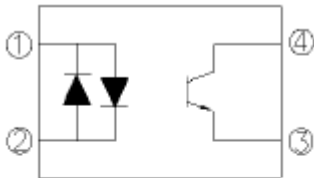


**Feature:**

- High Isolation voltage between input and output  
(Viso = 5000V rms)
- Current transfer ration  
(CTR: Min. 20% at  $I_F = \pm 1\text{mA}$ ,  $V_{ce} = 5\text{V}$ )
- High collector-emitter voltage  $V_{CEO} = 80\text{V}$
- Operating Temperature up to  $+100\text{ }^\circ\text{C}$
- Compact Dual-in-line Package
- Available packaged in Tube or Tape and reel
- Available with standard DIP-4, Wide lead bend, and SMD lead bend options.
- Conventional black housing package

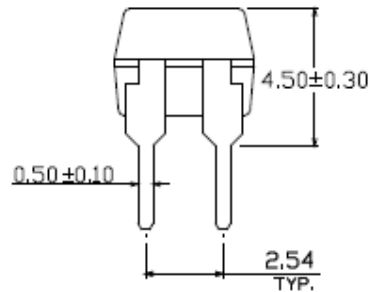
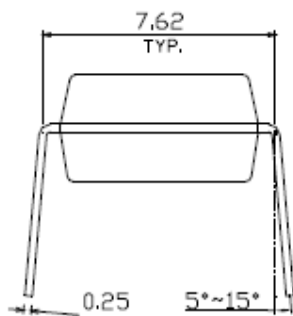
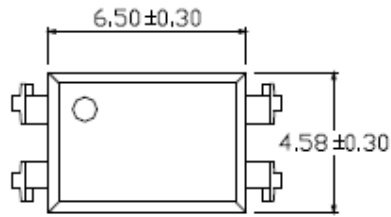
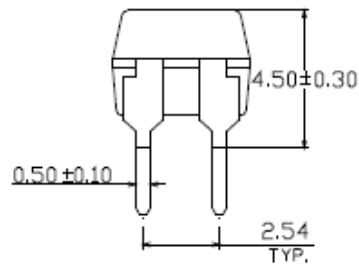
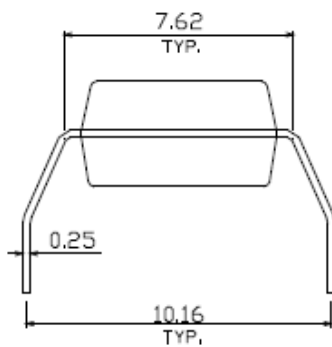
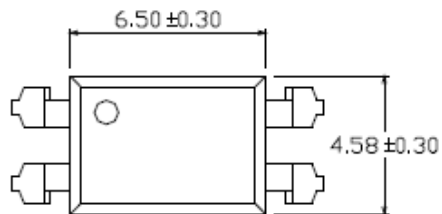
**Schematic:**Pin Configuration

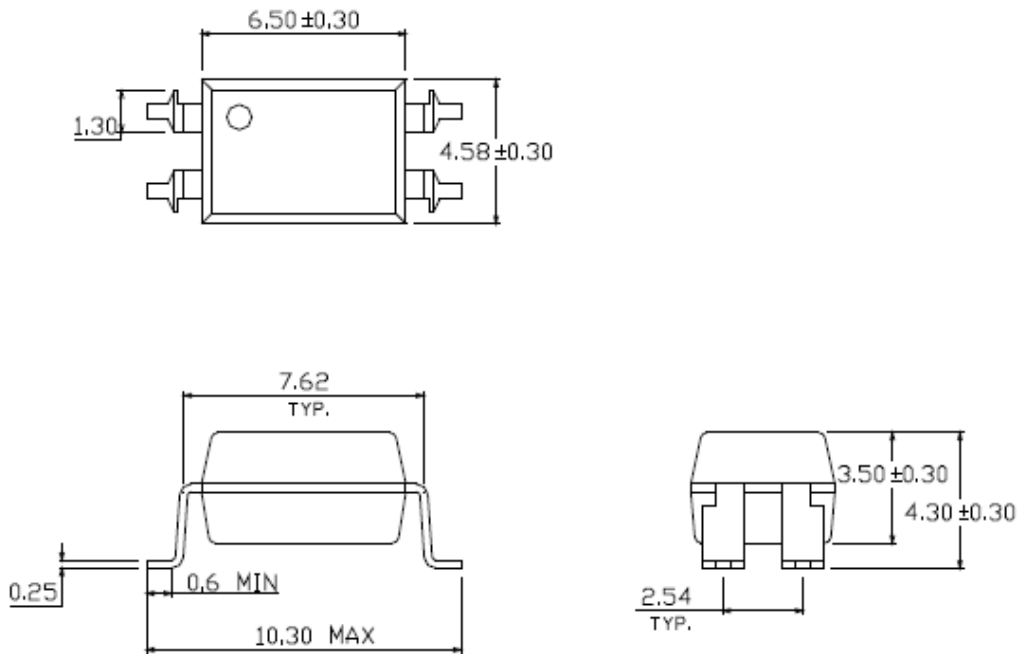
1. Anode / Cathode
2. Cathode / Anode
3. Emitter
4. Collector

