



# TF256 — N-channel Silicon Junction FET Electret Condenser Microphone Applications

## Features

- High gain :  $G_V=2.7\text{dB typ}$  ( $V_{CC}=2\text{V}$ ,  $R_L=2.2\text{k}\Omega$ ,  $C_{in}=5\text{pF}$ ,  $V_{IN}=10\text{mV}$ ,  $f=1\text{kHz}$ )
- Ultrasmall package facilitates miniaturization in end products [1.0mm×0.6mm×0.27mm (max 0.3mm)]
- Best suited for use in electret condenser microphone for audio equipments and telephones
- Excellent transient characteristics
- Adoption of FBET process
- Halogen free compliance

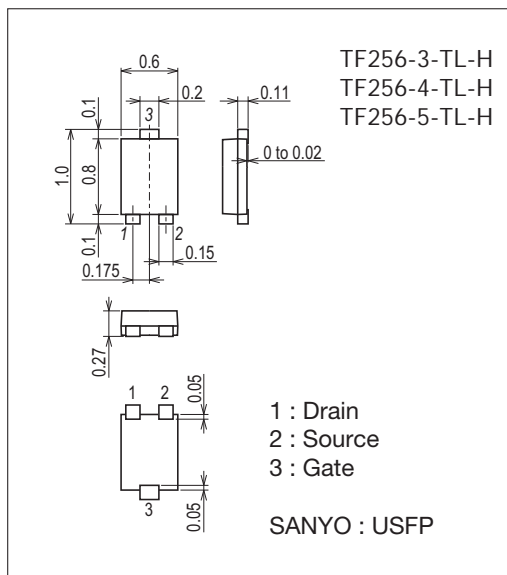
## Specifications

### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Gate-to-Drain Voltage	$V_{GDO}$		-20	V
Gate Current	$I_G$		10	mA
Drain Current	$I_D$		1	mA
Allowable Power Dissipation	$P_D$		30	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

## Package Dimensions

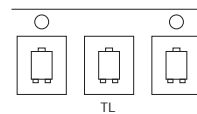
unit : mm (typ)  
7055-001



## Product & Package Information

- Package : USFP
- JEITA, JEDEC : -
- Minimum Packing Quantity : 10,000 pcs./reel

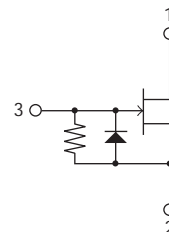
## Packing Type: TL



## Marking



## Electrical Connection



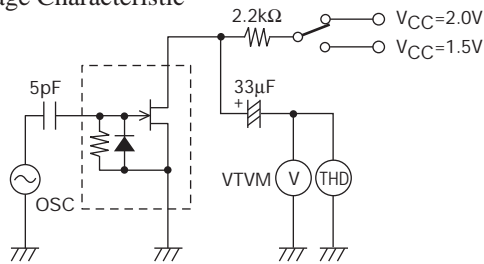
# TF256

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings				Unit
			Rank	min	typ	max	
Gate-to-Drain Breakdown Voltage	V(BR)GDO	I <sub>G</sub> =-100μA		-20			V
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =2V, I <sub>D</sub> =1μA		-0.1	-0.35	-1.0	V
Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =2V, V <sub>GS</sub> =0V	3	100		180	μA
			4	140		280	
			5	240		450	
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =2V, V <sub>GS</sub> =0V, f=1kHz		0.75	1.7		mS
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =2V, V <sub>GS</sub> =0V, f=1MHz			3.1		pF
Reverse Transfer Capacitance	C <sub>rss</sub>				1.0		pF
[Ta=25°C, V <sub>CC</sub> =2.0V, R <sub>L</sub> =2.2kΩ, C <sub>in</sub> =5pF, See specified Test Circuit.]							
Voltage Gain	G <sub>V</sub>	V <sub>IN</sub> =10mV, f=1kHz	3		1.0		dB
			4		2.0		
			5		3.0		
Reduced Voltage Characteristic	ΔG <sub>VV</sub>	V <sub>IN</sub> =10mV, f=1kHz, V <sub>CC</sub> =2.0V → 1.5V	3		-0.5	-1.0	dB
			4		-0.6	-1.3	
			5		-0.9	-2.0	
Frequency Characteristic	ΔG <sub>Vf</sub>	f=1kHz to 110Hz				-1.0	dB
Total Harmonic Distortion	THD	V <sub>IN</sub> =30mV, f=1kHz	3		1.4		%
			4		0.9		
			5		0.35		
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =0V, A curve			-105	-100	dB

