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# TF256

## N-Channel JFET 20V, 140 to 450 $\mu$ A, 1.7mS, USFP

ON Semiconductor®

<http://onsemi.com>

### Features

- High gain :  $GV=2.7\text{dB typ}$  ( $V_{CC}=2\text{V}$ ,  $R_L=2.2\text{k}\Omega$ ,  $C_{in}=5\text{pF}$ ,  $V_{IN}=10\text{mV}$ ,  $f=1\text{kHz}$ )
- Ultrasmall package facilitates miniaturization in end products [1.0mm $\times$ 0.6mm $\times$ 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 $T_a=25^\circ\text{C}$

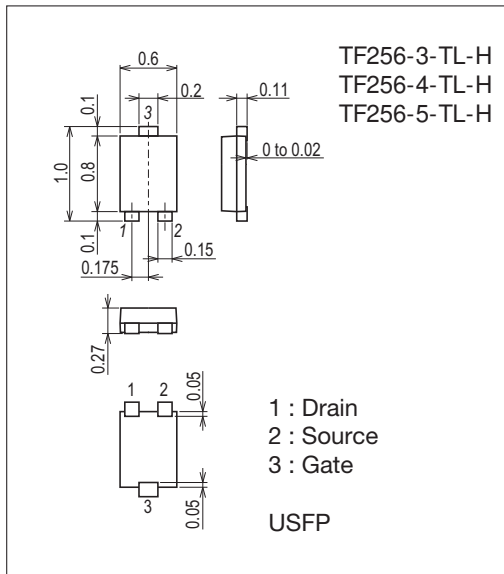
Parameter	Symbol	Conditions	Ratings	Unit
Gate-to-Drain Voltage	$V_{GDO}$		-20	V
Gate Current	$I_G$		10	mA
Drain Current	$I_D$		1	mA
Allowable Power Dissipation	$P_D$		30	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

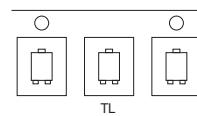
7055-001



### Product & Package Information

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

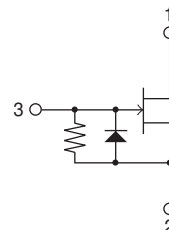
### Packing Type: TL



### Marking



### Electrical Connection



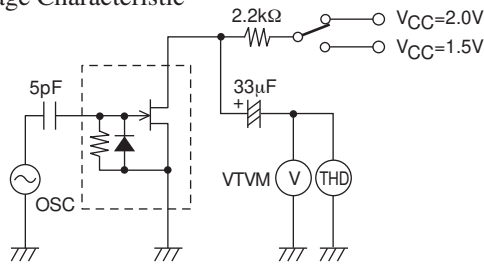
# TF256

## 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

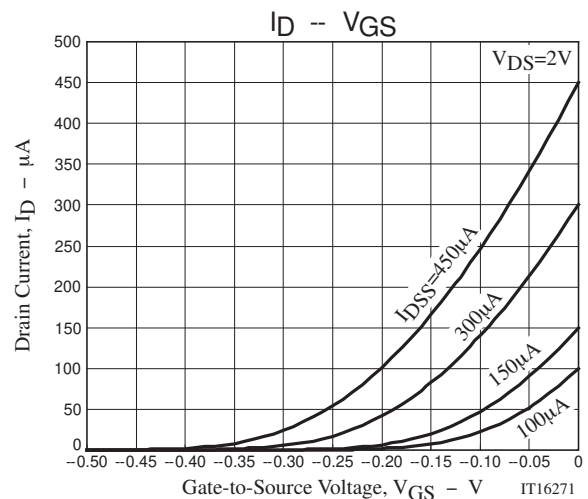
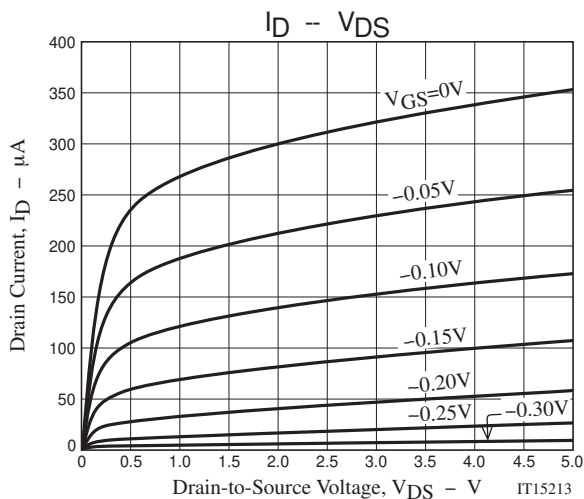
## Test Circuit

