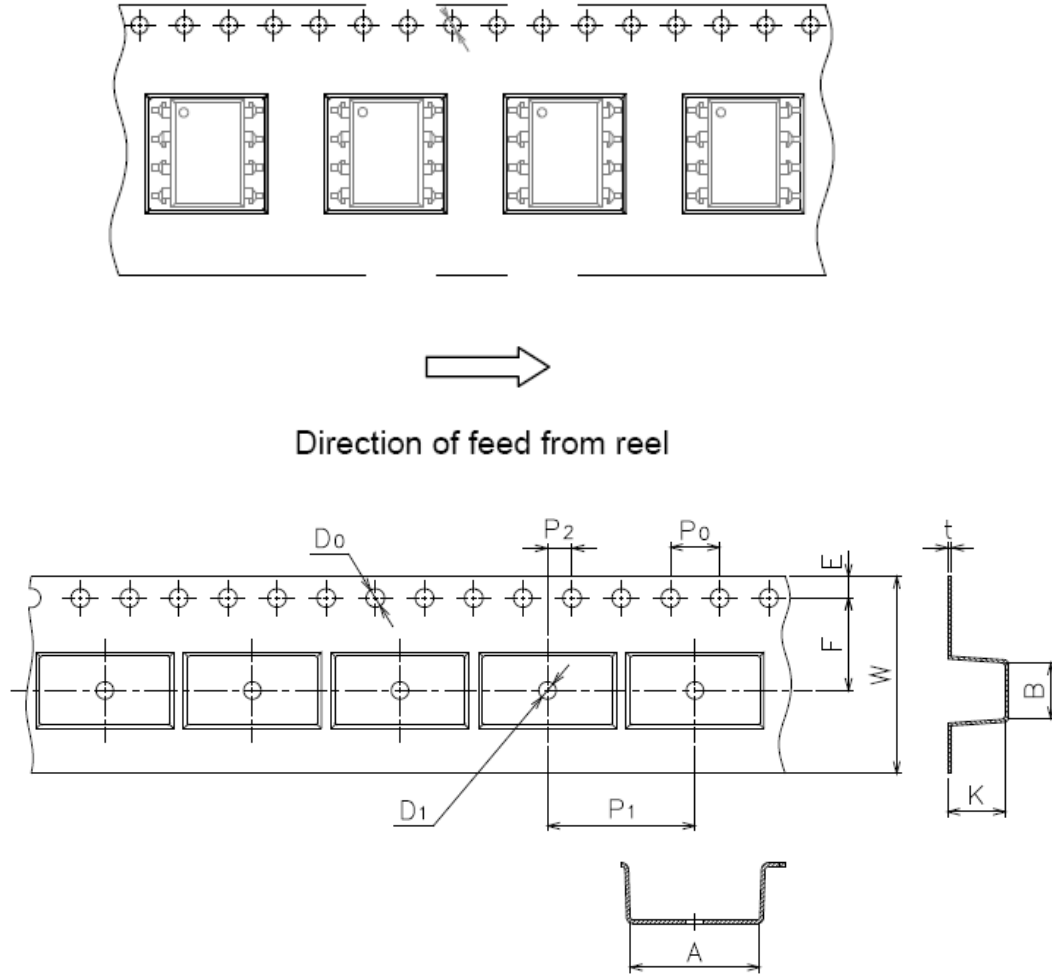
Recommended Solder Footprint for SMD Leadform

Units: mm

tolerance: +/- 0.1mm

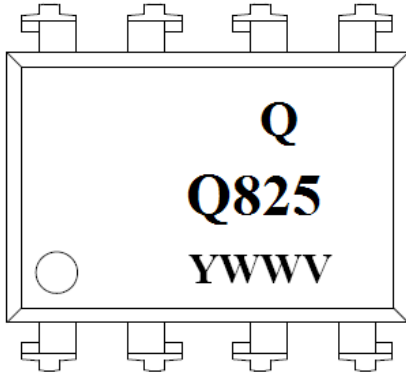
**Packing & Labeling:**

**Tape Dimensions:**



Dimension No.	<b>A</b>	<b>B</b>	<b>Do</b>	<b>D1</b>	<b>E</b>	<b>F</b>
Dimension(mm)	10.4±0.1	10.0±0.1	1.5±0.1	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	<b>Po</b>	<b>P1</b>	<b>P2</b>	<b>t</b>	<b>W</b>	<b>K</b>
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.4±0.1	16.0+0.3/ -0.1	4.5±0.1



**Device Marking:**

Q = QT-Brightek Corporation  
 Q825 = Device Part Number  
 Y = Year  
 WW = Week  
 V = VDE Option

**Ordering Information:**

Part Number	Orderable Part Number	Options	Description	Quantity per packing
Q825	Q825	None	Standard 8pin DIP	50pcs / Tube
	Q825V	None	With VDE marking	50pcs / Tube
	Q825W	W	Wide lead bend (0.4 inch spacing)	50pcs / Tube
	Q825WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	50pcs / Tube
	Q825STA	S	SMD lead form with tape and reel option	900pcs / reel
	Q825STAV	S	SMD lead form with tape and reel option + VDE marking	900pcs / reel

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**Revision History:**

Description:	Revision #	Revision Date
Initial release of Q825	1.0	4/23/2010
Feature, certification & compliance and ordering information updates	1.1	02/01/2011

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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.

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