

6 ' P E W W = : % ' q '
 % Y X S Q S X M Z I + V E H I

Overview

% T T P M G E X M S R W

8 L 6 M O V S R W X S V O G X E I P P S P J H V S T P R I R For use in electromagnetic interference (EMI) suppression encapsulated with self-extinguishing in a box of 1/4 P M I P M R I X S E R V E S G V R S H W W E X I I P M I G E X M S U Y M V M R W K E J G X J E W W M % K E J S W M R R situations where failure of the capacitor could lead to danger

Automotive Grade devices (up to 22.5 mm Lead Spacing) S J P I G W L S G S O K S Y M M R V I V I M I X E M R W I meet the demanding Automotive Electronics Council's AEC applications.

5 U Y E P M % G E Y M M S R I R X W

& I R I 1/4 X W

- Approvals: ENEC, UL, cUL, CQC
- Class Y2 / X1 (IEC 60384-14)
- Rated voltage: 300 VAC 50/60 Hz
- Capacitance range: 0.001 – 1 µF
- Lead spacing: 10 – 37.5 mm
- Capacitance tolerance: ±20%, ±10%
- Climatic category: 40/110/56, IEC 60068-1
- Tape and reel in accordance with IEC 60286-2
- RoHS Compliant and lead-free terminations
- 3 T I V E X X O I R I W E E R S K I £ X S £'
- 100% screening factory test at 5,000 VDC/2,500 VAC
- Self-healing properties
- Automotive (AEC-Q200) grades available up to 22.5 mm Lead Spacing



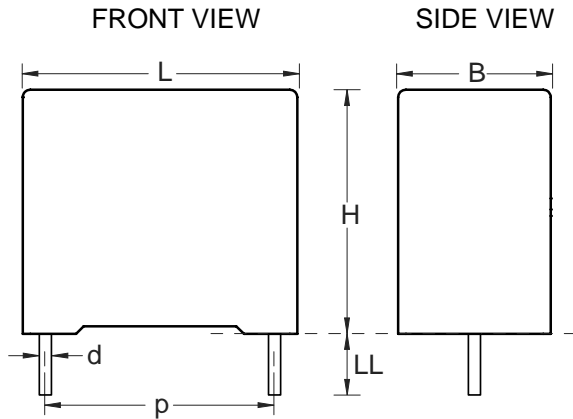
4 E V X 2 Y Q F I V 7] W X I Q

R41		I			M1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Y2, Metallized Polypropylene	3 = 300	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent W M K R M K G E I R X 8L 1/4 V H M K M X W I G M R M W F I V of zeros to be added.	See Ordering Options Table	00 M1	K = ±10% M = ±20%

3VHIVMRK 3TXMSRW 8EFPI

01EH 7TEGMRK 2SQMRE 0JTI SJ 01EHW ERH QQ	01EH 0IRKX 01EH ERH 4EGOEKMRK QQ	4EGOEKMRK 'SHI	
15,	7XERHEVH 01EH ERH 4EGOEKMRK 3TXMSRW		
	Bulk (Bag) – Short Leads	-	00
	Ammo Pack	H ₀ = 18.5 ±0.5	DQ
	3XLIV 01EH ERH 4EGOEKMRK 3TXMSRW		
	Tape & Reel (Large Reel)	H ₀ = 18.5 ±0.5	CK
	Bulk (Bag) – Short Leads	0	JB
	Bulk (Bag) – Short Leads	0	JE
	Bulk (Bag) – Short Leads	0.2	JH
	Bulk (Bag) – Long Leads	18 ±1	JM
	Bulk (Bag) – Long Leads	0	40
Bulk (Bag) – Long Leads	1	50	
7XERHEVH 01EH ERH 4EGOEKMRK 3TXMSRW	Bulk (Bag) – Short Leads	0	00
	Tape & Reel (Large Reel)	H ₀ = 18.5 ±0.5	CK
	3XLIV 01EH ERH 4EGOEKMRK 3TXMSRW		
	Bulk (Bag) – Long Leads	0	40
	Bulk (Bag) – Long Leads	1	50
7XERHEVH 01EH ERH 4EGOEKMRK 3TXMSRW	Bulk (Bag) – Short Leads	0	00
	3XLIV 01EH ERH 4EGOEKMRK 3TXMSRW		
	Bulk (Bag) – Long Leads	0	40
	Bulk (Bag) – Long Leads	1	50

