



# PRODUCT SPECIFICATION

October 2012

## KMT 0 NG LHS / NGJ LHS

rev. K

## KMT 0 NGJ LHS ULC

Ref. / PS-KMT-281

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### Approvals:

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<b>Laurent Kubat</b> Engineering Manager	Date
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### Revision record:

Revision	Date	Comments
-	March 22 <sup>nd</sup> 2010	Creation
rev. A	May 28 <sup>th</sup> , 2010	Update : (According to ECR N°5437) <ul style="list-style-type: none"><li>• KMT 011 NG LHS version added</li><li>• Product height (KMT 071 version) : § Main features</li><li>• KMT switch integration recommendation : note in §2 added</li></ul>
rev. B	September 30 <sup>th</sup> , 2010	Update : (According to ECR N°5857) <ul style="list-style-type: none"><li>• Electrical data : contact resistance (150 mΩ instead of 300 mΩ)</li></ul>
rev. C	February 7 <sup>th</sup> , 2011	Update : (According to ECR N°6361) <ul style="list-style-type: none"><li>• IP code</li></ul>
rev. D	January 5 <sup>th</sup> , 2012	Update : (According to ECR N°7252) <ul style="list-style-type: none"><li>• KMT switch integration recommendation (§10)</li></ul>
rev. E	April 12 <sup>th</sup> , 2012	Update : (According to ECR N°7772 & 7840) <ul style="list-style-type: none"><li>• ULC versions added</li><li>• Packaging: 5000 p/reel instead of 4000 p/reel</li></ul>
rev. F	June 7 <sup>th</sup> , 2012	Update : (According to ECR N°8211) <ul style="list-style-type: none"><li>• KMT 011 NG LHS OT1 versions added</li></ul>
rev. G	July 13 <sup>th</sup> , 2012	Update : (According to ECR N°8385) <ul style="list-style-type: none"><li>• § main features : note about switch height updated</li></ul>
rev. H	October 3 <sup>rd</sup> 2012	Update : (according to ECR 8541) <ul style="list-style-type: none"><li>• Electrical data updated : max power &amp; max current</li></ul>
Rev. J	July 3 <sup>rd</sup> 2013	Update : (according to ECR 9985) <ul style="list-style-type: none"><li>• KMT Switch integration recommendation (§10): Key size</li></ul>
Rev. K	July 5 <sup>th</sup> 2013	Update : (according to ECR 9985) <ul style="list-style-type: none"><li>• Packaging (§7): quantity per reel</li></ul>



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## Summary:

1. Description / Main Features
2. Construction
3. Electrical data
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5. Physical data
6. Operating environment
7. Additional data : storage and handling environment
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9. Applicable norms
10. KMT Switch integration recommendation

## Appendix:

- 1: Reflow profile characteristics
- 2: Packaging

**Note:** This specification, attached documents and attached drawings cannot be communicated to anybody without written agreement of C&K.

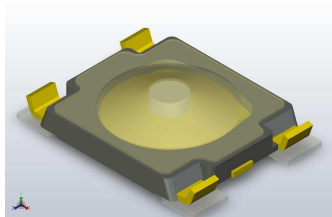
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**1 - Description**



The KMT0 NG LHS / NGJ LHS / NGJ LHS ULC is a Halogen Free, ultra-low profile tact switch, single pole, normally open, momentary action designed for SMT mounting.

**Main Features**

- Height with actuator between 0.63 and 0.65 mm according to each reference drawing
- 3.6 x 2.6 mm footprint
- Without ground
- Good tactile feed-back
- Terminal plating : LFS (Lead Free Silver)
- **ROHS compliance**
- **Halogen Free compliance**
  - Bromine (Br) ≤ 900 ppm
  - Chlorine (Cl) ≤ 900 ppm
  - Total concentration of Br & Cl ≤ 1500 ppm
- Compatible with lead free reflow soldering process
- Delivered on plastic reels
- Compatible with Pick &Place machines