**Certification & Compliance:**

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



**Dimension:****4-Pin Dip (standard):****Wide lead bend (Option W):**

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

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

**Absolute Maximum Rating:**

Symbol	Parameter	Rating	Units
		Q814	
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
P <sub>D</sub>	Power Dissipation	100	mW
	Power Dissipation Derated above 100°C	2.9	mW/°C
<b>DETECTOR</b>			
V <sub>CEO</sub>	Collector–Emitter Voltage	80	V
V <sub>ECO</sub>	Emitter-Collector Voltage	6	V
P <sub>C</sub>	Collector Power Dissipation	150	mW
	Collector Power Dissipation Derated above 80 °C	5.8	mW/°C

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

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$V_F$	Forward voltage	Q814	$I_F = 20\text{mA}$	-	1.2	1.4	V
$C_{in}$	Input capacitance	Q814	$V = 0, f = 1\text{KHz}$	-	50	250	pF

**Detector**

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$I_{CEO}$	Collector- Emitter dark current	Q814	$V_{CE} = 20\text{V},$ $I_F = 0\text{mA}$	-	-	100	$\mu\text{A}$
$BV_{CEO}$	Collector- Emitter breakdown voltage	Q814	$I_C = 0.1\text{mA}$	80	-	-	V
$BV_{ECO}$	Emitter- collector breakdown voltage	Q814	$I_E = 0.1\text{mA}$	6	-	-	V

**DC Transfer Characteristic**

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
CTR	Current Transfer Ratio	Q814	$I_F = 1\text{mA}$ , $V_{CE} = 5\text{V}$	20	-	300	%
		Q814A		50	-	150	
$V_{CE(\text{Sat})}$	Collector-Emitter saturation voltage	Q814	$I_F = 20\text{mA}$ , $I_C = 1\text{mA}$	-	0.05	0.2	V