(M Q I R W M S R W • 1 M P P M Q I X I V W



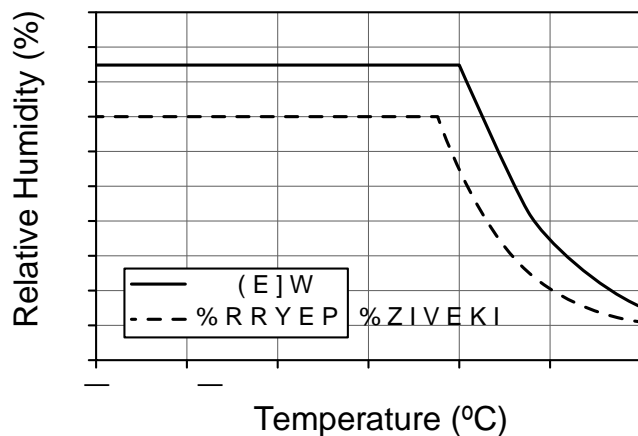
p		B		H		L		H	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
10.0	±0.4	4.0		9.0		13.0		0.6	±0.05
10.0	±0.4	5.0		11.0		13.0		0.6	±0.05
10.0	±0.4	6.0		12.0		13.0		0.6	±0.05
15.0	±0.4	5.0		11.0		18.0		0.6	±0.05
15.0	±0.4	6.0		12.0		18.0		0.6	±0.05
15.0	±0.4	7.5		13.5		18.0		0.6	±0.05
15.0	±0.4	8.5		14.5		18.0		0.6	±0.05
15.0	±0.4	11.0		19.0		18.0		0.8	±0.05
22.5	±0.4	6.0		15.0		26.5		0.8	±0.05
22.5	±0.4	7.0		16.0		26.5		0.8	±0.05
22.5	±0.4	8.5		17.0		26.5		0.8	±0.05
22.5	±0.4	10.0		18.5		26.5		0.8	±0.05
22.5	±0.4	13.0		22.0		26.5		0.8	±0.05
27.5	±0.4	13.0		22.0		32.0		0.8	±0.05
27.5	±0.4	14.0		28.0		32.0		0.8	±0.05
27.5	±0.4	18.0		33.0		32.0		0.8	±0.05
37.5	±0.4	13.0		24.0		41.5		1.0	±0.05
37.5	±0.4	16.0		28.5		41.5		1.0	±0.05
37.5	±0.4	20.0		40.0		41.5		1.0	±0.05

2 S X I 7 I I 3 V H I V M R K 3 T X M S R W 8 E S T P X M S R W P I E H P I R K X L 0 0 ,

4 I V J S V Q E R G I ' L E V E G X I V M W X M G W

Dielectric	4 S P J T V S 7 P J Q I R I
Plates	Metal layer deposited by evaporation under vacuum
Winding	Non-inductive type
Leads	Tinned wire
Protection	4 P E V G E W G I V Q S W I I X M F R I S Q E X I M W S P Z I R X M E R X E W I X E V E G R S X S M R K
Related documents	IEC 60384-14, EN 60384-14
Rated Voltage (V)	300 VAC (50/60 Hz), 1,000 VDC
Capacitance Range	0.0010 to 1 μF
Capacitance Values	E6 series (IEC 60063)
Capacitance Tolerance	±10%, ±20%
Temperature Range	- 40 X S 125 q'
Climatic Category	40/110/56 IEC 60068-1
Storage Conditions	7 X S V E N K Q I Q S R X I V S Q H E Q E V S I R I L P E F T I P G O E K I
	% Z I V E K I E L X M Q Z M T H I M I X E J V
	6, μ J S V H E J W E R H S I Q I V X V M F S X K L J S E V X
	Dew is absent
Approvals	8 I Q T I V E X Y X S q' W I I E \ M Q Y Q M I M X S V S I R I H M X W E R I W S [
Approvals	ENEC, UL, cUL, CQC