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

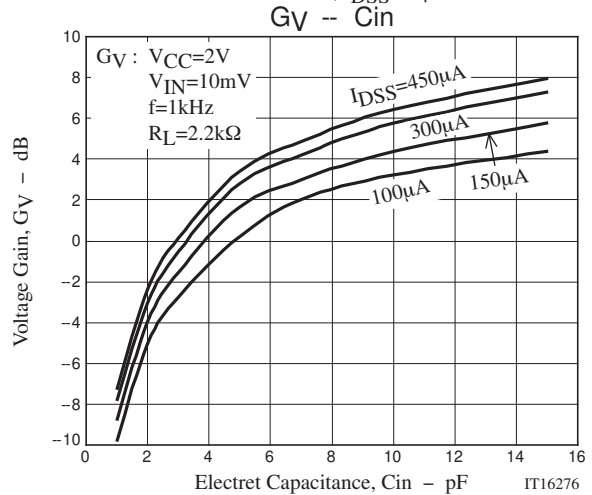
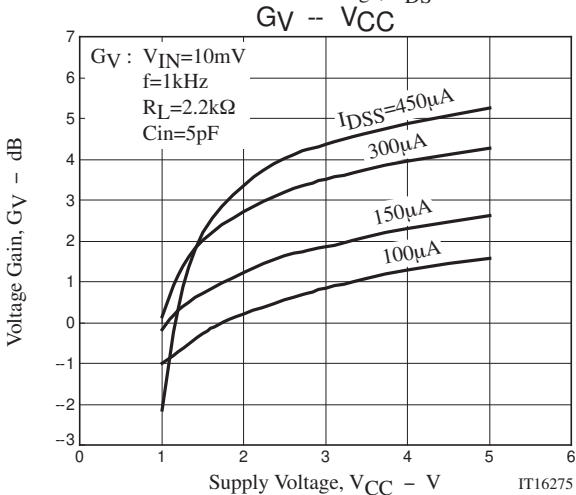
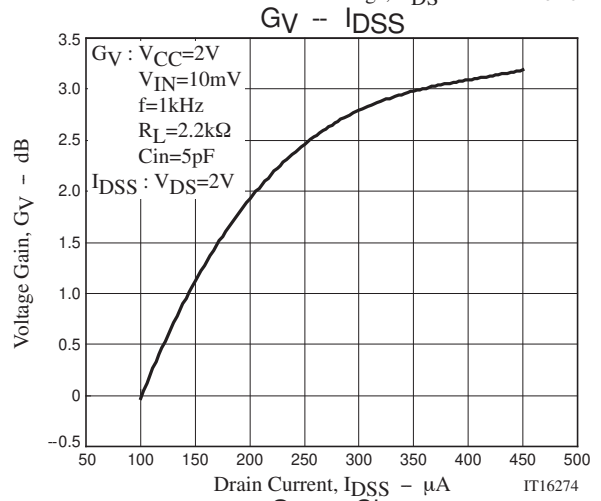