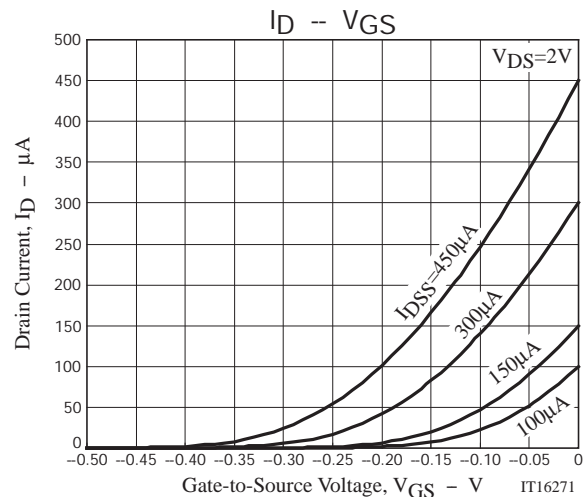
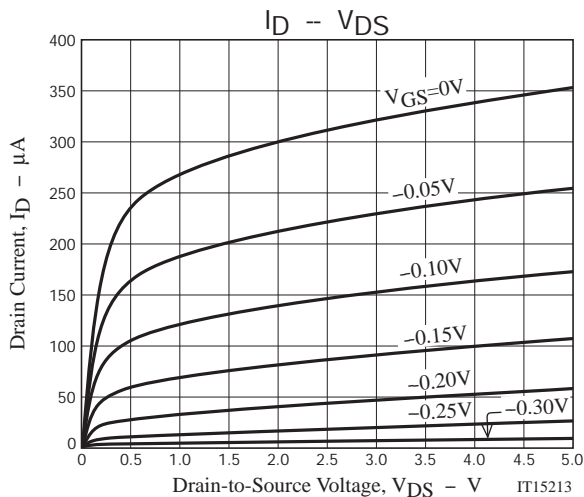
## Test Circuit

