



# 15GN01MA

## RF Transistor 8V, 50mA, $f_T=1.5\text{GHz}$ , NPN Single MCP

ON Semiconductor®

<http://onsemi.com>

### Features

- Small ON-resistance [ $R_{on}=2\Omega$  ( $I_B=3\text{mA}$ )]
- Small output capacitance [ $C_{ob}=1.1\text{pF}$  ( $V_{CB}=10\text{V}$ )]

### Specifications

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

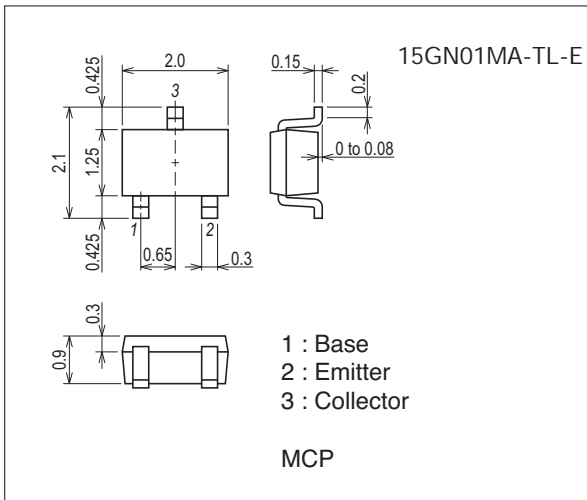
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		15	V
Collector-to-Emitter Voltage	$V_{CEO}$		8	V
Emitter-to-Base Voltage	$V_{EBO}$		3	V
Collector Current	$I_C$		50	mA
Collector Dissipation	$P_C$	When mounted on ceramic substrate ( $250\text{mm}^2 \times 0.8\text{mm}$ )	400	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)

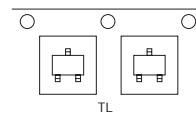
7023A-009



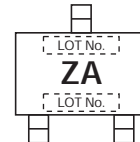
### Product & Package Information

- Package : MCP
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

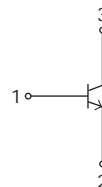
### Packing Type: TL



### Marking



### Electrical Connection



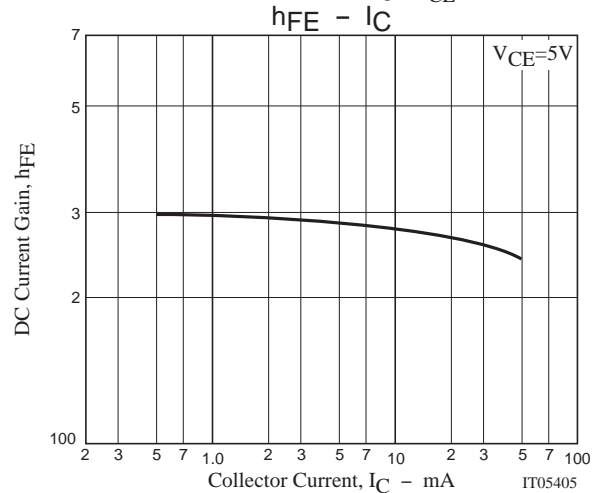
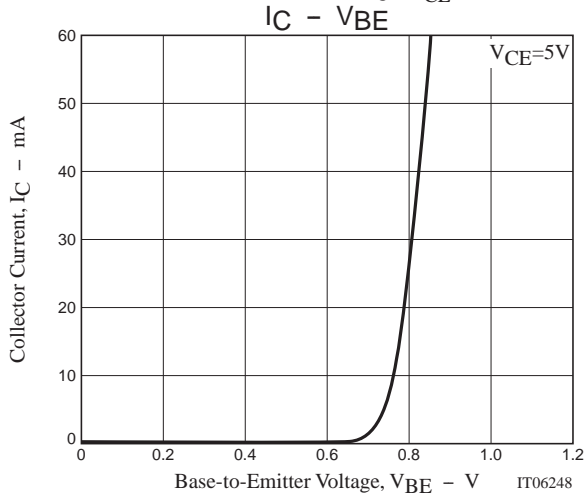
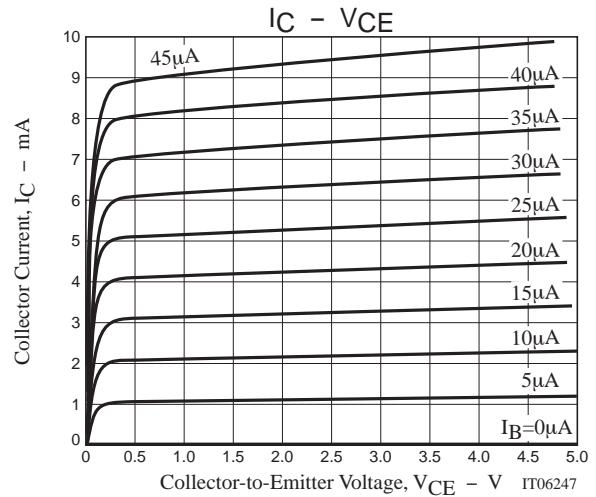
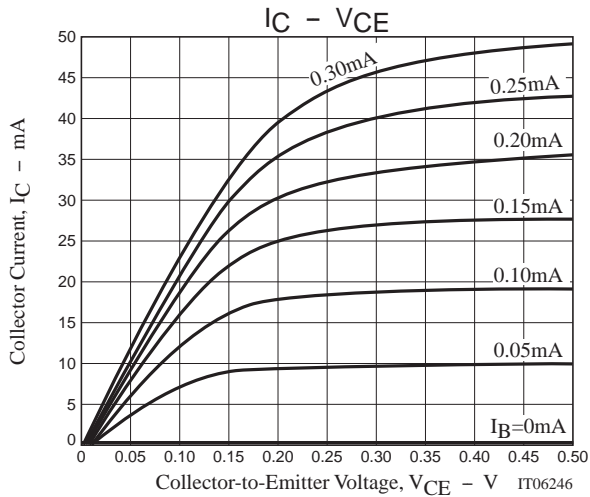
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## Electrical Characteristics at Ta=25°C