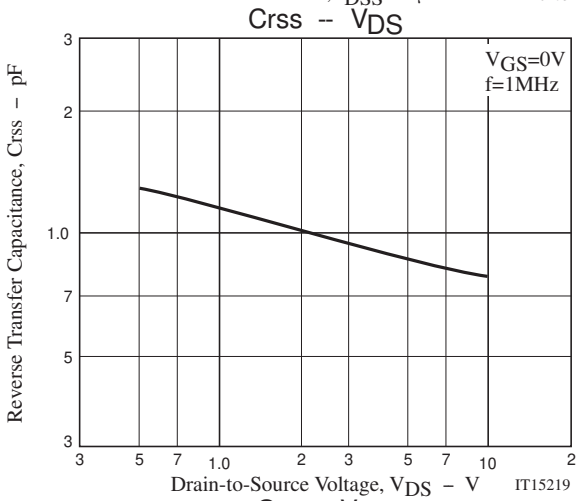
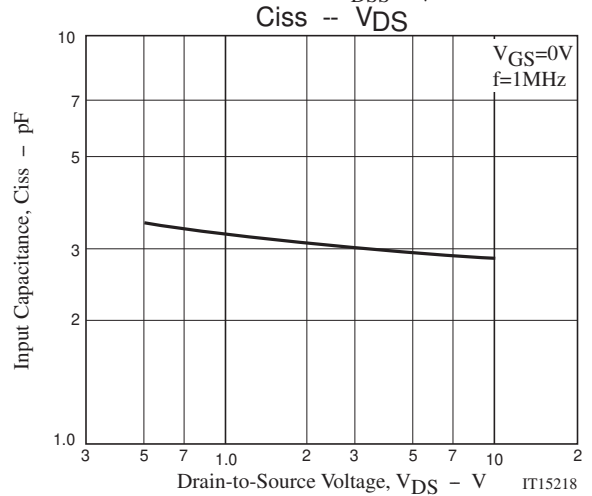
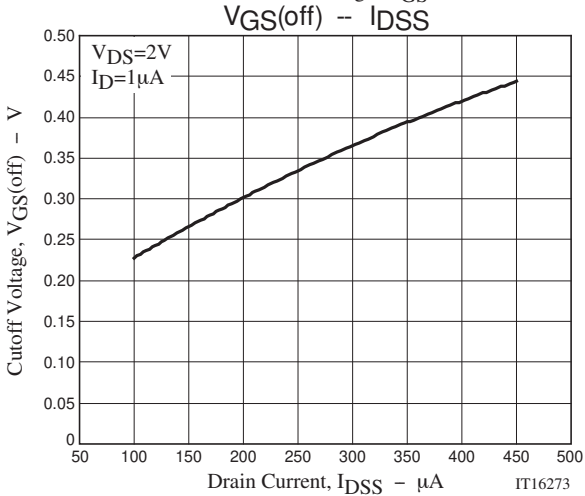
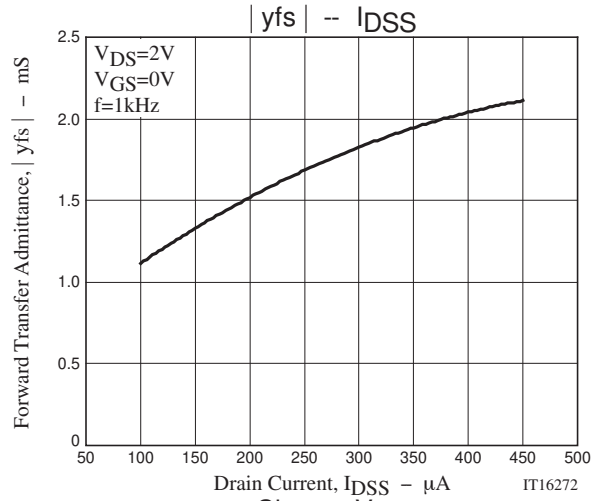
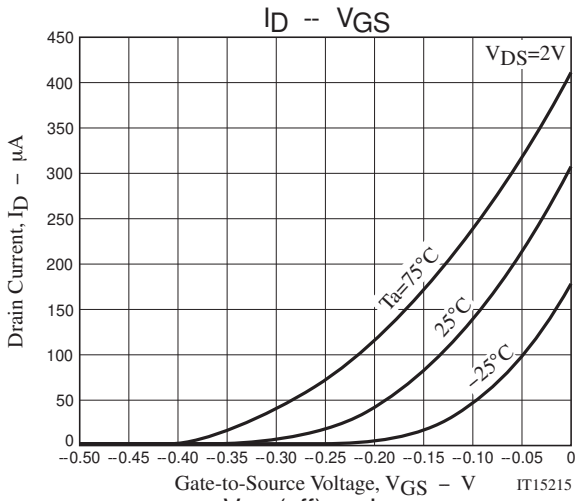