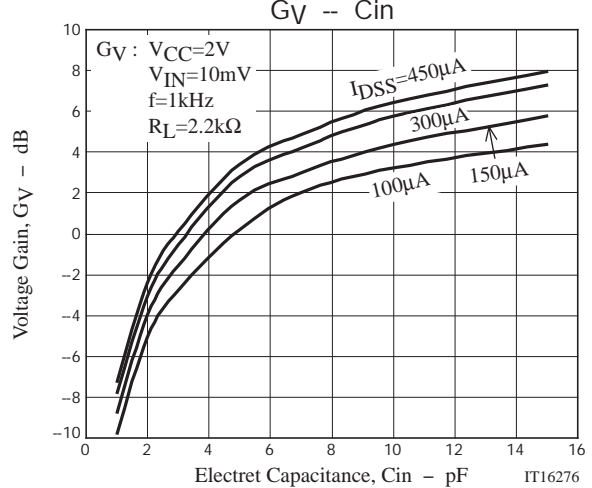
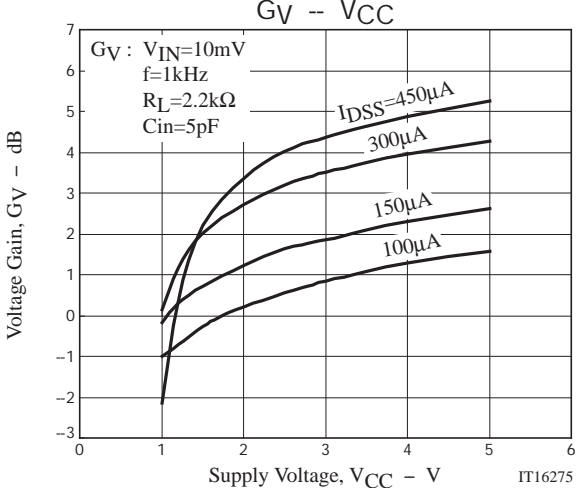
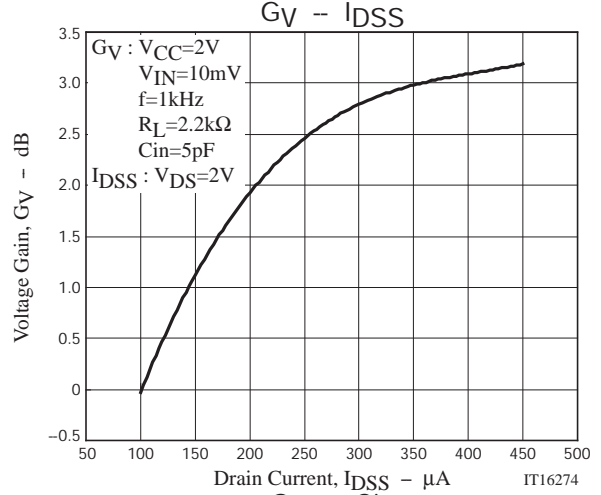
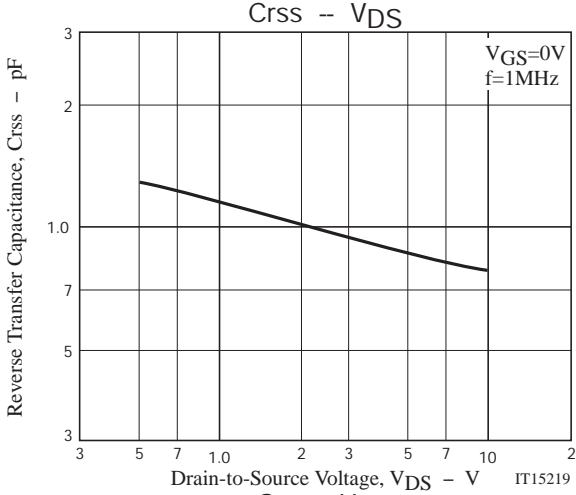
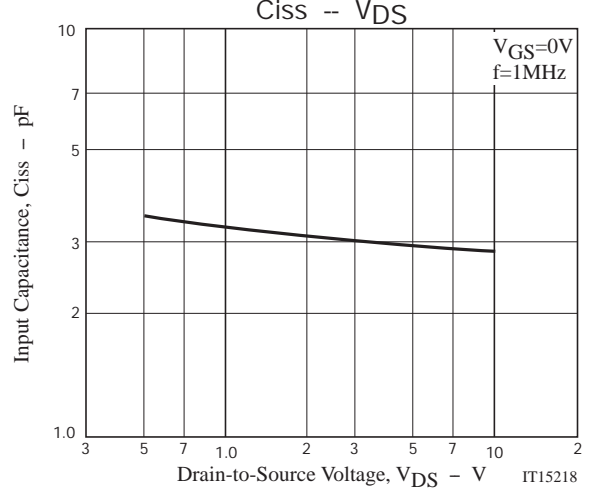
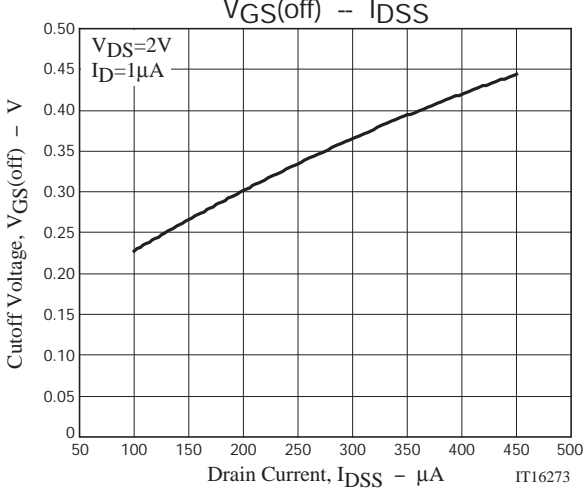
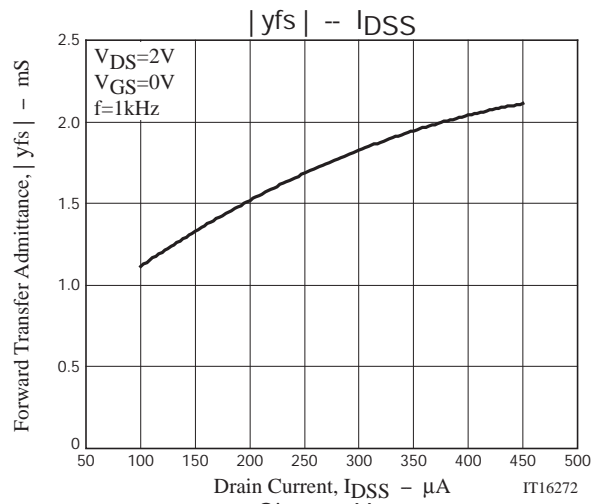
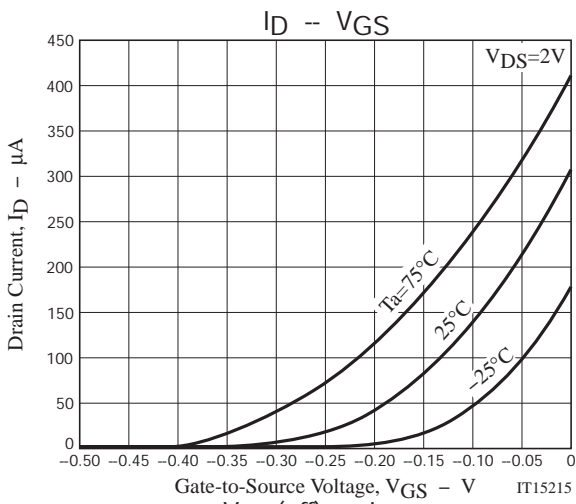
- Voltage gain
- Frequency Characteristic
- Distortion
- Reduced Voltage Characteristic