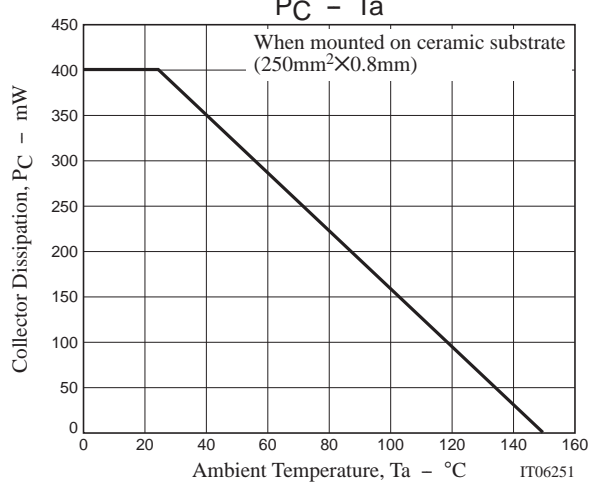
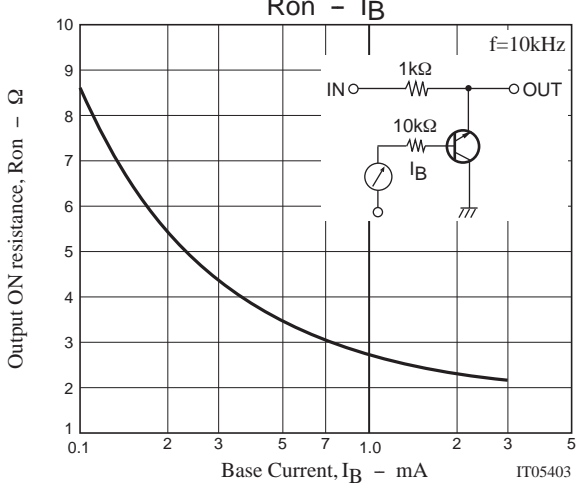
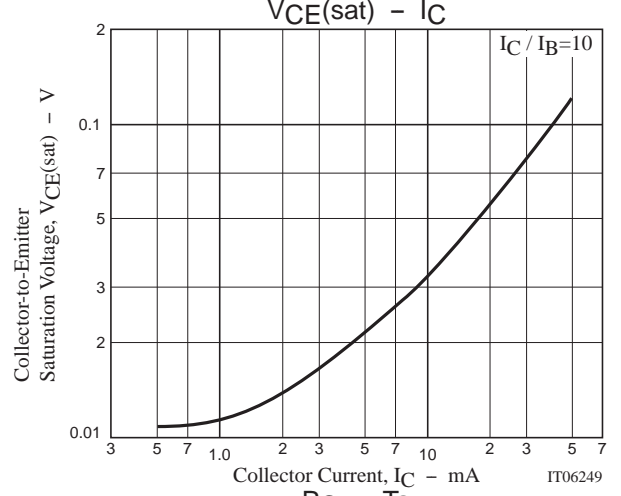
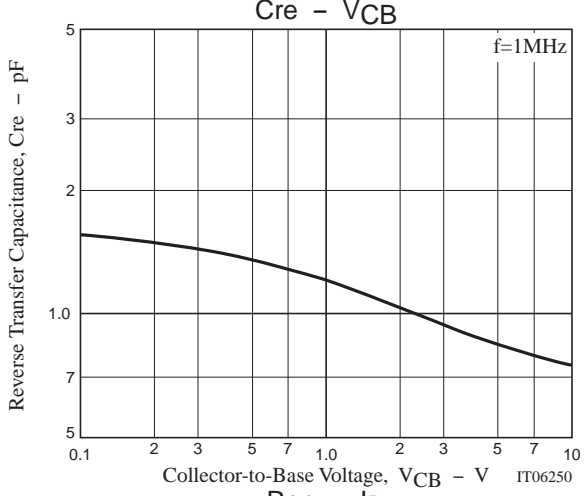
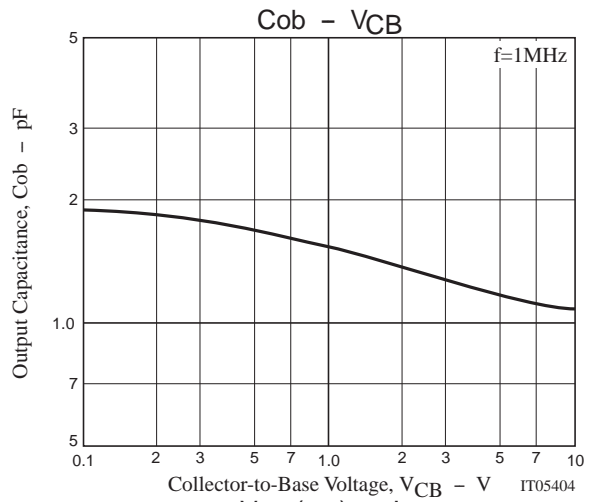
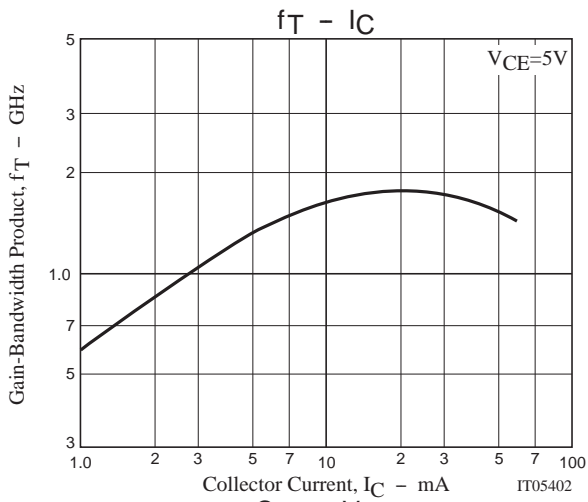
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=10V, I_E=0A$			0.5	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=2V, I_C=0A$			0.5	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=5V, I_C=10mA$	200		400	
Gain-Bandwidth Product	$f_T$	$V_{CE}=5V, I_C=10mA$	1.0	1.5		GHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		1.1	1.5	pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.06	0.12	V
Output ON resistance	$R_{on}$	$I_B=3mA, f=10kHz$		2.0		$\Omega$