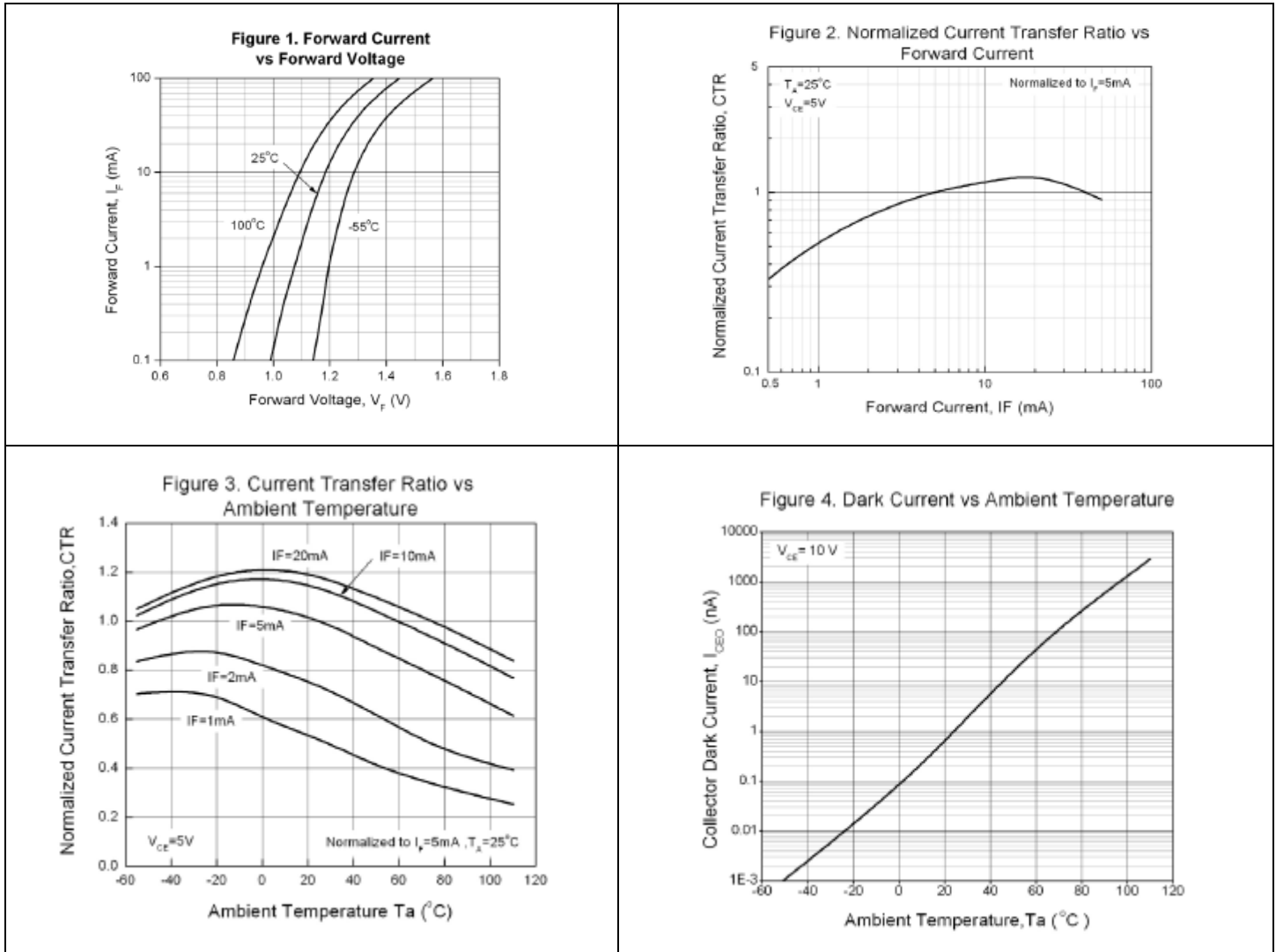
**AC Characteristic**

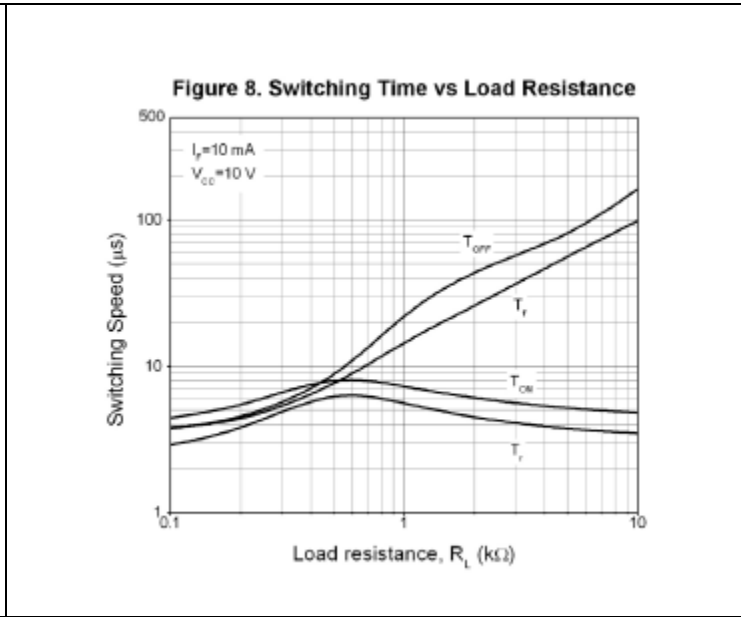
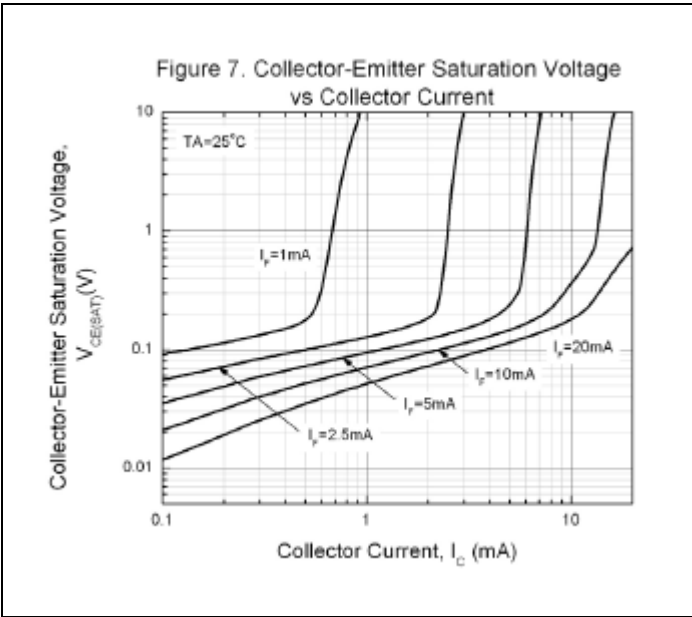
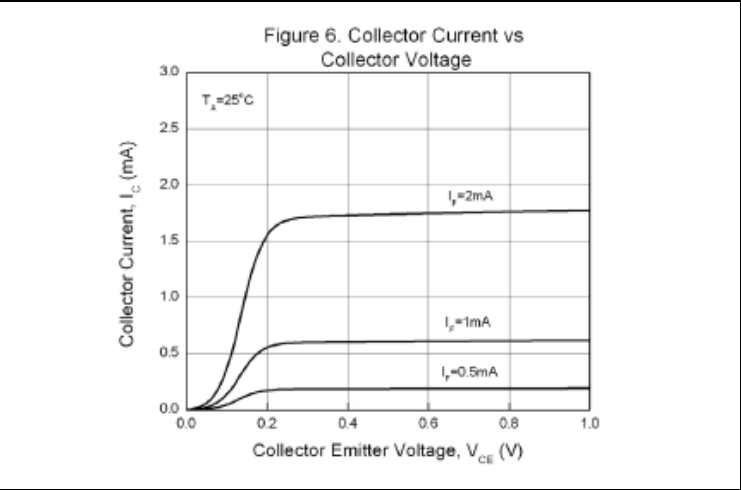
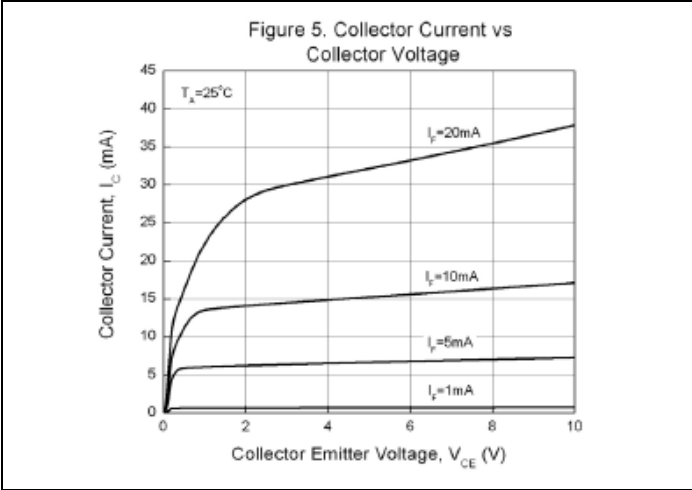
Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$f_c$	Cut-off frequency	Q814	$V_{ce} = 5\text{V}$ , $I_C = 2\text{mA}$ $R_L = 100\Omega$ , -3dB	-	80	-	KHz
$t_r$	Rise time	Q814	$V_{ce} = 2\text{V}$ , $I_C = 2\text{mA}$ $R_L = 100\Omega$ ,	-	7	18	$\mu\text{s}$
$t_f$	Fall time	Q814	$V_{ce} = 2\text{V}$ , $I_C = 2\text{mA}$ $R_L = 100\Omega$ ,	-	11	18	$\mu\text{s}$

**Isolation Characteristic**

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
$R_{ISO}$	Isolation Resistance	Q814	$V_{IO} = 500\text{Vdc}$ , 40~60% R.H.	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
$C_{ISO}$	Isolation Capacitance	Q814	$V_{IO} = 0$ , $f = 1\text{MHz}$	-	0.6	1.0	$\mu\text{F}$
$V_{ISO}$	Isolation Voltage	Q814	$f = 60\text{Hz}$ , $t = 1\text{min}$ , $I_{I-O} \leq 2\mu\text{A}$	5000	-	-	V rms