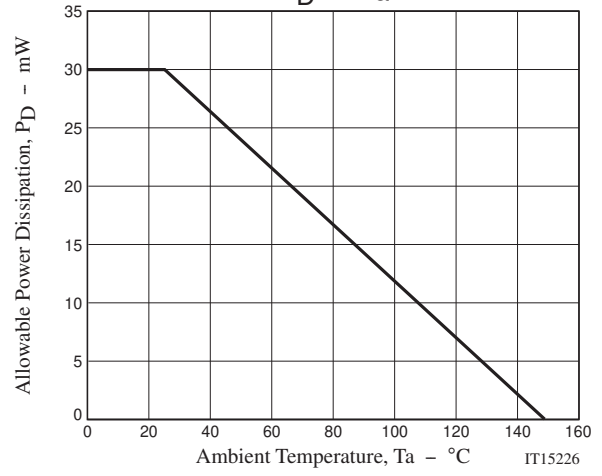
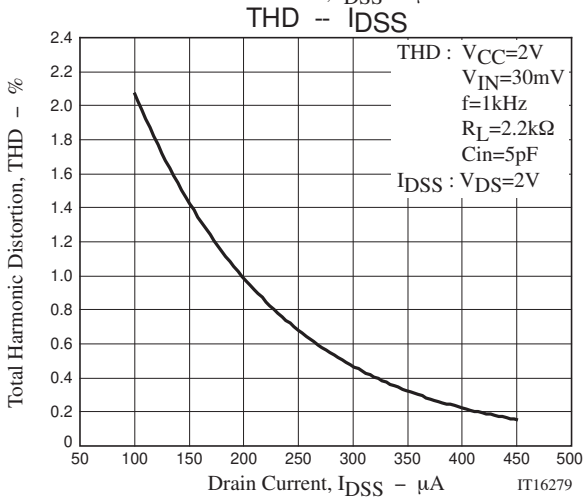
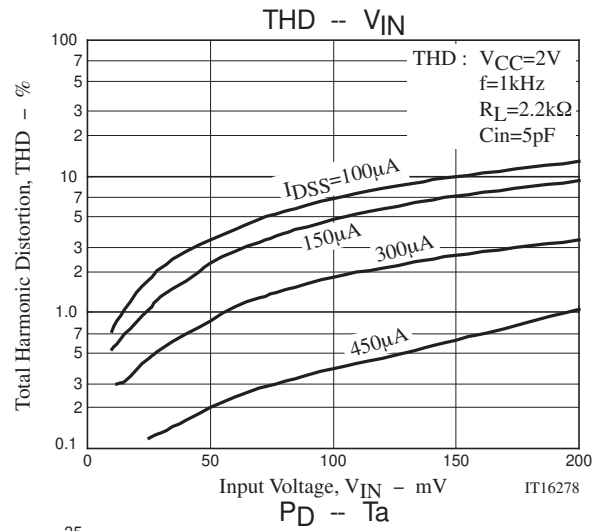
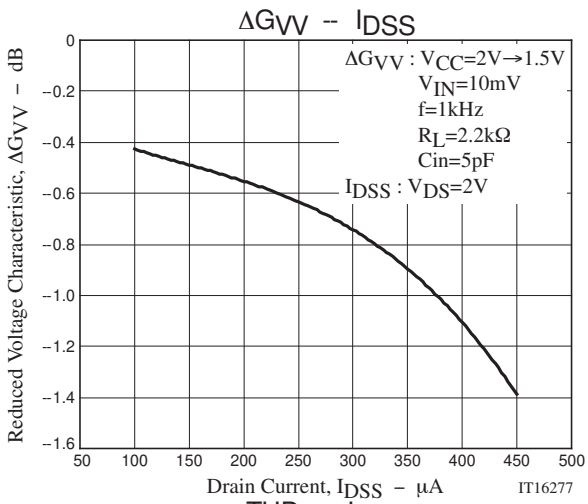
## Ordering Information