## Ordering Information

Device	Package	Shipping	memo
15GN01MA-TL-E	MCP	3,000pcs./reel	Pb Free



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## S Parameters (Common emitter)

$V_{CE}=5V, I_C=5mA, Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.662	-25.65	4.631	122.00	0.028	71.36	0.765	-10.50
200	0.582	-36.72	3.028	112.20	0.051	68.80	0.732	-14.15
300	0.529	-47.21	2.353	104.69	0.071	65.59	0.713	-17.91
400	0.487	-56.61	1.955	97.68	0.088	63.00	0.700	-21.58
500	0.459	-65.82	1.691	91.07	0.103	60.43	0.689	-25.23
600	0.429	-74.14	1.496	85.11	0.116	57.83	0.679	-28.81
700	0.409	-82.44	1.353	79.01	0.128	56.22	0.674	-32.38
800	0.388	-89.94	1.239	73.29	0.138	54.76	0.671	-35.89
900	0.374	-96.79	1.149	67.98	0.148	53.44	0.671	-39.34
1000	0.365	-103.28	1.072	63.13	0.156	52.60	0.670	-42.75

$V_{CE}=5V, I_C=10mA, Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.587	-31.65	6.647	118.78	0.026	71.86	0.694	-11.96
200	0.502	-46.40	4.239	108.57	0.046	68.22	0.653	-15.76
300	0.444	-59.47	3.227	100.32	0.064	65.90	0.630	-19.10
400	0.405	-70.80	2.616	93.18	0.079	63.91	0.619	-22.50
500	0.381	-81.80	2.217	86.64	0.093	62.30	0.607	-25.83
600	0.356	-91.29	1.922	80.82	0.105	60.39	0.598	-29.19
700	0.342	-101.15	1.715	74.86	0.115	59.29	0.596	-32.72
800	0.329	-109.42	1.544	69.40	0.125	58.34	0.593	-36.10
900	0.319	-116.99	1.414	64.16	0.135	57.86	0.594	-39.48
1000	0.315	-124.06	1.305	59.41	0.144	57.47	0.593	-42.80

$V_{CE}=5V, I_C=20mA, Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.505	-41.07	8.945	114.82	0.023	71.42	0.611	-13.64
200	0.417	-60.49	5.500	103.75	0.042	69.03	0.568	-16.14
300	0.369	-76.83	4.039	95.20	0.056	67.39	0.548	-18.89
400	0.341	-90.31	3.197	88.11	0.070	66.22	0.539	-21.75
500	0.328	-102.08	2.654	81.71	0.082	65.43	0.533	-24.77
600	0.316	-112.57	2.264	76.38	0.094	64.49	0.528	-27.99
700	0.311	-122.49	1.988	70.80	0.104	64.03	0.530	-31.32
800	0.306	-130.50	1.771	65.75	0.115	63.95	0.530	-34.57
900	0.304	-137.80	1.605	60.92	0.125	64.09	0.534	-37.93
1000	0.306	-144.30	1.470	56.51	0.135	64.16	0.537	-41.24

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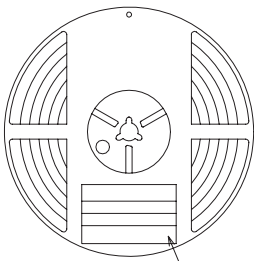
## Embossed Taping Specification

### 15GN01MA-TL-E

#### 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)
MCP	MCP	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

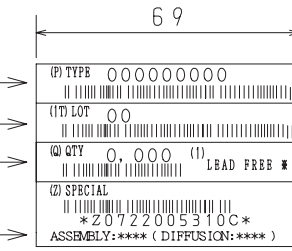
#### Packing method



Reel label

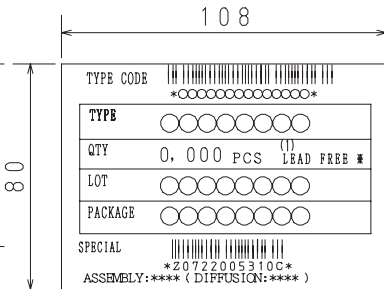
Type No.  
LOT No.  
Quantity  
Origin

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.



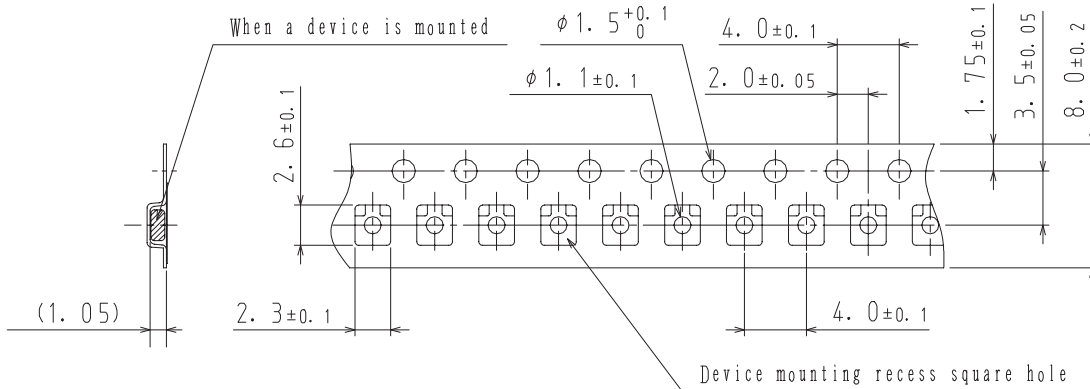
NOTE (1)