**2 - Construction**

Function	Momentary action
Contact type	Normally Open
Terminals	SMT

**3 - Electrical data**

	Contact plating : Ag
Maximum power	0.3 VA
Min/max voltage	20 mV – 32 Vdc
Min/max current	<ul style="list-style-type: none"> <li>• Std versions : 1 mA – 25 mA</li> <li>• ULC versions: 1 µA – 25 mA</li> </ul>
Dielectric strength	≥ 250 Vrms (1 mm)
Contact resistance	≤ 150 mΩ
Insulation resistance	≥ 50 MΩ
Bounce time	≤ 6 ms

**4 - Mechanical data**

Operating force (Fa)	<ul style="list-style-type: none"> <li>• KMT 011 NG LHS : Fa = 1.0 N ± 25%</li> <li>• KMT 011 NG LHS OT1 : Fa = 1.0 N ± 25%</li> <li>• KMT 011 NGJ LHS: Fa = 1.0 N ± 25%</li> <li>• KMT 021 NGJ LHS: Fa = 1.6 N ± 25%</li> <li>• KMT 031 NGJ LHS: Fa = 3.4 N ± 25%</li> <li>• KMT 071 NGJ LHS: Fa = 2.3 N ± 25%</li> <li>• KMT 011 NGJ LHS ULC: Fa = 1.0 N ± 25%</li> <li>• KMT 031 NGJ LHS ULC: Fa = 3.4 N ± 25%</li> </ul>
Tactile feeling (Δ%)	<ul style="list-style-type: none"> <li>• KMT 011 versions: Δ ≥ 10%</li> <li>• KMT 021 versions: Δ ≥ 30%</li> <li>• KMT 031 versions: Δ ≥ 30%</li> <li>• KMT 071 versions: Δ ≥ 30%</li> </ul> <p>(Δ% after 2 reflow cycles)</p>

Return force (Frr)	Frr ≥ 0.25 N
Electrical travel (Te)	Te = 0.15 mm ± 0.1
Mechanical travel (Tm)	Tm = 0.15 mm ± 0.1
Simultaneity	≤ 0.05mm
Actuation condition limits	According to § 10

**5 - Physical data**

Dimensions & layout	<p>According to drawings:</p> <ul style="list-style-type: none"> <li>• KMT 011 NG LHS : CU34H01124FP</li> <li>• KMT 011 NG LHS OT1 : CU34H01520FP</li> <li>• KMT 0 NGJ LHS : CU34MH2005FP</li> <li>• KMT 0 NGJ LHS ULC : CU34MH20100P</li> </ul>
Mass	0.02 g ± 0.01

**6 - Operating environment**

Operating temperatures	- 40 °C / + 85 °C
Relative humidity	90 to 96 % According to IEC 60068-2-78

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Operating life	$\geq 300\,000$ cycles <i>Contact resistance after life test : <math>\leq 5\ \Omega</math></i>
Vibrations	10-500 Hz / 10 g / 3 axis No discontinuity $> 1\ \mu\text{s}$ According to NF EN 60068-2-6
Mechanical shocks	$\frac{1}{2}$ sinusoidal / 50 g / 11 ms 3 shocks in each direction of the 3 axis No discontinuity $> 1\ \mu\text{s}$ According to NF EN 60068-2-27
Overload	Static Overload : 30 N Overload life test : 10 N – 1000 cycles
<b>7 - <u>Additional data : storage and handling environment</u></b>	
Packaging conditions	According to drawings in appendix 2 Tape and reel per EIA 481-B. <i>Number of pieces per reel:</i> - <i>KMT 011 NG LHS : 1000</i> - <i>Other versions : 5000</i>  Dry pack with desiccant. Once dry pack is opened and a part of the reel unused for more one week, baking, prior to SMT 4 hour/60°C is recommended.
Transport conditions	According to specification NF H00-060
Storage temperatures	- 55 °C (10 days)/+85°C (10 days)
<b>8 - <u>Additional data : process environment</u></b>	
Lead free reflow soldering process	According to C&K Procedure : PS-LF-001 (reflow profile characteristics described in appendix 1) <i>Recommendation for solder paste thickness : <math>100\ \mu\text{m} \pm 20\ \mu\text{m}</math></i>
Re-work process by iron soldering	N.A.
Washing process	NA
Sealing	IP 68
Chemical agent	NA
Shear test (switch/PCB)	$> 30\ \text{N}$
<b>9 - <u>Applicable norms</u></b>	
Testing procedure (C&K spec)	Proc-essai 16
Legal norm (EHS)	C&K procedure
<b>10 - <u>KMT Switch integration recommendation</u></b>	
According to page 5	

