

ECN/PCN No.: 4119

For Manufacturer			
Product Description: PLASTIC SMD MEMS OSCILLATOR	Abrakon Part Number / Part Series: ASTMUPLP	<input type="checkbox"/> Documentation only <input type="checkbox"/> ECN <input checked="" type="checkbox"/> EOL	<input checked="" type="checkbox"/> Series <input type="checkbox"/> Part Number
Affected Revision: I.R.	New Revision: EOL	Application:	<input type="checkbox"/> Safety <input checked="" type="checkbox"/> Non-Safety
Prior to Change: Active https://abracon.com/Oscillators/ASTMUPLP.pdf			
After Change: EOL			
Cause/Reason for Change: Discontinuation of manufacturing capability.			
Change Plan			
Effective Date: 2/7/2022	Additional Remarks: N/A		
Change Declaration: N/A			
Issued Date: 2/7/2022	Issued By: <i>Brooke Cushman Product Engineer</i>	Issued Department: Engineering	
Approval: <i>Thomas Culhane Engineering Director</i>	Approval: <i>Reuben Quintanilla Quality Director</i>	Approval: <i>Ying Huang Purchasing Director</i>	
For Abracon EOL only			
Last Time Buy (if applicable): 5/7/2022	Alternate Part Number / Part Series: ASEDV (3.2x2.5mm), ASFLDV (5.0x3.2mm), ASVDV (7.0x5.0mm)		
Additional Approval:	Additional Approval:	Additional Approval:	
Customer Approval (If Applicable)			
Qualification Status: <input type="checkbox"/> Approved <input type="checkbox"/> Not accepted <i>Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.</i>			
Customer Part Number:		Customer Project:	
Company Name:	Company Representative:	Representative Signature:	
Customer Remarks:			

High Performance, Programmable LVPECL SMD MEMS Oscillator



3.2 x 2.5 x 0.75mm;
5.0 x 3.2 x 0.75mm;
7.0 x 5.0 x 0.9mm

ASTMUPLP



Moisture Sensitivity Level (MSL) – 1

FEATURES:

- Industry Standard package sizes: 3.2 x 2.5 x 0.75mm, 5 x 3.2 x 0.75mm, 7.0 x 5.0 x 0.9mm
- Any frequency between 1MHz and 625MHz
- Supply Voltage options: 3.3V, 2.8V, 1.8V, 2.25V~3.63V
- Ultra-low RMS phase jitter: 0.6ps typ. (@156.25MHz, integration bandwidth: 12kHz to 20MHz)
- Frequency Stability options: ±10ppm, ±20ppm, ±25ppm, ±50ppm over -20 to +70°C and -40 to +85°C

APPLICATIONS:

- 10GB Ethernet, SONET, SATA, SAS, Fiber Channel, PCI Express
- Storage
- Servers
- Networking
- Telecom
- Instrumentation
- Harsh environment (vibration, shock-prone and humid)

STANDARD SPECIFICATIONS:

Parameters	Min	Typ	Max	Unit	Notes
Output Frequency Range (F)	1		625	MHz	See Note 1 for Frequencies not supported
Frequency Stability (F _{stab})	-10		+10	ppm	Inclusive of initial tolerance at 25°C, and variations over operating temperature, rated power supply voltage and load
	-20		+20		
	-25		+25		
	-50		+50		
Operating Temperature Range (T _{use})	-20		+70	°C	Option "E"
	-40		+85		Option "L"
Aging@25°C	1 st year		+2	ppm	
	10 years		+5		
Supply Voltage (V _{dd})	2.25	2.5	2.75	V	Option "25"
	2.97	3.3	3.63		Option "33"
	2.25	-	3.63		Option "Blank" (default)
Input High Voltage (V _{IH})	70%*V _{dd}			V	Pin 1
Input Low Voltage (V _{IL})			30%*V _{dd}	V	Pin 1
Input Pull-up Impedance (Z _{in})		100	250	kΩ	Pin 1, OE logic high or logic low, ST logic high
		2		MΩ	Pin 1, ST logic low
Startup Time (T _{start})		6	10	ms	Measured from the time V _{dd} reaches its rated minimum value
Resume Time (T _{resume})		6	10	ms	In standby mode. Measured from the time ST pin crosses 50% threshold
Duty Cycle	45		55	%	
Output Type		LVPECL			
Current Consumption (I _{dd})		61	69	mA	Excluding load termination current, V _{dd} =2.5V or 3.3V
OE Disable Current (I _{OD})			35	mA	OE=Low
Output Disable Leakage Current (I _{leak})			1	μA	OE=Low
Standby Current (I _{std})			100	μA	ST=Low, for all V _{dd}
Maximum Output Current (I _{driver})			30	mA	Maximum average current drawn from OUT+ or OUT-