Maximum Humidity in Storage Conditions



4 I V J S V Q E R G I ' L E V E G X I V M W X M G W G S R X H

(M W W M E G X M S R)	μ	E X O , ^	q ' r q ' X] T M E P I
Test Voltage Between Terminals	The 100% screening factory test is carried out at 5,000 VDC/2,500 VAC. The voltage level is selected based on the requirements in applicable equipment standards. All electrical characteristics are checked after the test. It is not permitted to repeat this test as there is a risk to damage the capacitor. KEMET is not liable in such case for any failures.		
Insulation Resistance	1 I E W Y B / X H q ' r q ' E G G S X I S M R K •		
	Minimum Values Between Terminals		
	Voltage Charge	Voltage Charge Time	' μ ¥ * ' " ¥ *
In DC Applications	100 VDC	1 min	↓ 5 1° ↓ 5 1°

* Typical value

5 Y E P M ¼ G E X M S R

Automotive grade products meet or exceed the requirements outlined by the Automotive Electronics Council. Details are available in the Automotive Electronics Council's Automotive Electronics Council (AEC) Q200. For additional information regarding the Automotive Electronics Council and AEC-Q200, please visit their website at www.aecouncil.com.

- Q T I H E R G I + V E T L

) R Z M V S R Q I R X E P 8 I W X (E X E

8 I W X	-) ' 4 Y F P M G E X M S R	4 V S G I H Y V I
Endurance	EN/IEC 60384-14	1.7 x V _R VAC 50 Hz, once every hour increase to 1,000 VAC for 0 second, 1,000 hours at upper rated temperature
Vibration	IEC 60068-2-6 Test Fc	3 directions at 2 hours each 10 – 55 Hz at 0.75 mm Ør 98 m/s
Bump	IEC 60068-2-29 Test Eb	1,000 bumps at 390 m/s
Change of Temperature	IEC 60068-2-14 Test Na	Upper and lower rated temperature 5 cycles
Active Flammability	IEC 60384-14	V _R W Y V T K I P W X W : T Y P Z M V W I G S R H W
Passive Flammability	IEC 60384-14	-) ' • -) ' • • 2 I I H Ø I E Q I I W X
Damp Heat Steady State	IEC 60068-2-78 Test Cab	q ' E R H 6 , H E J W

% T T V S Z E P W

8EFPI • 6EXMRKW 4EVX 2YQFIV 6IJIVIRGI

'ETEGMX :EPYI v	ER(MQIRWMSR)W			T	EGMRKX : vW	2I[/)1)8 4EVX 2YQFIV 2YQFIV	0IKEG] 4EVX
	B	H	L				
0.0010	4.0	9.0	13.0	10.0	800	413F1100(1)00(2)	R413F1100(1)00(2)
0.0015	4.0	9.0	13.0	10.0	800	413F1150(1)00(2)	R413F1150(1)00(2)
0.0022	4.0	9.0	13.0	10.0	800	413F1220(1)00(2)	R413F1220(1)00(2)
0.0033	4.0	9.0	13.0	10.0	800	413F1330(1)M1(2)	R413F1330(1)M1(2)
0.0047	5.0	11.0	13.0	10.0	800	413F1470(1)M1(2)	R413F1470(1)M1(2)