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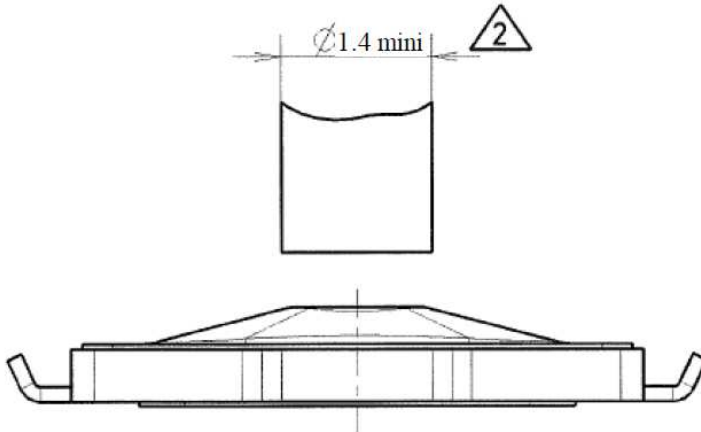
**10. KMT Switch integration recommendation****1. KMT extreme area for actuation**

This area illustrates the optimal actuation surface.  
Application key or button has to remain inside  $\text{Ø}1.8\text{mm}$ .

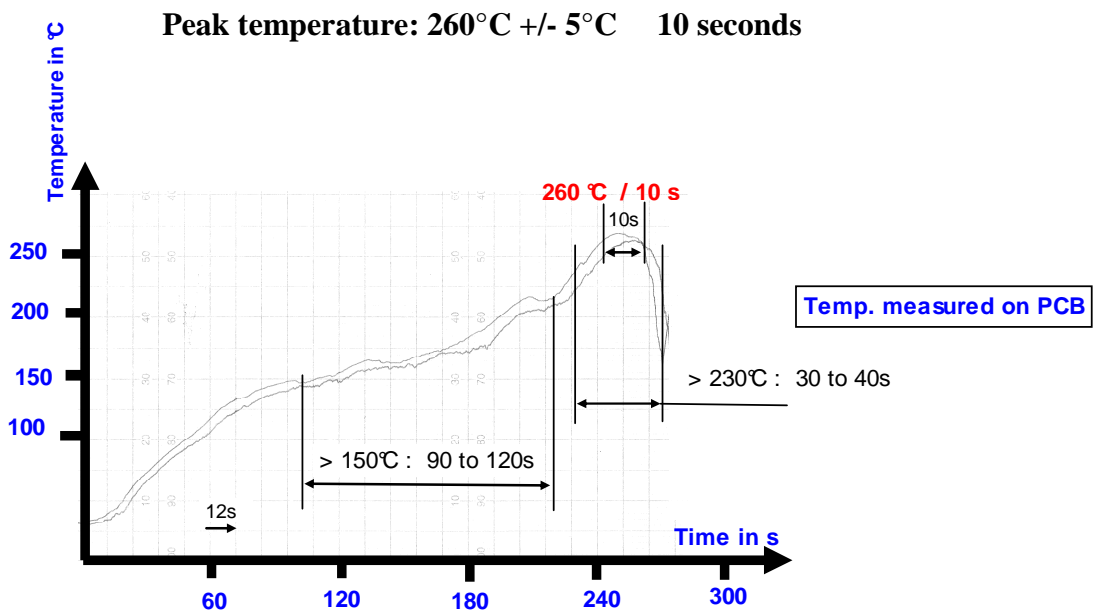
Outside this recommended area, KMT will not perform properly.

**2. Key size**

Key size should be over (or equal) to  $\text{Ø}1.4\text{ mm}$ . We recommend 0.2mm off-centred max.  
Optimal solution would be to have a full flat key.

**3. PCB pad and stencil definition – P&P setup**

According to CK procedure: RU-KMT-006.