Note: 1. Frequencies not supported:

Range 1: From 209.000001MHz to 210.999999MHz

Range 2: From 251.000001MHz to 263.999999MHz

Range 3: From 314.000001MHz to 422.999999MHz

Range 4: From 502.000001MHz to 527.999999MHz

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RoHS/RoHS II compliant



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7.0 x 5.0 x 0.9mm

(Continued)

Parameters	Min	Typ	Max	Unit	Notes
Output High Voltage (V_{OH})	$V_{dd} - 1.1$		$V_{dd} - 0.7$	V	
Output Low Voltage (V_{OL})	$V_{dd} - 1.9$		$V_{dd} - 1.5$	V	
Output Differential Voltage Swing (V_{Swing})	1.2	1.6	2.0	V	
Rise/Fall Time (T_r/T_f)		300	700	ps	20%-80%, Freq. = 1MHz~220MHz
		300	500		20%-80%, Freq. = 220MHz~625MHz
OE Enable/Disable Time (T_{oe})			115	ns	F=212.5MHz, 220MHz. For other frequencies, $T_{oe}=100ns+3*\text{cycles}$
RMS Period Jitter (T_{jit})		1.2	1.7	ps	F=100MHz, 156.25MHz, 212.5MHz, $V_{dd}=2.5V$ or 3.3V
		1.2	1.7		F=266MHz, 312.5MHz, 622.08MHz, $V_{dd}=2.5V$ or 3.3V
RMS Phase Jitter (random) (T_{phj})		0.6	0.85	ps	F=156.25MHz, 312.5MHz, integration bandwidth=12kHz to 20MHz

Standard Frequencies

Standard Frequency (MHz)							
25.000000	50.000000	74.175824	74.250000	75.000000	98.304000	100.000000	106.250000
125.000000	133.000000	133.300000	133.330000	133.333000	133.333300	133.333330	133.333333
148.351648	148.500000	150.000000	155.520000	156.250000	161.132800	166.000000	166.600000
166.660000	166.666000	166.666600	166.666660	166.666666	200.000000	212.500000	

Absolute Maximum Ratings

Attempted operation outside the absolute maximum ratings may cause permanent damage to the part. Actual performance of the IC is only guaranteed within the operational specifications, not at absolute maximum ratings.

Parameters	Min.	Max.	Unit
Storage Temperature	-65	150	°C
V_{DD}	-0.5	4	V
Electrostatic Discharge (HBM)		2000	V
Soldering Temperature (follow standard Pb free soldering guidelines)		260	°C

Thermal Consideration

Package	θ_{JA} , 4 Layer Board (°C/W)	θ_{JC} , Bottom (°C/W)
7.0 x 5.0mm, 6-pin	142	27
5.0 x 3.2mm, 6-pin	97	20
3.2 x 2.5mm, 6-pin	109	20