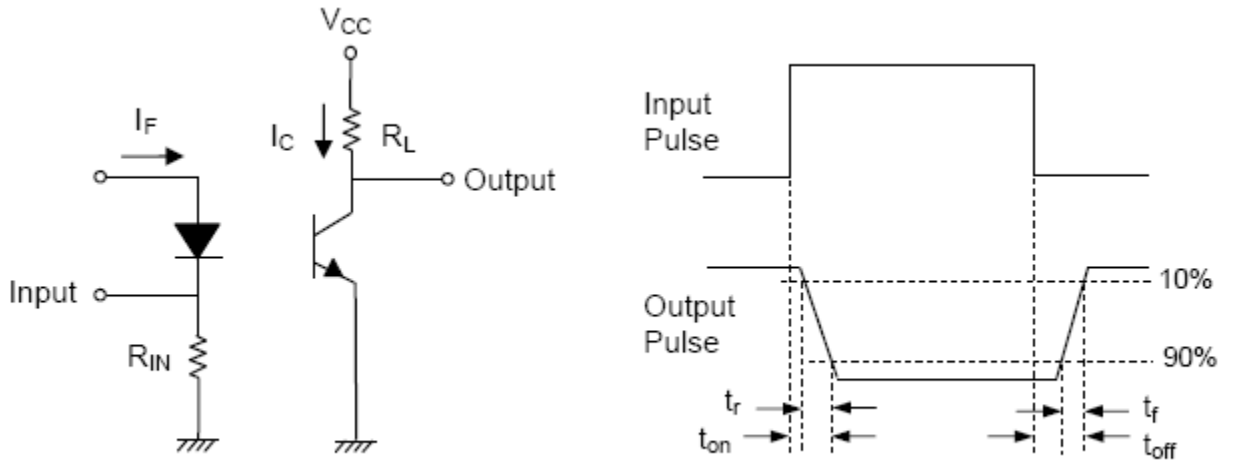
**Characteristic Curves:**



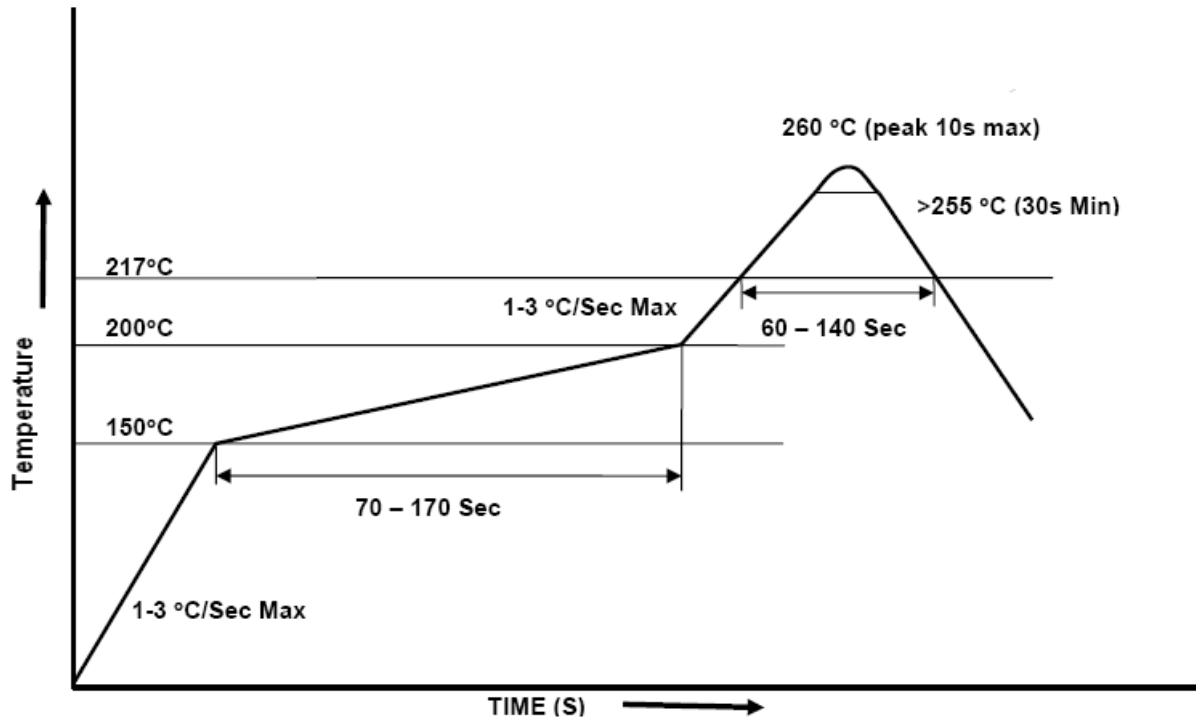


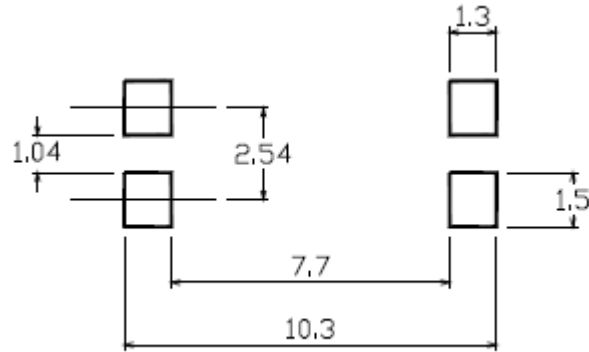


**Test Circuit for Response Time**



**Solder Reflow Temperature Profile:**



**Solder Profile & Footprint:**

Recommended Solder Footprint for SMD Leadform

Units: mm

tolerance: +/- 0.1mm

**Device Marking:**

Q = QT-Brightek Corporation

Q814 = Device Part Number

F = Country of Origin

R = Binning Option

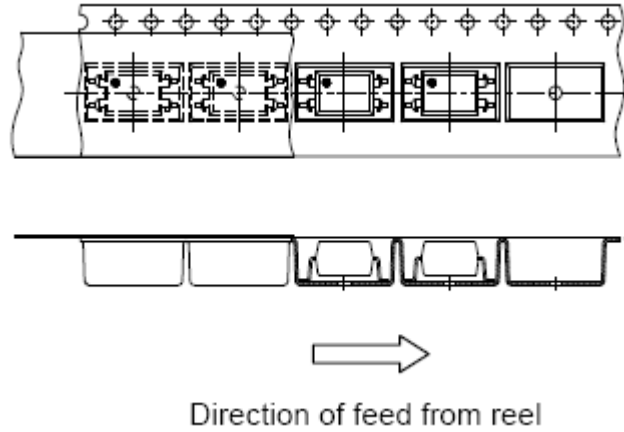
Y = Year

WW = Week

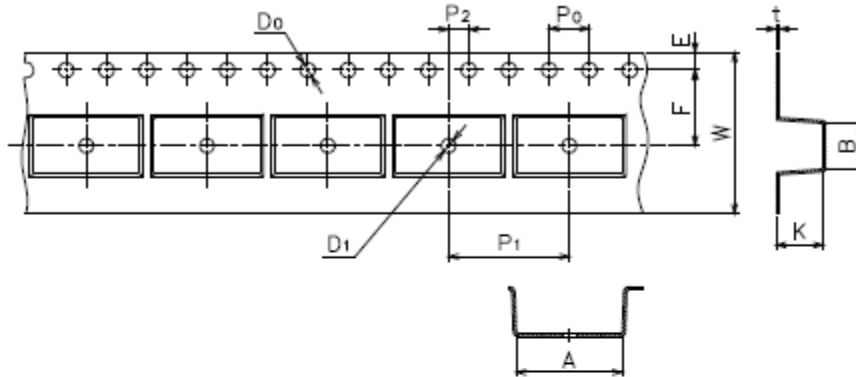
V = VDE Option

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	Version# 1.2	

**Tape and Reel Packing Specifications:**



**Tape Dimensions:**



Dimension No.	A	B	D <sub>0</sub>	D <sub>1</sub>	E	F
Dimension(mm)	10.4±0.1	4.55±0.1	1.5±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension No.	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	t	W	K
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.33±0.1	16.0+0.3/ -0.1	4.55±0.1

**Ordering Information:**

Part Number	Orderable Part Number	Options	Description	Quantity per packing
Q814	Q814	None	Standard 4pin DIP	100pcs / Tube
	Q814V	None	With VDE marking	100pcs / Tube
	Q814W	W	Wide lead bend (0.4 inch spacing)	100pcs / Tube
	Q814WV	W	Wide lead bend (0.4 inch spacing) + VDE marking	100pcs / Tube
	Q814STA	S	SMD lead form with tape and reel option	2000pcs / reel
	Q814STAV	S	SMD lead form with tape and reel option + VDE marking	2000pcs / reel

**Revision History:**

Description:	Revision #	Revision Date
Initial release of Q814	1.0	4/22/2010
Add binning option	1.1	6/23/2010
Feature, certification & compliance and ordering information updates	1.2	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.