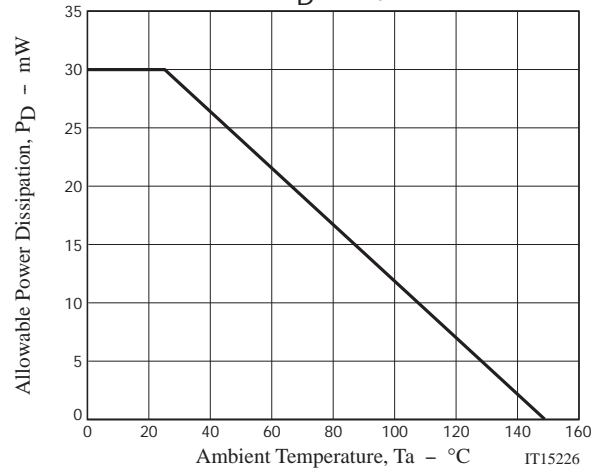
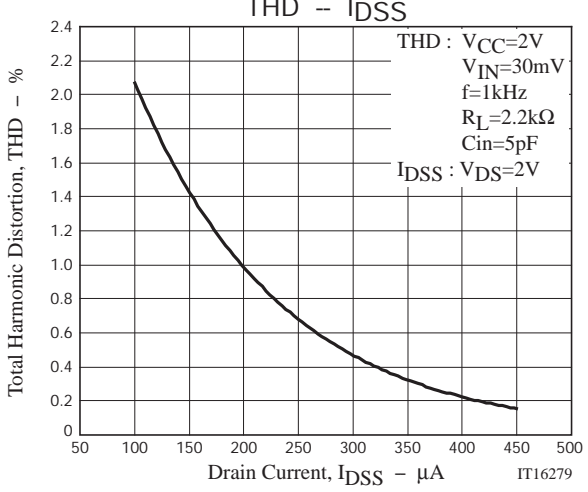
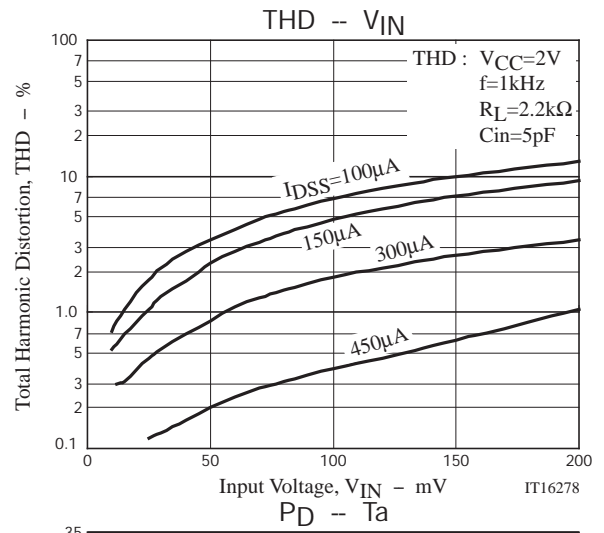
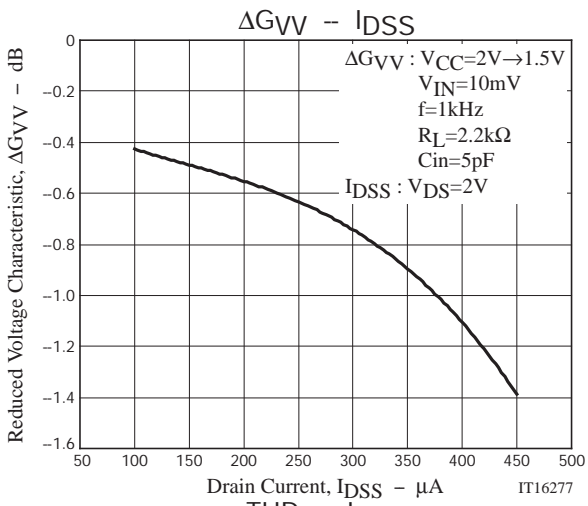