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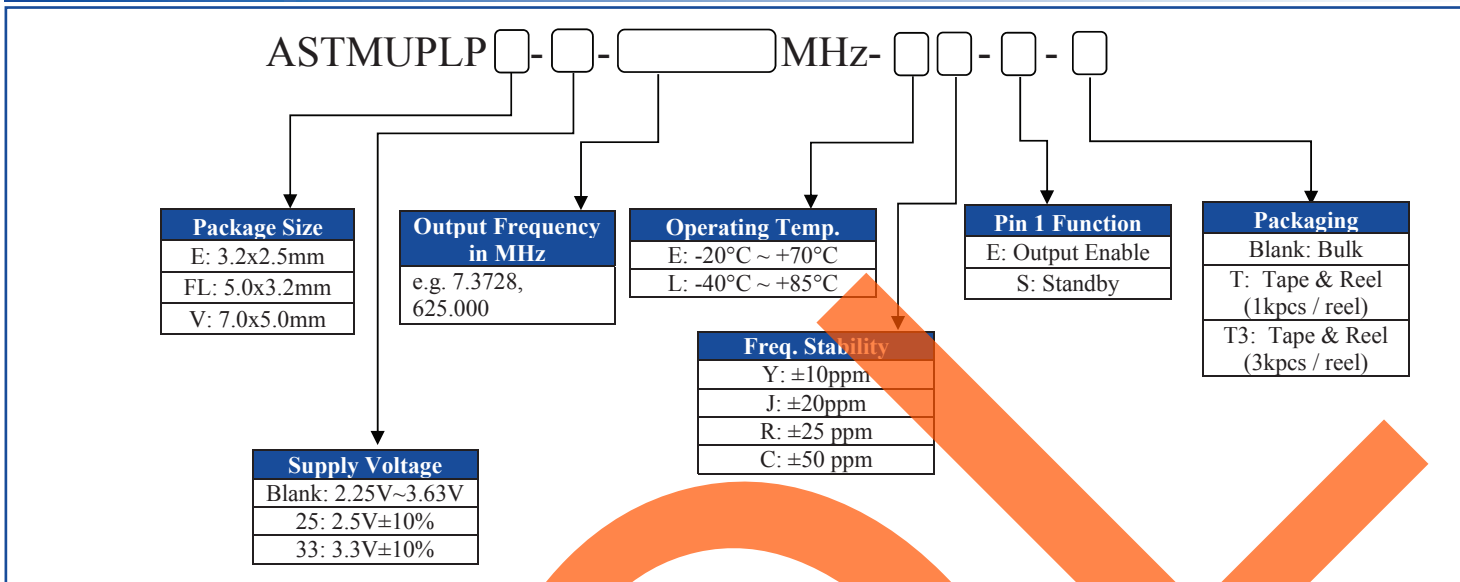
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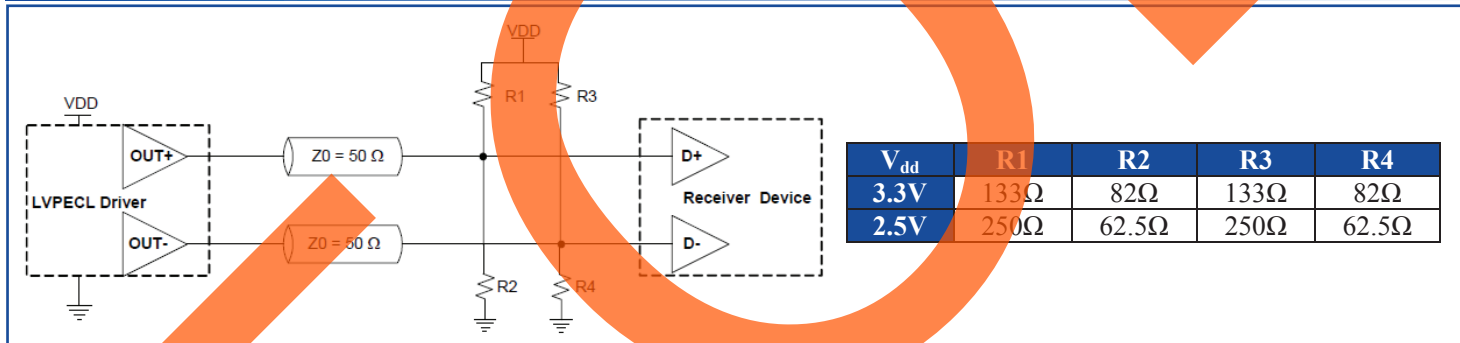