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

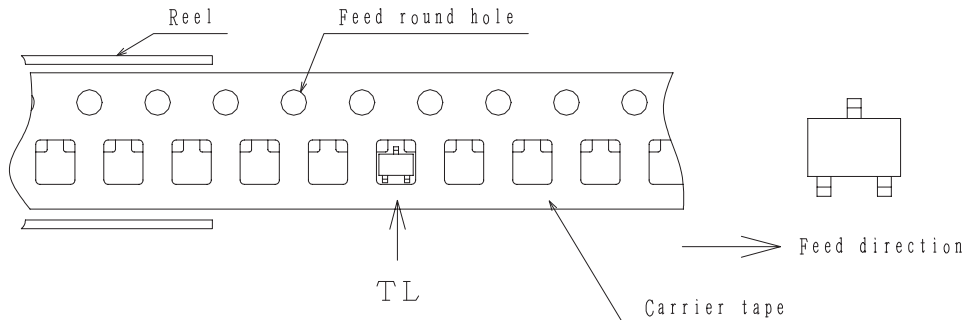
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

#### 2. Taping configuration

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



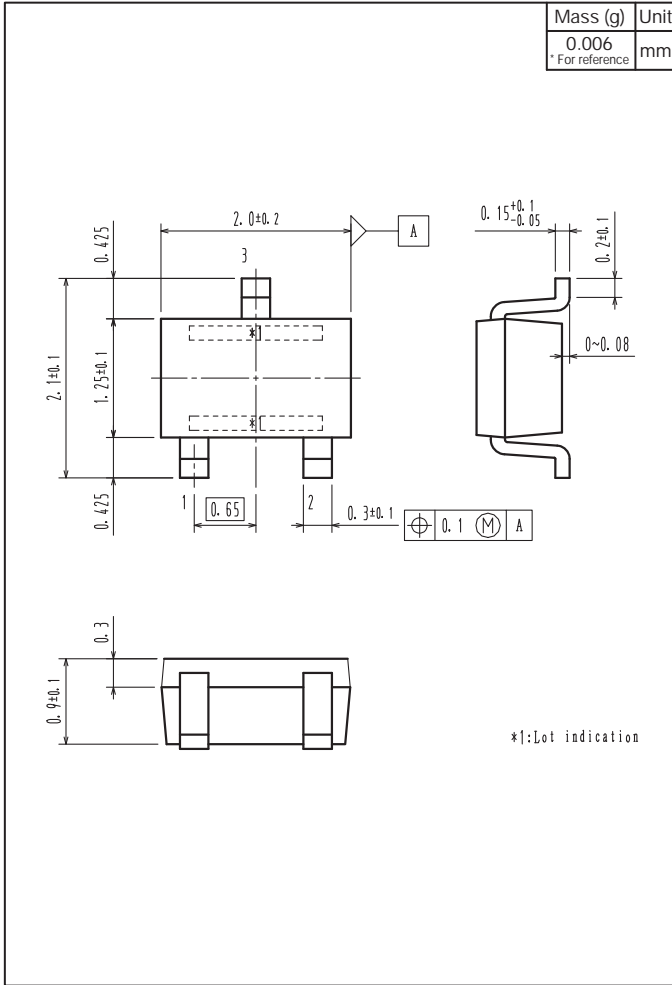
##### 2-2. Device placement direction



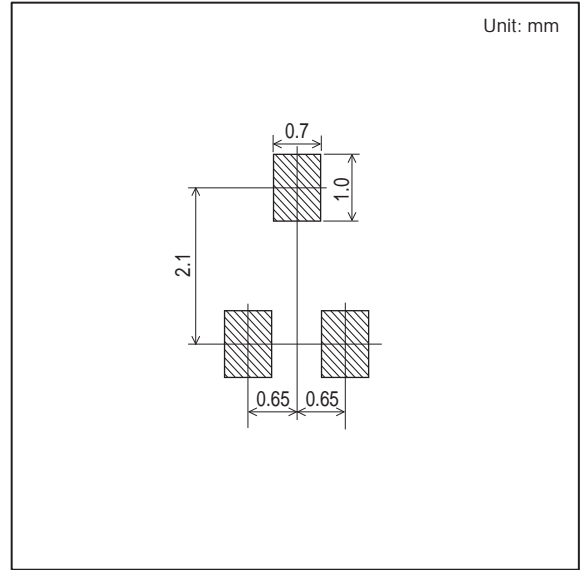
Those with oen electrode terminal on the feed hole side.....TL

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## Outline Drawing 15GN01MA-TL-E



## Land Pattern Example



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