## Ordering Information

Device	Package	Shipping	memo
TF256-3-TL-H	USFP	10,000pcs./reel	Pb Free and Halogen Free
TF256-4-TL-H	USFP	10,000pcs./reel	
TF256-5-TL-H	USFP	10,000pcs./reel	







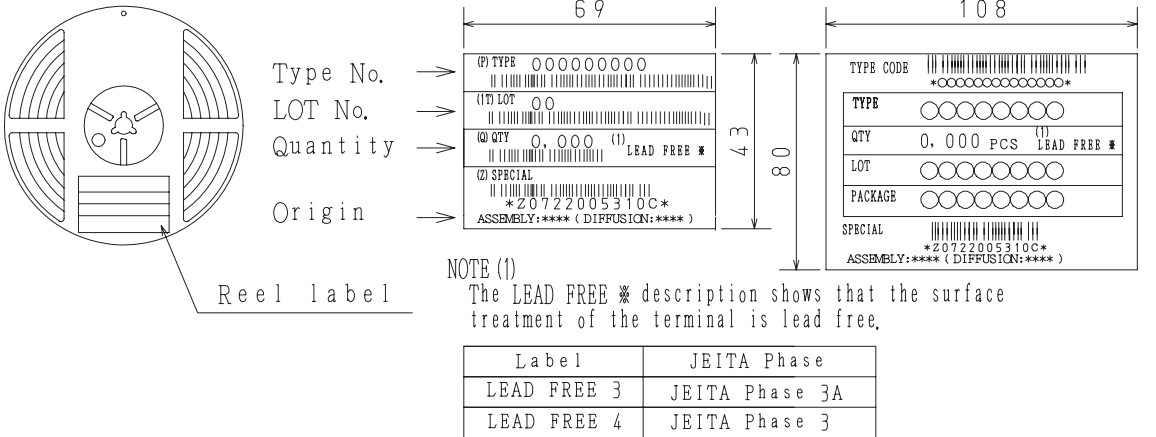
Taping Specification

TF256-3-TL-H, TF256-4-TL-H, TF256-5-TL-H

1. Packing Format

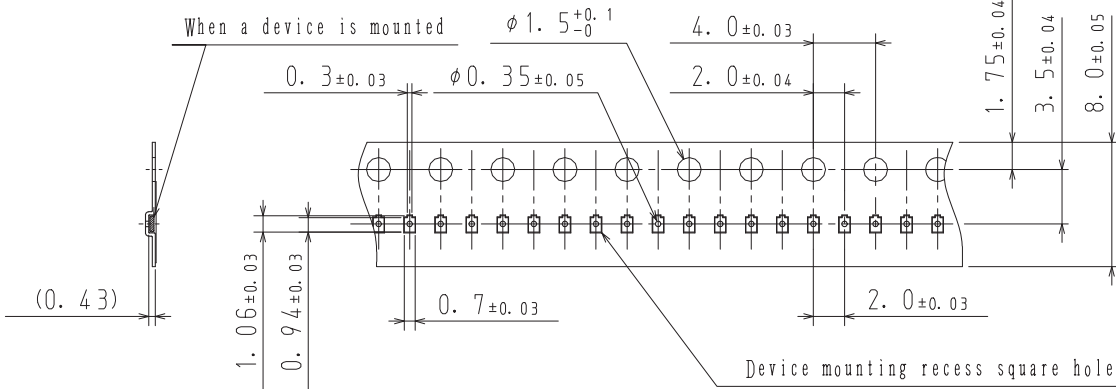
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
USFP	USFP	10,000	50,000	300,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method