RoHS/RoHS II compliant

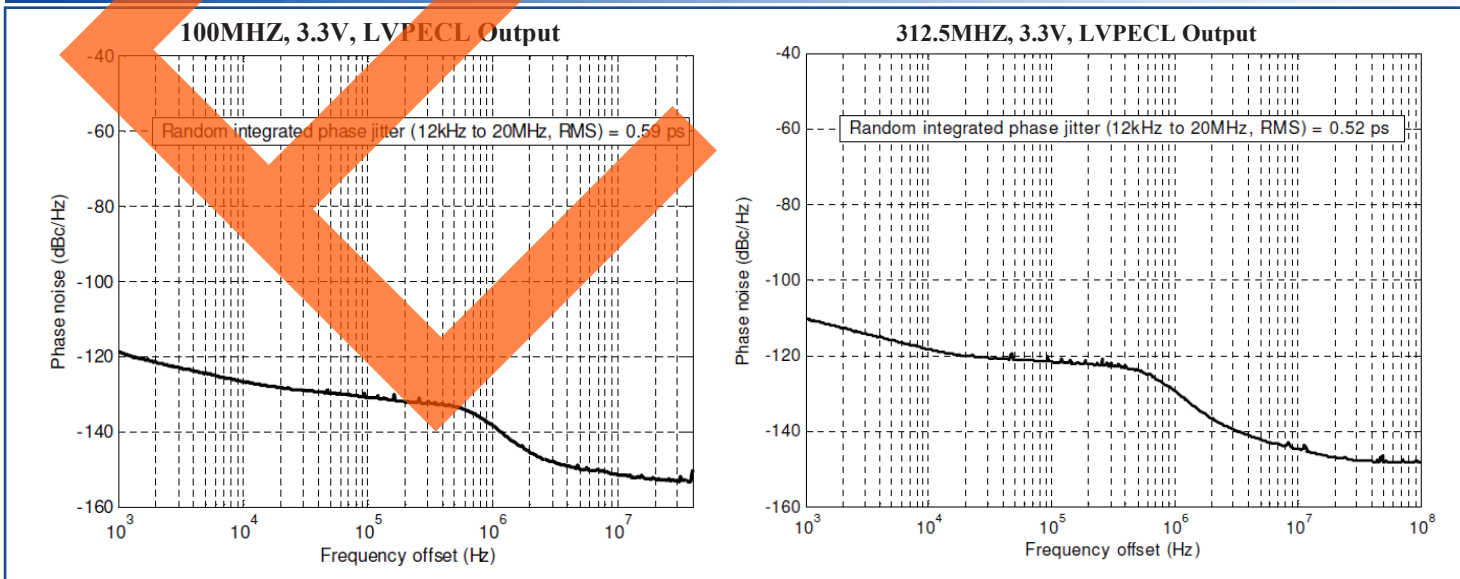
PART IDENTIFICATION:



RECOMMENDED TERMINATION DIAGRAM



TYPICAL PHASE NOISE



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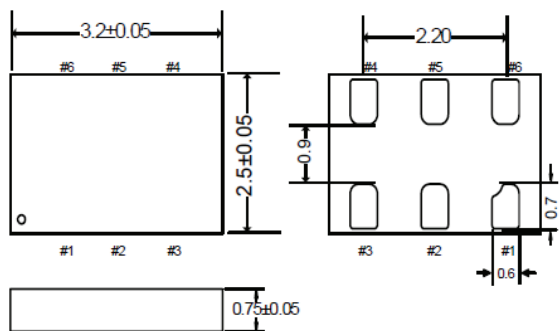
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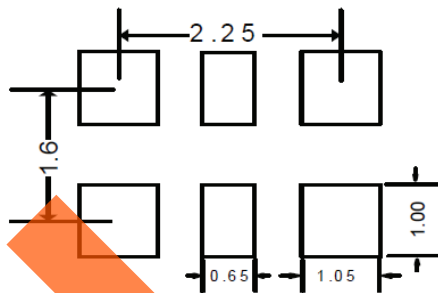
RoHS/RoHS II compliant

OUTLINE DIMENSION:

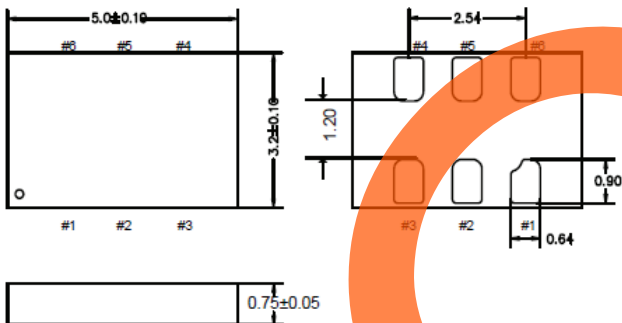
3.2 x 2.5mm Package (Option "E")