7SPHIVMRK 4VSGIWW

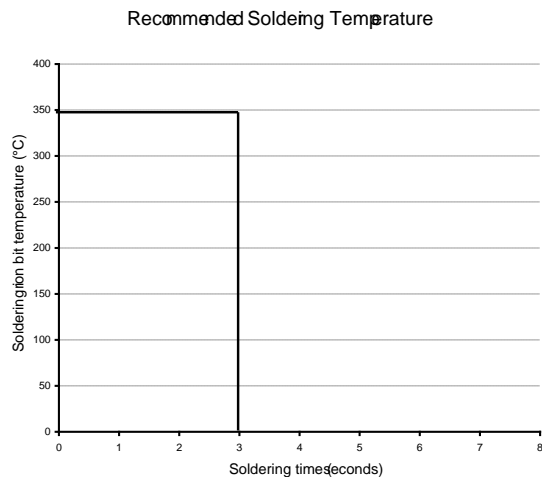
The implementation of the RoHS directive has resulted in the selection of SnAgCu (SAC) alloys or SnCu alloys as primary solder. As a result, the heat stress to the components, even in wave soldering, has increased considerably due to higher pre-heat and wave soldering can be destructive, especially for mechanically small polypropylene capacitors (with lead spacing of 5 mm to 15 mm). KEMET with any questions. In general, the wave soldering curve from IEC Publication 61760-1 Edition 2 serves as a solid guide for successful soldering. Please see Figure 1.

6 1 1/2 WSPHIVMRK 6IGSQQIRHEXMSRW above the recommended limits may result to degradation or permanent damage to the capacitors.

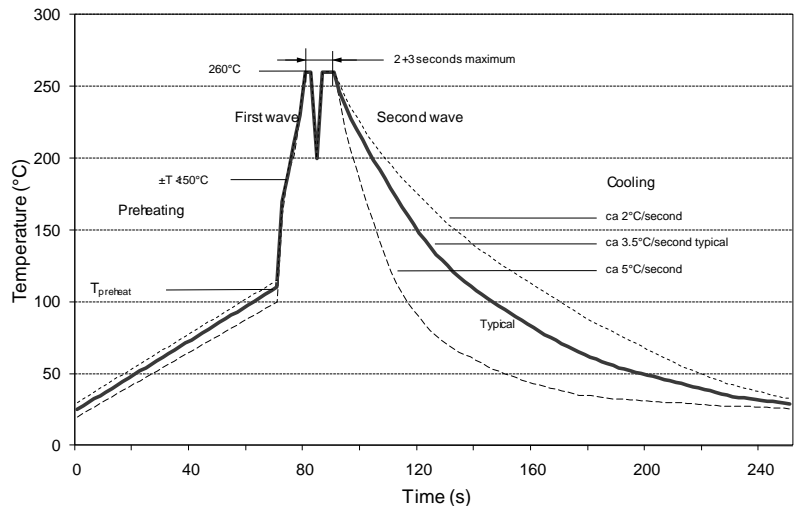
Do not place the polypropylene capacitor through an adhesive curing oven to cure resin for surface mount components. If through-hole components must pass through the adhesive curing process. A maximum two soldering cycles is recommended. Please allow time for the capacitor surface temperature to return to a normal temperature before the second soldering cycle.

1ERYEP 7SPHIVMRK 6IGSQQIRHEXMSRW

The following is the recommendation for manual soldering with a soldering iron.



The soldering iron tip temperature should be 450°C ± 450°C. Soldering duration not to exceed more than 3 seconds.



7SPHIVMRK 4VSGIWW GSRX H

;EZI 7SPHIVMRK 6IGSQQIRHEXMSRW GSRX H

1. The table indicates the maximum set-up temperature of the soldering process
Figure 1

(MIPIGXVMG *MPQ 1EXIVMEP	1E\MQYQ 4VILIE		1E\MQYQ 4VILIE		
	Capacitor Pitch μ	Capacitor Pitch $Q = 15\text{ mm}$	Capacitor Pitch $Q > 15\text{ mm}$	Capacitor Pitch μ	Capacitor Pitch $Q > 15\text{ mm}$
Polyester	q'	q'	q'	q'	q'
Polypropylene	q'	q'	q'	q'	q'
Paper	q'	q'	q'	q'	q'
Polyphenylene Sulphide	q'	q'	q'	q'	q'

2. The maximum temperature measured inside the capacitor:

Set the temperature so that inside the element the maximum temperature is below the limit:

(MIPIGXVMG *MPQ 1EXIVMEP	1E\MQYQ 4VILIE
Polyester	q'
Polypropylene	q'
Paper	q'
Polyphenylene sulphide	q'

Temperature monitored inside the capacitor.