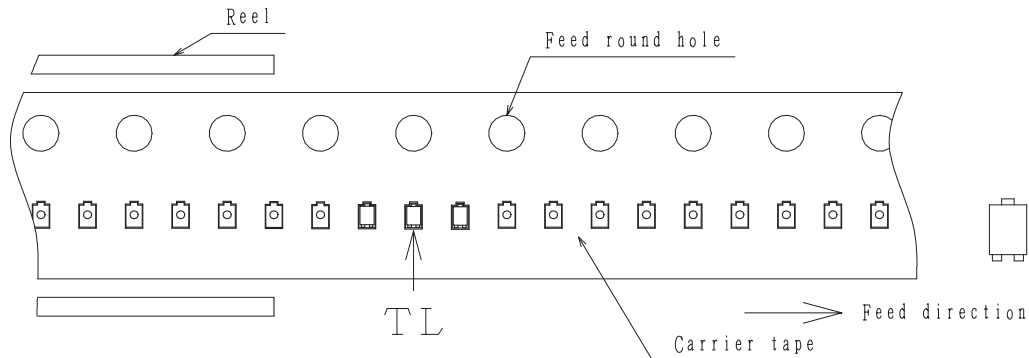


2. Taping configuration

2-1. Carrier tape size (unit:mm)



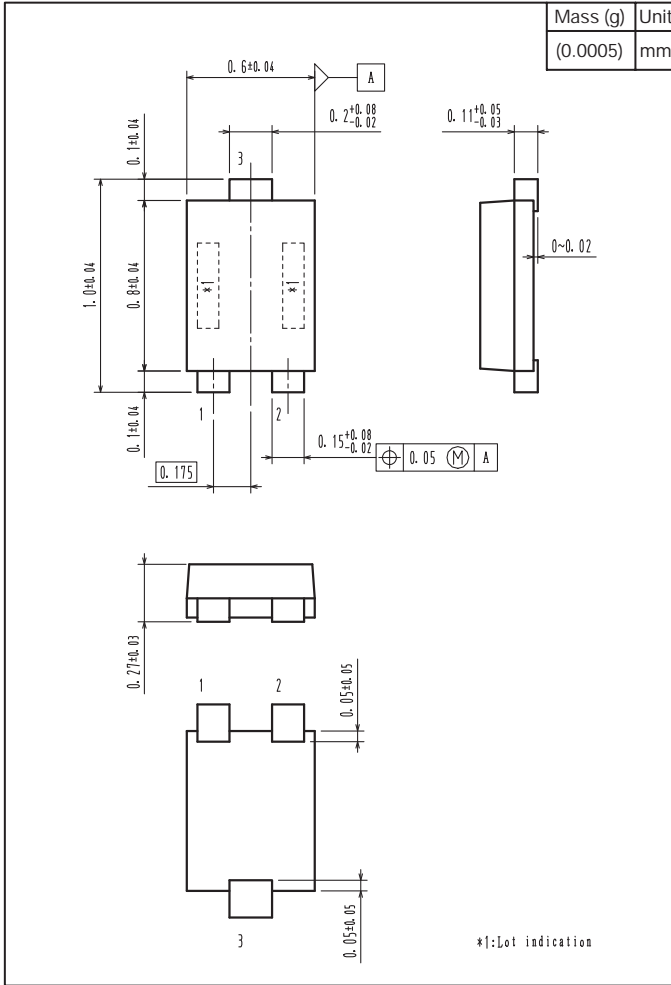
2-2. Device placement direction



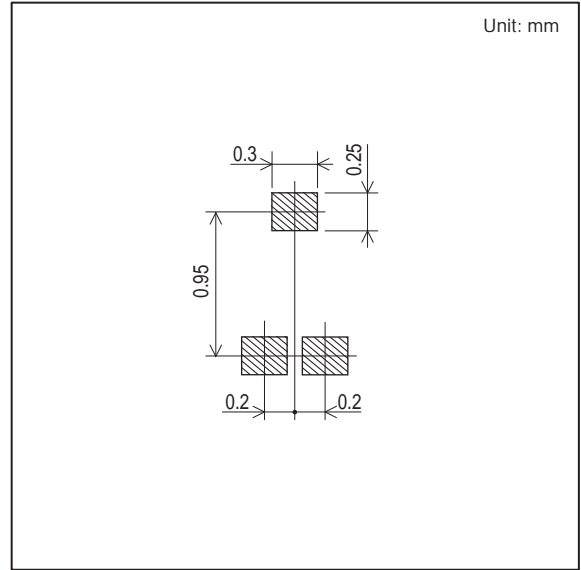
Those with one electrode terminal on the feed hole side.....TL

Outline Drawing

TF256-3-TL-H, TF256-4-TL-H, TF256-5-TL-H



Land Pattern Example



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