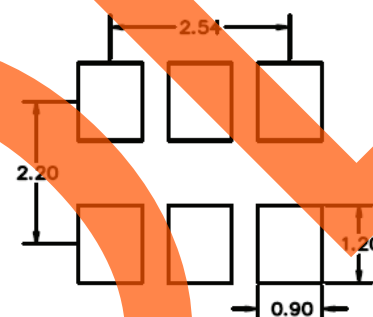
Recommended Land Pattern



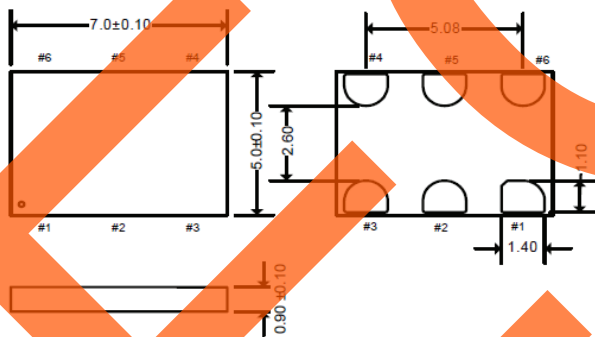
5.0 x 3.2mm Package (Option "FL")



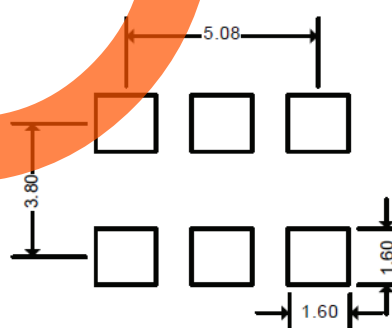
Recommended Land Pattern



7.0 x 5.0mm Package (Option "V")



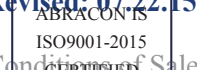
Recommended Land Pattern



Dimensions: mm

Pin	Name	Functionality
1	Output Enable	H or Open: specified frequency output L: output is high impedance. Only output driver is disabled
	Standby	H or Open: specified frequency output L: output is low (weak pull down). Device goes to sleep mode. Supply current reduces to I_{std} .
2	NC	No Connect Leave it floating or connect to GND for better heat dissipation
3	GND	Power V_{dd} power supply ground ⁽¹⁾
4	Out+	Output Oscillator output
5	Out-	Output Complementary oscillator output
6	V_{dd}	Power Power supply voltage ⁽¹⁾

Notes: 1. A capacitor value of 0.1 μ F between V_{dd} and GND is recommended.



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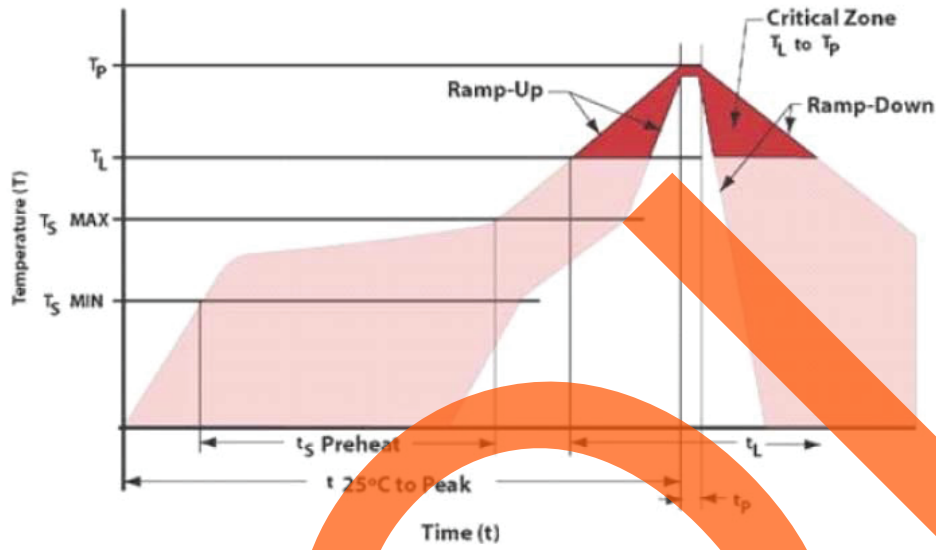
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REFLOW PROFILE:



Item	Conditions
T_S MAX to T_L (Ramp-up Rate)	3°C/second max
Preheat	
Temperature Minimum (T_S MIN)	150°C
Temperature Typical (T_S TYP)	175°C
Temperature Maximum (T_S MAX)	200°C
Time (t_s)	60 – 180 seconds
Ramp-up Rate (T_L to T_P)	3°C/second max
Time Maintained Above Temperature (T_L)	217°C
Time (t_L)	60 – 150 seconds
Peak Temperature (T_P)	260°C max
Target Peak Temperature (T_P Target)	255°C
Time within 5°C of actual peak (t_p)	20 – 40 seconds
Max. Number of Reflow Cycles	3
Ramp-down Rate	6°C/second max
Time 25°C to Peak Temperature (t)	8 minutes max