7IPIGXMZI 7SPHIVMRK 6IGSQQIRHEXMSRW

When the board is over the bath, it is stopped and pre-designed solder pots are lifted from the bath with molten solder only at the places of the selected components, and pressed against the lower surface of the board to solder the components.

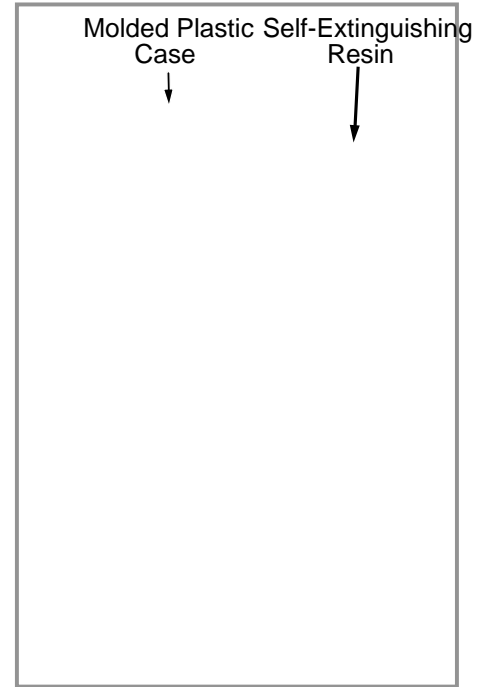
In selective soldering, the risk of MQI is reduced by using a selective soldering process. The risk of MQI is reduced by using a selective soldering process.