**Appendix 1****Reflow profile test characteristics**

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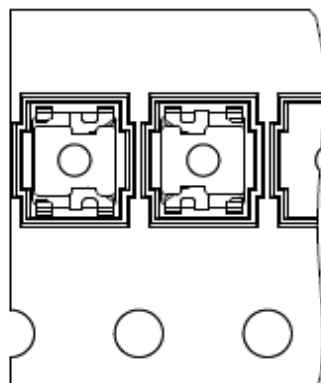
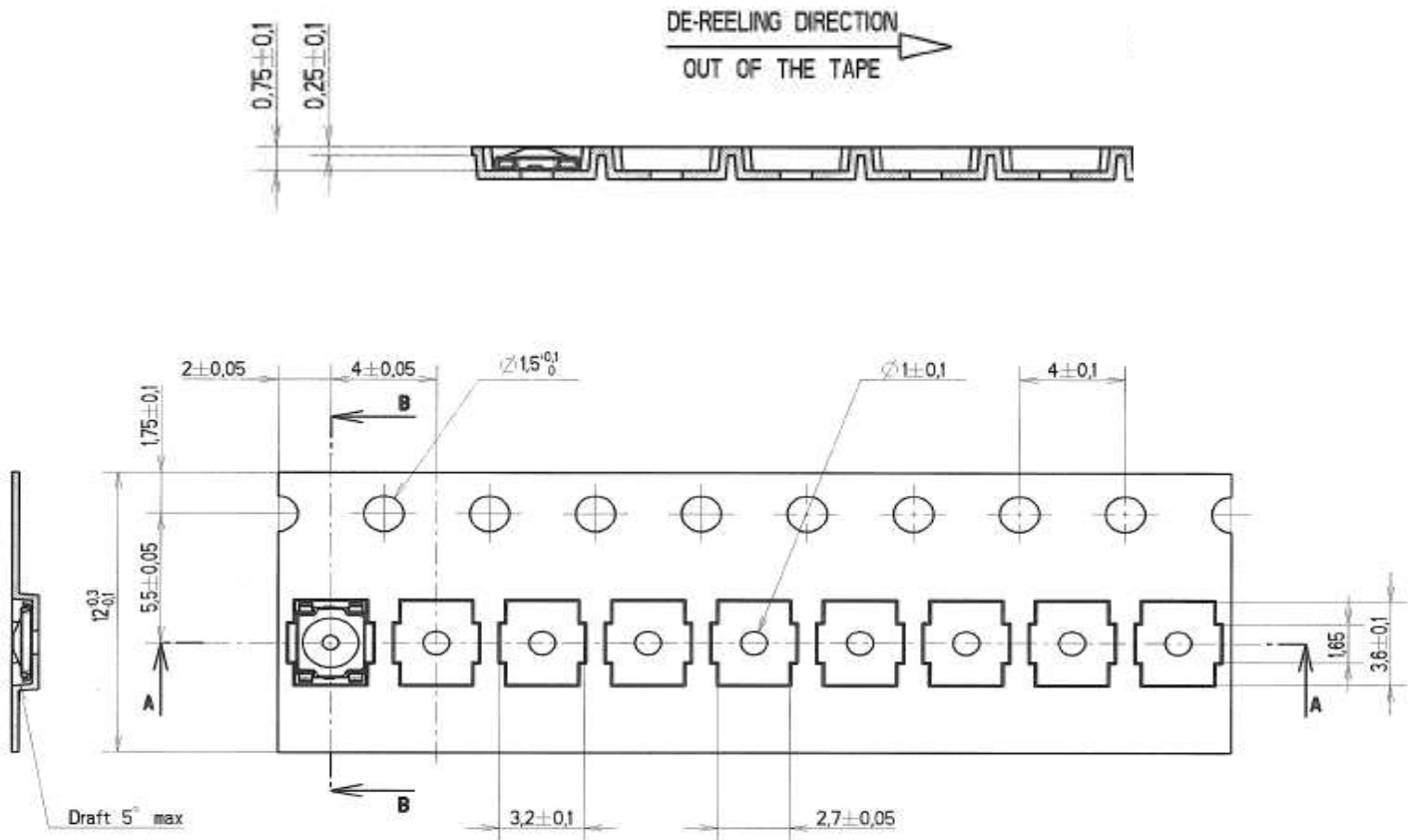
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Appendix 2

Packaging (1/2)



Product are symmetrical  
but can be presented  
in any 180° direction  
as shown on the left

Be careful! Bottom view

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Appendix 2

## Packaging (2/2)