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	









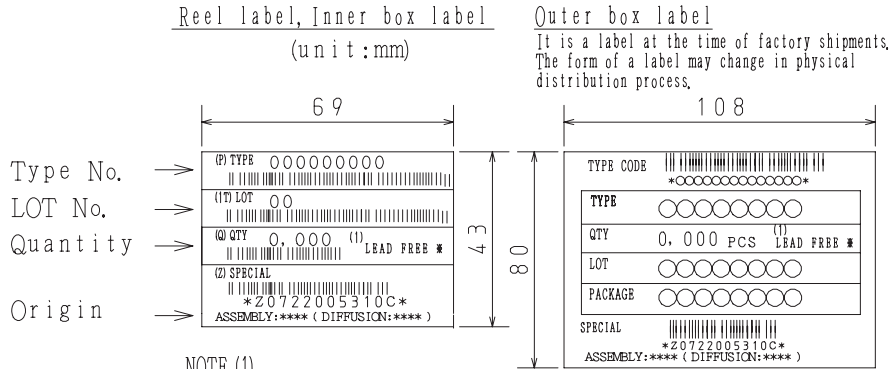
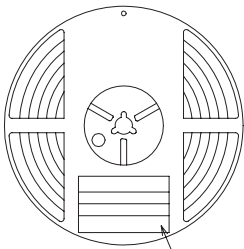
**Taping Specification**

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

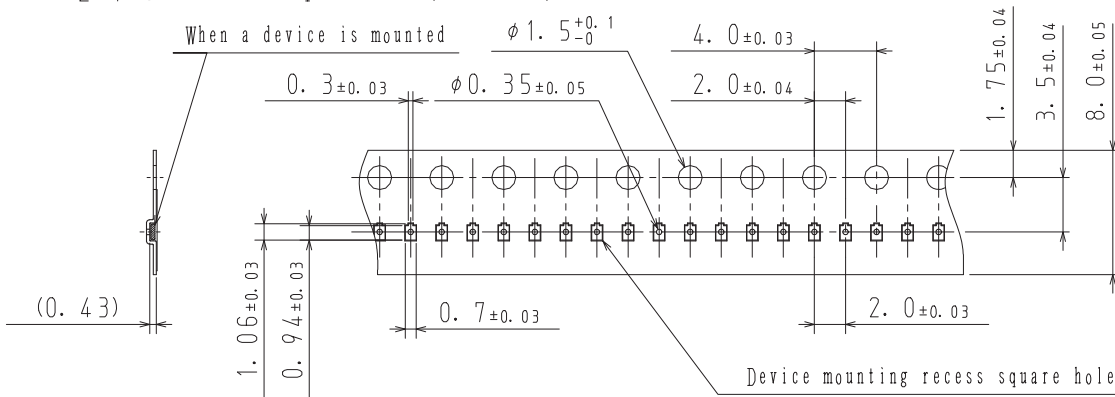


NOTE (1)  
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

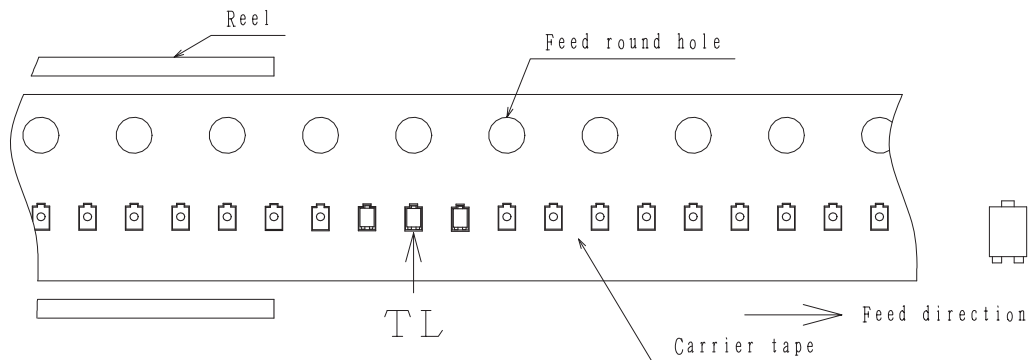
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