' S R W X V Y G X M S R

Molded Plastic
Case

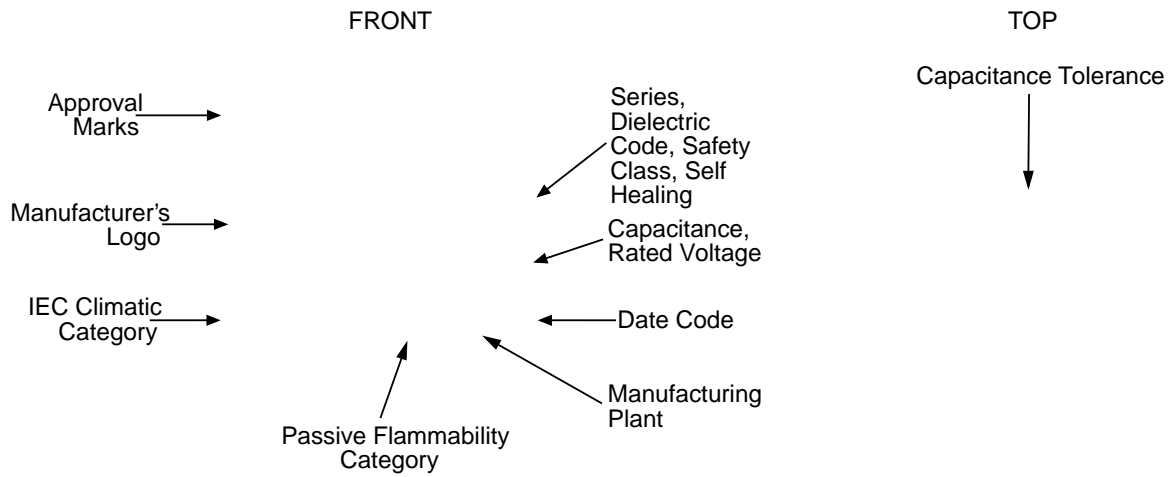


Detailed Cross Section

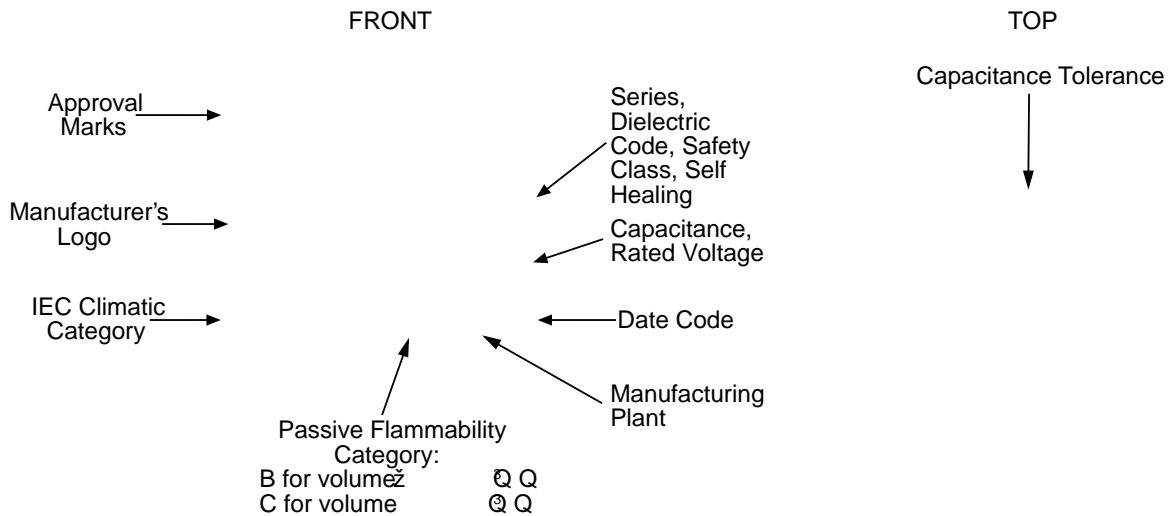


1 E V O M R K

Lead Spacing 10 mm



Lead Spacing 15 mm, 22.5 mm (small case sizes)



4 E G O E K M R K 5 Y E R X M X M I W

01EH 7T QQ	ESLMRKO QQ	R, I W W QQ	L X I R K QQ	XL & YPO 7LSVX	& YPO 00SRW 0	7XERH Reel % QQ	0EVKI % QQ	611% QQS QQ 8ETIH
	4.0	9.0	13.0	2000	1800	750	1500	1000
	5.0	11.14						

01EH 8ETMRK 4EGOEKMRK -)'

Figure 1
Lead Spacing 10 mm

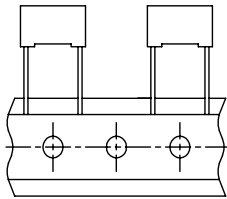


Figure 2
Lead Spacing 15 mm

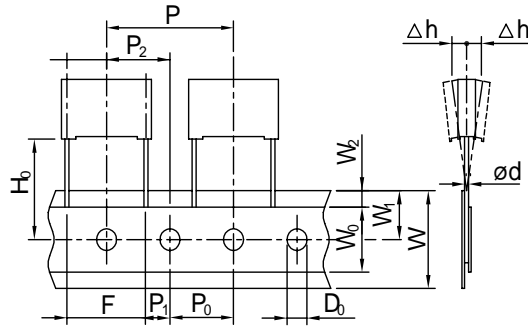
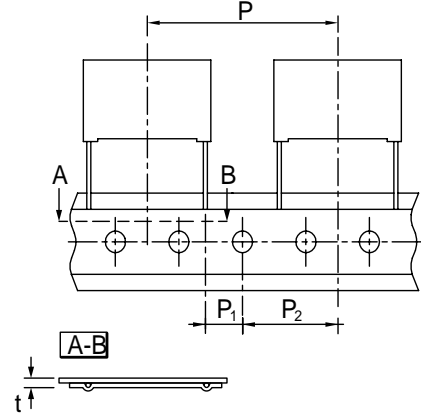


