Document number: TTDS-050
Issue: 4
Date: April 2011

TECHNICAL DATA SHEET

DESCRIPTION

TTMS (-2X) & TTMS-MP heat-shrinkable identification tubing

APPLICATION / USE

Thin wall flame retarded radiation cross-linked modified polyolefin heat-shrinkable tubing, flattened and spooled.

Most sizes of TTMS & TTMS-MP tubing have a 3:1 shrink ratio; TTMS-2X has a 2:1 shrink ratio, see tables 1 & 2 for details.

Used in the identification of wires and cables by computer-based printing onto the tube. Tubing can also provide terminal insulation and strain relief. Suitable for a variety of applications, where wiring system complexity is relatively low.

TTMS-MP variant is flattened to an oval shape for ease of installation

RECOMMENDED PRINTER & RIBBONS

New Applications
Printer T2000CT-PRINTER or T6112DS-PRINTER (Optional cutter perforator)
Ribbon 2000P-4TT (black) or 2000P-4AG (silver) and 2000P-WH (white)

Legacy system
Printer TMS-2000Plus printer,
Ribbon 2000P-4TT (black) or 2000P-4AG (silver) and 2000P-WH (white)

Software TE Connectivity WinTotal software v4.5 or later.

APPROVALS

Tubing meets the material and performance requirements of SAE AMS-DTL-23053/5 Classes 1 & 3.
TTMS-2X product also meets dimensional
UL recognized Standard 224 (File E35586).
CSA certified (File 31929).

See TE Connectivity specification RW 2517 for full performance & dimensional details.

PRODUCT SIZE RANGE

Table 1: TTMS and TTMS-MP

Size TTMS- or TTMS-MP	Minimum Internal diameter as supplied mm (inch)	Maximum Internal diameter after Full Recovery mm (inch)	Wall Thickness After Full Recovery mm ± 0.08 (inch ± 0.003)
2.4	2.4 (3/32)	0.79 (0.031)	0.58 (0.023)
3.2	3.2 (1/8)	1.06 (0.042)	0.58 (0.023)
4.8	4.8 (3/16)	1.57 (0.062)	0.58 (0.023)
6.4	6.4 (1/4)	2.11 (0.083)	0.58 (0.023)
9.5	9.5 (3/8)	3.17 (0.125)	0.61 (0.023)
12.7	12.7 (1/2)	4.21 (0.166)	0.61 (0.024)
19.0	19.0 (3/4)	6.35 (0.250)	0.61 (0.024)
25.4	25.4 (1.0)	8.45 (0.333)	0.64 (0.025)
38.1	38.1 (1.5)	19.0 (0.750)	0.51 (0.020)
50.8	50.8 (2.0)	25.4 (1.000)	0.64 (0.025)

Table 2: TTMS-2X

Size TTMS-2X	Minimum Internal diameter as supplied mm (inch)	Maximum Internal diameter after Full Recovery mm (inch)	Wall Thickness After Full Recovery mm ± 0.08 (inch ± 0.003)
2.4	2.4 (3/32)	1.20 (0.047)	0.51 (0.020)
3.2	3.2 (1/8)	1.60 (0.063)	0.51 (0.020)
4.8	4.8 (3/16)	2.40 (0.094)	0.51 (0.020)
6.4	6.4 (1/4)	3.20 (0.125)	0.64 (0.025)
9.5	9.5 (3/8)	4.75 (0.187)	0.64 (0.025)
12.7	12.7 (1/2)	6.35 (0.250)	0.64 (0.025)
19.0	19.0 (3/4)	9.50 (0.374)	0.76 (0.030)

PROPERTIES

Property		Value	Test Method
Heat Aging		168 hours at 175°C (347°F). 100% UE retained & Print legible	SAE-AMS-DTL-23053/5
Heat Shock		4 hours at 250°C (482°F) No cracking, dripping or flowing & print legible	SAE-AMS-DTL-23053/5
Low temperature Flexibility		4 hours at -55°C (-67°F), No cracking	SAE-AMS-DTL-23053/5
Colors		White (-9), yellow (-4) and black (-0) Other colors are available on request.	
Tensile Strength		10MPa minimum	SAE-AMS-DTL-23053/5
Ultimate Elongation		200% minimum	SAE-AMS-DTL-23053/5
Longitudinal Change		-20% maximum (±5% for TTMS-2X)	SAE-AMS-DTL-23053/5
Mold Growth		Rating 1 maximum Original tensile strength retained	ASTM G21
Water Absorption		0.5% maximum	SAE-AMS-DTL-23053/5
Corrosive Effect	Copper Mirror	Non-corrosive; no pitting or blackening of mirror after 16 hours at 175°C. (347°F)	SAE AMS-DTL-23053
	Copper Contact		SAE AMS-DTL-23053
Dielectric Strength		20MV/m minimum	ASTM D 2671
Flammability	TTMS(-MP)	SAE AMS-DTL-23053 Class 1 UL 224 Rated	ASTM D 2671 Procedure B UL 224, All tube flame test
	TTMS-2X	SAE AMS-DTL-23053 Class 1 UL 224 Rated	ASTM D 2671 Procedure B UL 224, VW-1

PRINT PERFORMANCE PROPERTIES

Property		Test method	Effect
Print Adherence		SAE AS 81531 clause 4.6.2 (50 rubs)	Print Legible
Solvent Resistance		MIL-STD-202F method 215J	Print Legible
Fluid Resistance	JP 8 (F34)	All fluid resistance test samples immersed for 24hrs at 23°C (unless otherwise given) then followed by Print Adherence test SAE AS 81531 clause 4.6.2 (20 rubs)	Print Legible
	Skydrol 500 B4		Print Legible
	Methyl Ethyl Ketone		Print Legible
	Hydraulic Fluid (MIL PRF 5606)		Print Legible
	Lubricating Oil (MIL PRF 23699)		Print Legible
	Diesel Fuel		Print Legible
	Water – 1 Hr at 100°C		Print Legible
	Water – 168 hrs at 23°C		Print Legible
	MIL-A-8243 anti-icing fluid		Print Legible

ENVIRONMENTAL AND STORAGE PROPERTIES

Property	Value
Maximum storage temperature	40°C (104°F).
Service Temperature	-55°C to +135°C (-67°F to +275°F).

Product is compliant to EU RoHS Directive 2002/95/EC. This compliance information is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For the latest compliance status, visit the TE Connectivity RoHS Customer Support Center - http://www.te.com/customersupport/rohssupportcenter

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TE Connectivity:

TTMS-12.7-4