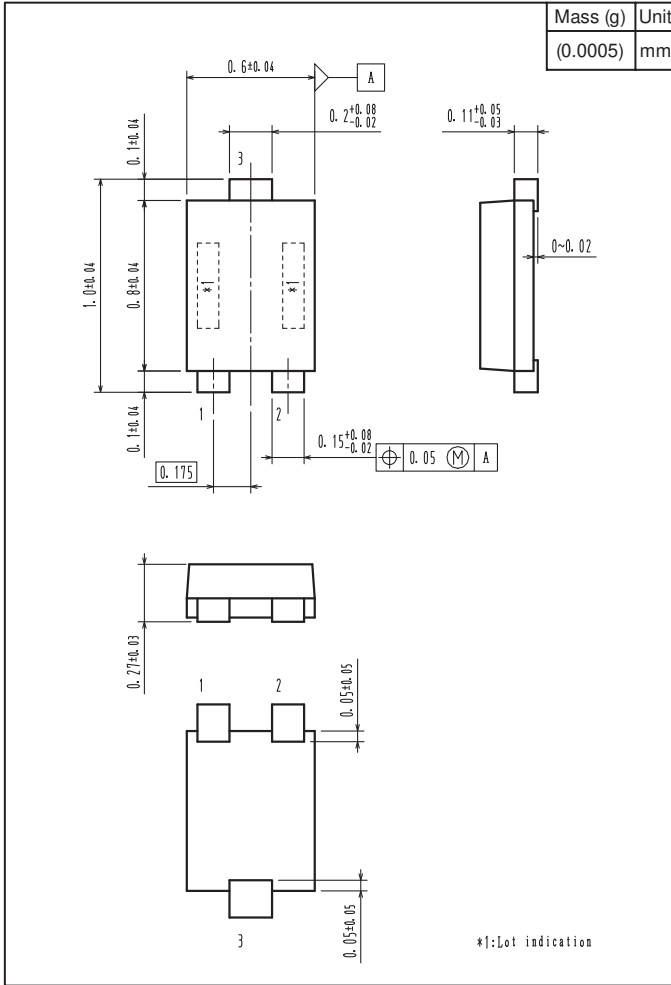


Those with one electrode terminal on the feed hole side.....TL

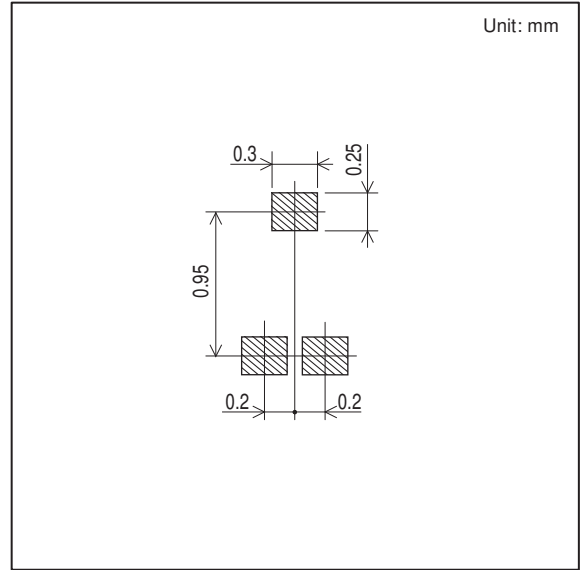
# TF256

## Outline Drawing

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



## Land Pattern Example



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