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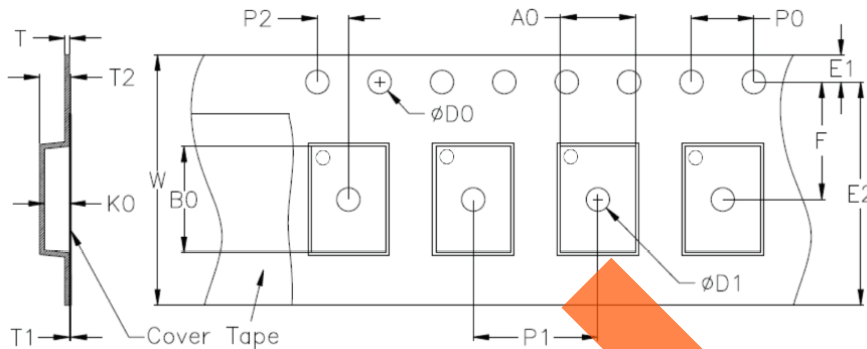
3.2 x 2.5 x 0.75mm;
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7.0 x 5.0 x 0.9mm

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TAPE & REEL:

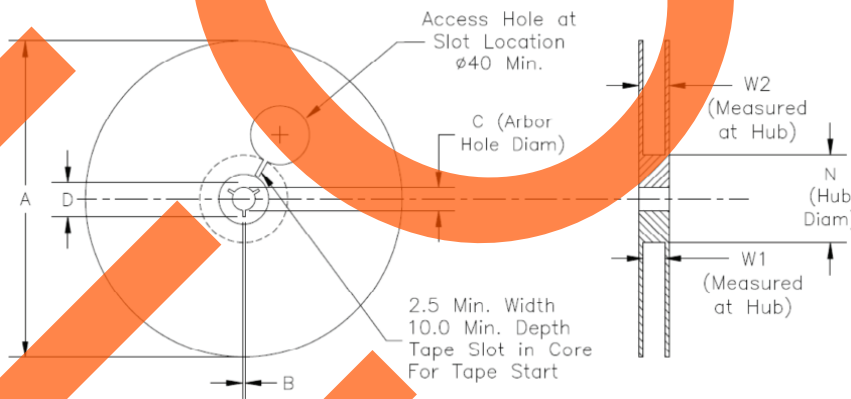


Unit: mm

Device Size	D0	D1 min.	E1	E2 min.	F	P0	P1	P2
3225	1.5+0.1/-0.0	1.5	1.75±0.1	10.25	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05
5032	1.5+0.1/-0.0	1.5	1.75±0.1	10.25	5.5±0.05	4.0±0.1	8.0±0.1	2.0±0.05
7050	1.5+0.1/-0.0	1.5	1.75±0.1	14.25	7.5±0.1	4.0±0.1	8.0±0.1	2.0±0.1

Unit: mm

Device Size	T	T1 max.	T2 max.	W max.	A0	B0	K0
3225	0.6	0.1	1.65	12.3	2.8±0.10	3.5±0.10	1.10±0.10
5032	0.6	0.1	1.65	12.3	3.5±0.10	5.3±0.10	1.10±0.10
7050	0.6	0.1	1.80	16.3	5.4±0.10	7.4±0.10	1.3±0.10



Unit: mm

Tape Size	A max.	B min.	C	D min.	N	W1	W2 max.
12mm	180	1.5	13.0±0.2	20.2	60±0.5	12.4+2.0/-0	18.4
	330	1.5	13.0±0.2	20.2	100±0.5	12.4+2.0/-0	18.4
16mm	180	1.5	13.0±0.2	20.2	60±0.5	16.4+2.0/-0	22.4
	330	1.5	13.0±0.2	20.2	100±0.5	16.4+2.0/-0	22.4

Device Size	"T" (1k/reel)		"T3" (3k/reel)	
3225	12mm Tape	7" Reel	12mm Tape	7" Reel
5032	12mm Tape	7" Reel	12mm Tape	13" Reel
7050	16mm Tape	7" Reel	16mm Tape	13" Reel

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