Figure 3



8ETMRK 7TIGM ¼ GEXMSR

(I W G V M T X M S R Q F S P		(M Q I R W M S R W Q Q				Tol.
		Lead Space				
		10 Fig. 1	15 Fig. 2	22.5 Fig. 3	27.5 Fig. 3	
Lead wire diameter	d	0.6	0.6-0.8	0.8	0.8	±0.05
Taping lead space	P	25.4	25.4	38.1	38.1	±1
* I I H L S P I P I E H W P E G I		12.7	12.7	12.7	12.7	r
Centering of the lead wire	₁ P	7.7	5.2	7.8	5.3	±0.7
Centering of the body	₂ P	12.7	12.7	19.05	19.05	±1.3
01EH WTEGMRK T M X G L		10	15	22.5	27.5	-
Component alignment	² L	0	0	0	0	±2
Height of component from tape center	H ₀	18.5	18.5	18.5	18.5	±0.5
Carrier tape width	W	18	18	18	18	-
Hold down tape width	₀ W	9	10	10	10	Minimum
Hole position	W ₁	9	9	9	9	±0.5
Hold down tape position	₂ W	3	3	3	3	Maximum
Feed hole diameter	₀ D	4	4	4	4	±0.2
Total tape thickness	t	0.7	0.7	0.7	0.7	±0.2

* Available also in 15 mm.

** Maximum 1 mm on 20 lead spaces.

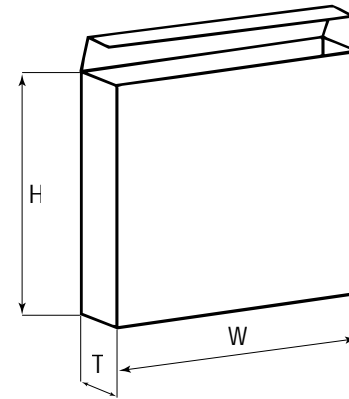
*** Pitches 15 mm and 10 mm taped to 7.5 mm (crimped leads) available upon request.

**** H₀ = 16.5 mm available upon request.

01EH 8ETMRK 4EGOEKMRK -)' • GSRX H

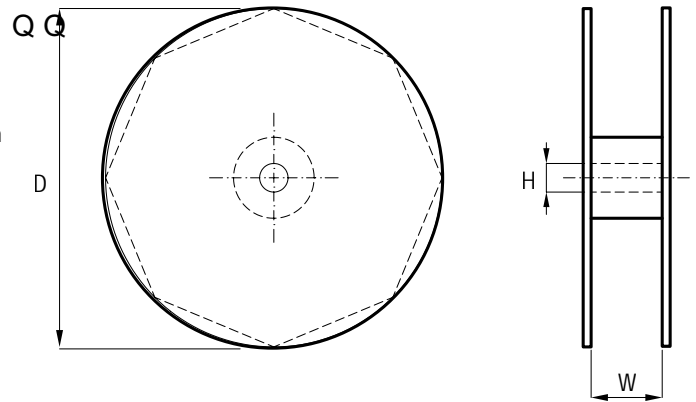
%QQS 7TIGM ¼ GEXMSRW

(MQIRWMSRW QQ		
H	W	8
360	340	59



6IIP 7TIGM ¼ GEXMSRW

6IIP 7M^I	(MQIRWMSRW		
	D	H	W
Standard	355	30	55 Maximum
Large	500	25	



/)1)8)PIGXVSRMGW 'SVTSVEXMSR 7EPIW 3¾ GIW

*SV E GSQTPIXI PMWX SJ SYV KPSFEP WEPIW S¾ GIW TPIEWI ZMWMX

(MWGPQMIV

%PP TVSHYGX WTIGM¼ GEXMSRW WXEXIQIRXW MRJSVQEXMSR ERH HEXE GSPPIGXZIP] XLI ^
checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed.