Ordering number : ENA0841B

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-channel Silicon Junction FET

TF252 — Electret Condenser Microphone Applications

Features

- High gain : G_V=1.0dB typ (V_{CC}=2V, R_L=2.2kΩ, Cin=5pF, V_{IN}=10mV, f=1kHz)
- 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 voltage characteristics
- Excellent transient characteristics
- Adoption of FBET process
- Halogen free compliance
- Protection diode in

Specifications

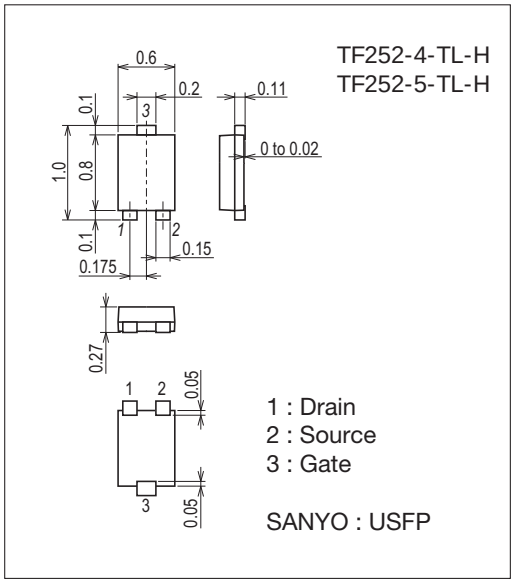
Absolute Maximum Ratings at Ta=25°C

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	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

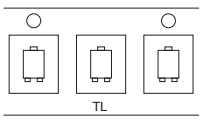
7055-001



Product & Package Information

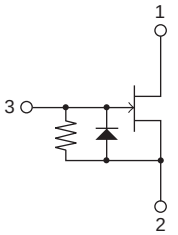
- Package : USFP
- JEITA, JEDEC : -
- Minimum Packing Quantity : 10,000 pcs./reel

Packing Type: TL



Marking

Electrical Connection



Electrical Characteristics at Ta=25°C

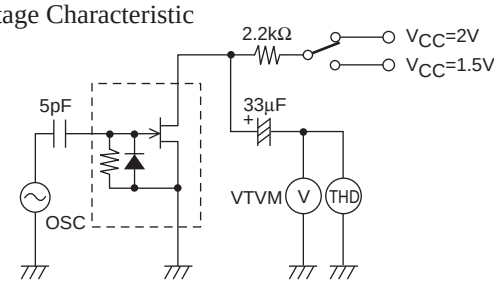
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	I_G=−100μA	−20			V
Cutoff Voltage	V_{GS}(off)	V_{DS}=2V, I_D=1μA	−0.1	−0.4	−1.0	V
Drain Current	I_{DSS}	V_{DS}=2V, V_{GS}=0V	140*		350*	μA
Forward Transfer Admittance	| yfs |	V_{DS}=2V, V_{GS}=0V, f=1kHz	0.8	1.4		mS
Input Capacitance	Ciss	V_{DS}=2V, V_{GS}=0V, f=1MHz		3.1		pF
Reverse Transfer Capacitance	Crss			0.95		pF
[Ta=25℃, V_{CC}=2V, R_L=2.2kΩ, Cin=5pF, See specified Test Circuit.]						
Voltage Gain	G_V	V_{IN}=10mV, f=1kHz		1.0		dB
Reduced Voltage Characteristic	ΔG_{VV}	V_{IN}=10mV, f=1kHz, V_{CC}=2.0V → 1.5V		−0.6	−2.0	dB
Frequency Characteristic	ΔGvf	f=1kHz to 110Hz			−1.0	dB
Total Harmonic Distortion	THD	V_{IN}=30mV, f=1kHz		0.65		%
Output Noise Voltage	V_{NO}	V_{IN}=0V, A curve		−106	−102	dB

* : The TF252 is classified by I_{DSS} as follows : (unit : μA)

Rank	4	5
I_{DSS}	140 to 240	210 to 350

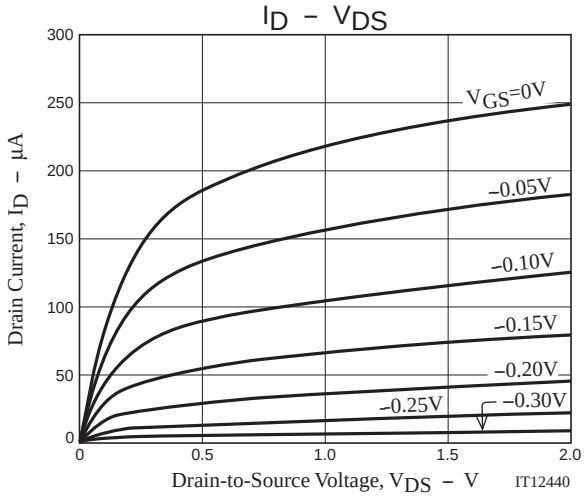
Test Circuit

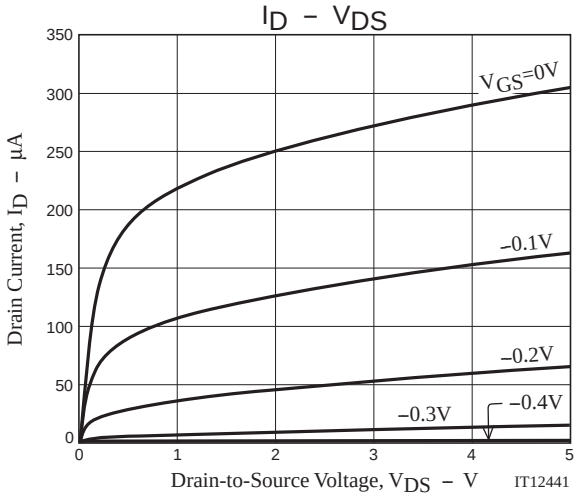
Voltage gain
Frequency Characteristic
Distortion
Reduced Voltage Characteristic

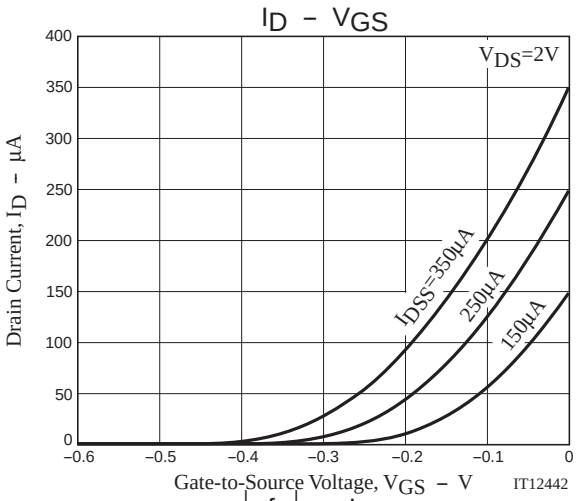


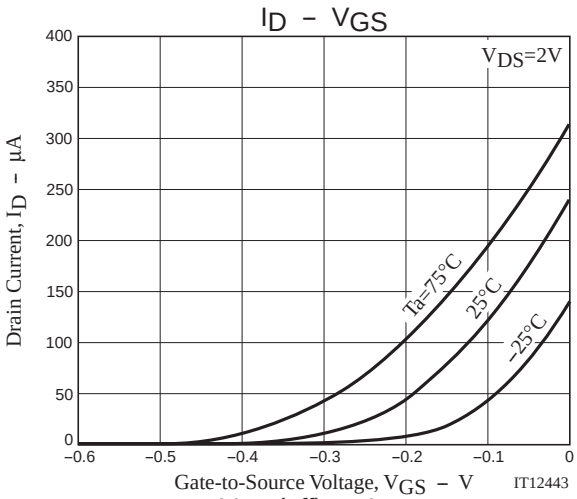
Ordering Information

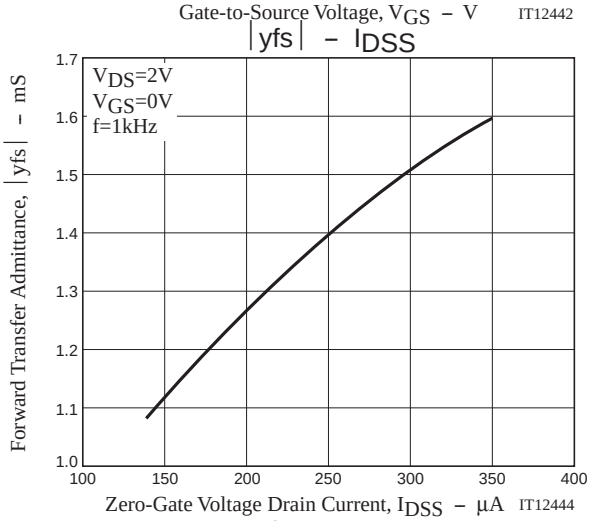
Device	Package	Shipping	memo
TF252-4-TL-H	USFP	10,000pcs./reel	Pb Free and Halogen Free
TF252-5-TL-H	USFP	10,000pcs./reel	

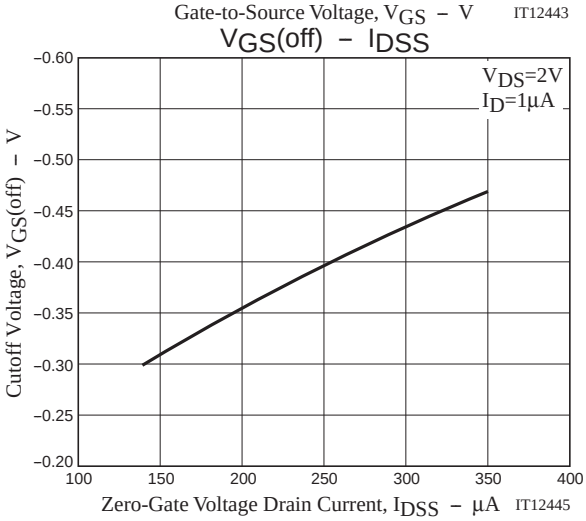


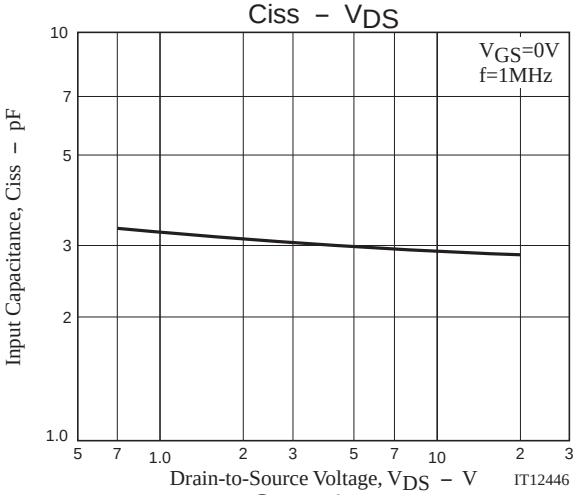


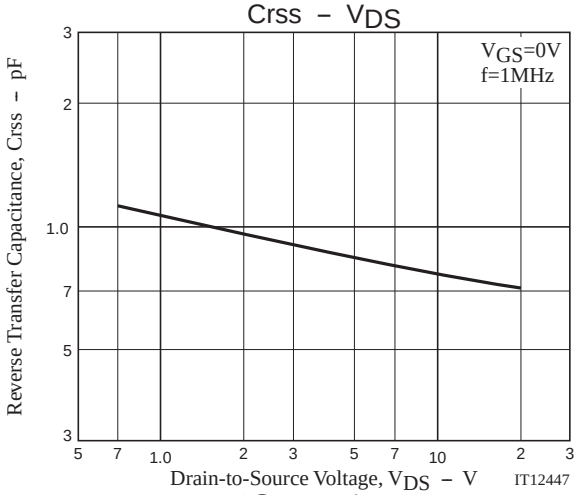

ID – VGS
VDS=2V
IDSS=350µA
250µA
150µA
Drain Current, ID – µA
Gate-to-Source Voltage, VGS – V
IT12442

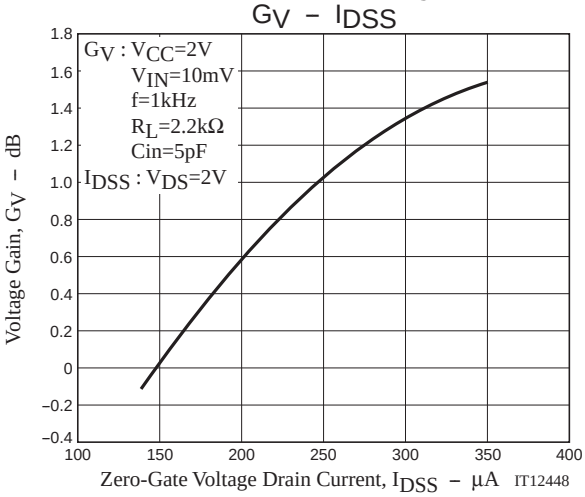

ID – VGS
VDS=2V
Ta=75°C
25°C
–25°C
Drain Current, ID – µA
Gate-to-Source Voltage, VGS – V
IT12443

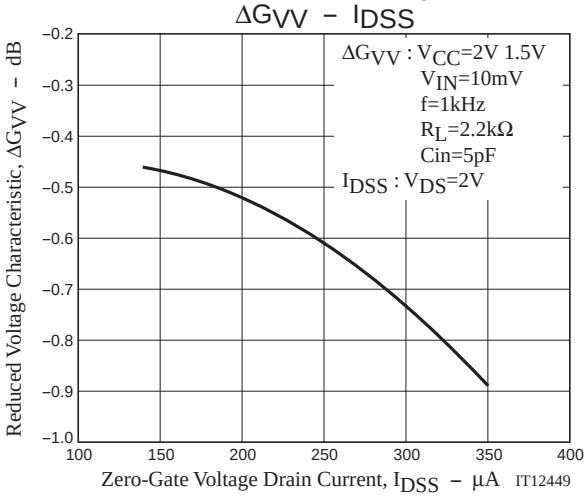

|yfs| – IDSS
VDS=2V
VGS=0V
f=1kHz
Forward Transfer Admittance, |yfs| – mS
Zero-Gate Voltage Drain Current, IDSS – µA
IT12444

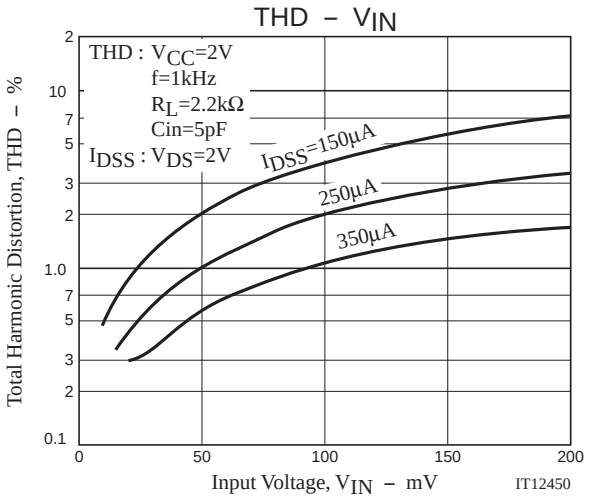

VGS(off) – IDSS
VDS=2V
ID=1µA
Cutoff Voltage, VGS(off) – V
Zero-Gate Voltage Drain Current, IDSS – µA
IT12445

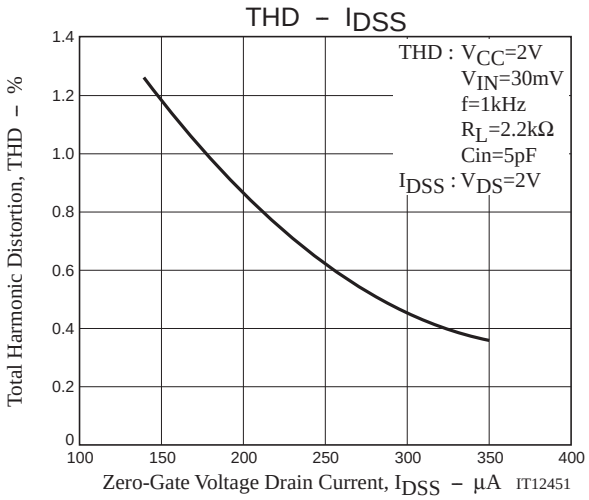

Ciss – VDS
VGS=0V
f=1MHz
Input Capacitance, Ciss – pF
Drain-to-Source Voltage, VDS – V
IT12446

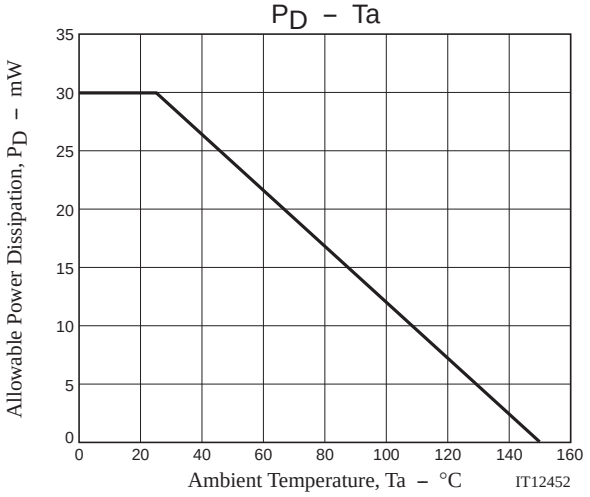

Crss – VDS
VGS=0V
f=1MHz
Reverse Transfer Capacitance, Crss – pF
Drain-to-Source Voltage, VDS – V
IT12447


GV – IDSS
GV : VCC=2V
VIN=10mV
f=1kHz
RL=2.2kΩ
Cin=5pF
IDSS : VDS=2V
Voltage Gain, GV – dB
Zero-Gate Voltage Drain Current, IDSS – µA
IT12448


ΔGVV – IDSS
ΔGVV : VCC=2V 1.5V
VIN=10mV
f=1kHz
RL=2.2kΩ
Cin=5pF
IDSS : VDS=2V
Reduced Voltage Characteristic, ΔGVV – dB
Zero-Gate Voltage Drain Current, IDSS – µA
IT12449


THD – VIN
THD : VCC=2V
f=1kHz
RL=2.2kΩ
Cin=5pF
IDSS : VDS=2V
IDSS=150μA
250μA
350μA
Total Harmonic Distortion, THD – %
Input Voltage, VIN – mV
IT12450


THD – IDSS
THD : VCC=2V
VIN=30mV
f=1kHz
RL=2.2kΩ
Cin=5pF
IDSS : VDS=2V
Total Harmonic Distortion, THD – %
Zero-Gate Voltage Drain Current, IDSS – μA
IT12451


PD – Ta
Allowable Power Dissipation, PD – mW
Ambient Temperature, Ta – °C
IT12452

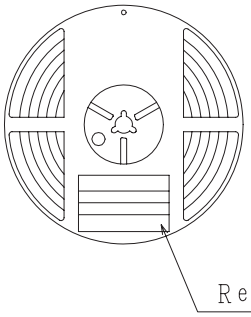
Taping Specification

TF252-4-TL-H, TF252-5-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

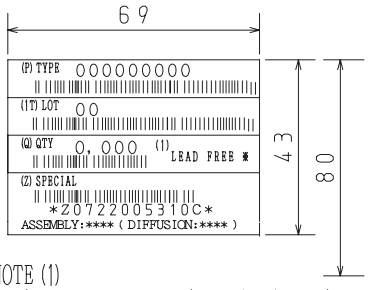
Packing method



Reel label

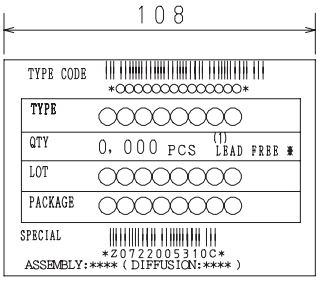
Reel label, Inner box label

(unit:mm)



Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.

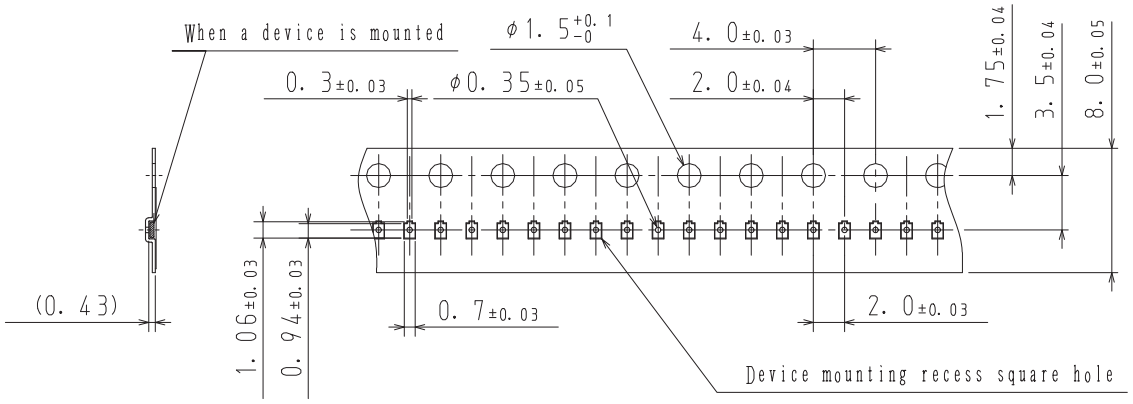


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

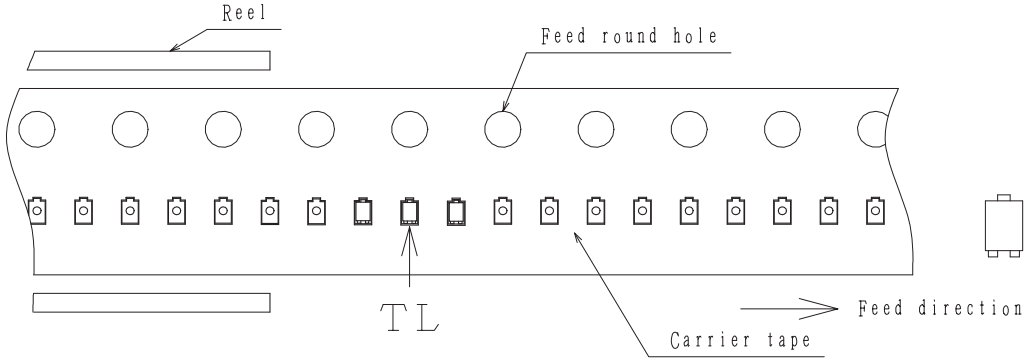
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



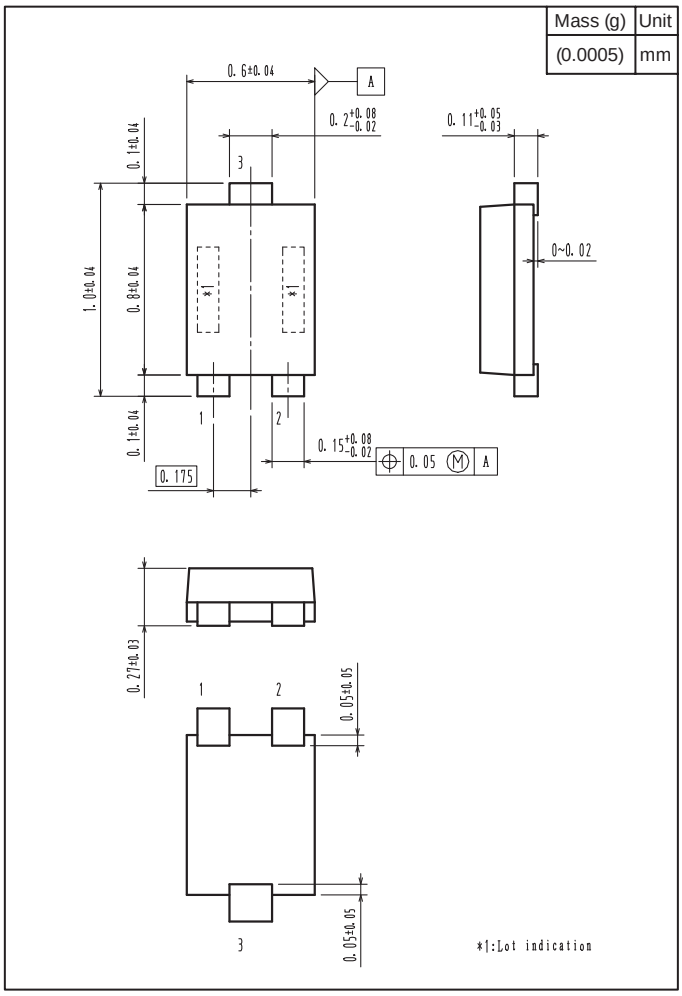
2-2. Device placement direction



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

Outline Drawing

TF252-4-TL-H, TF252-5-TL-H



Land Pattern Example