



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## EFC4615R — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

### Features

- 2.5V drive
- Best suited for LiB charging and discharging switch
- Common-drain type
- Protection diode in
- Halogen free compliance

### Specifications

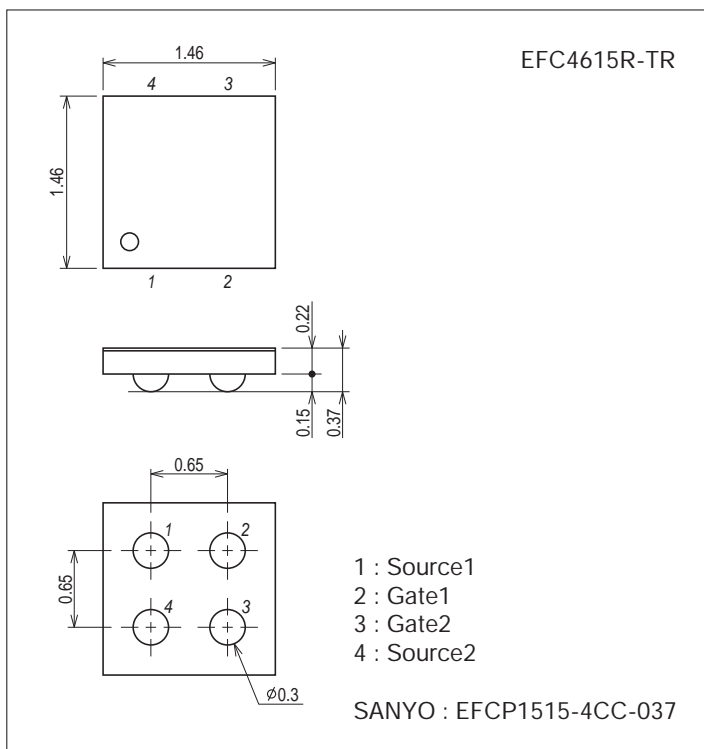
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Source-to-Source Voltage	VSSS		24	V
Gate-to-Source Voltage	VGSS		±12	V
Source Current (DC)	IS		6	A
Source Current (Pulse)	ISP	PW≤10μs, duty cycle≤1%	60	A
Total Dissipation	PT	When mounted on ceramic substrate (5000mm <sup>2</sup> ×0.8mm)	1.6	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

### Package Dimensions

unit : mm (typ)

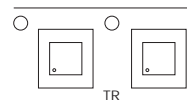
7067-001



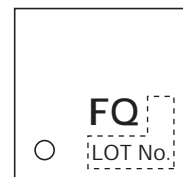
### Product & Package Information

- Package : EFCP
- JEITA, JEDEC : -
- Minimum Packing Quantity : 5,000 pcs./reel

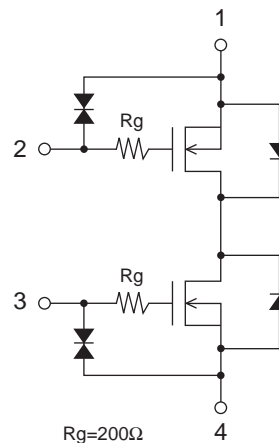
Taping Type : TR



Marking



Electrical Connection



# EFC4615R

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Source-to-Source Breakdown Voltage	V(BR)SSS	IS=1mA, VGS=0V Test Circuit 1	24			V
Zero-Gate Voltage Source Current	ISSS	VSS=20V, VGS=0V Test Circuit 1			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VSS=0V Test Circuit 2			±10	μA
Cutoff Voltage	VGS(off)	VSS=10V, IS=1mA Test Circuit 3	0.5		1.3	V
Forward Transfer Admittance	yfs	VSS=10V, IS=3A Test Circuit 4		5.4		S
Static Source-to-Source On-State Resistance	RSS(on)1	IS=3A, VGS=4.5V Test Circuit 5	19	27	31	mΩ
	RSS(on)2	IS=3A, VGS=4.0V Test Circuit 5	21	28	33	mΩ
	RSS(on)3	IS=3A, VGS=3.1V Test Circuit 5	24	33	44	mΩ
	RSS(on)4	IS=3A, VGS=2.5V Test Circuit 5	28	39	52	mΩ
Turn-ON Delay Time	td(on)	See specified Test Circuit. Test Circuit 7		13		ns
Rise Time	tr			235		ns
Turn-OFF Delay Time	td(off)			335		ns
Fall Time	tf			360		ns
Total Gate Charge	Qg	VSS=10V, VGS=4.5V, IS=6A		8.8		nC
Forward Source-to-Source Voltage	VF(S-S)	IS=6A, VGS=0V Test Circuit 6		1	1.2	V

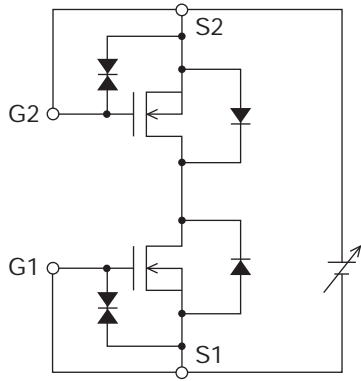
## Ordering Information

Device	Package	Shipping	memo
EFC4615R-TR	EFCP	5,000pcs./reel	Pb Free and Halogen Free

Test circuits are example of measuring FET1 side

Test Circuit 1

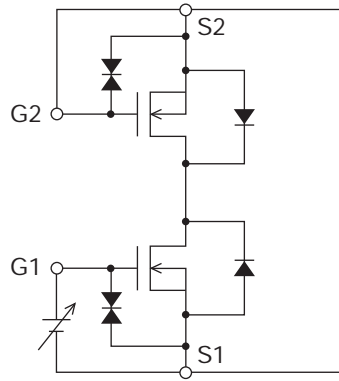
VSSS / ISSS



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Test Circuit 2

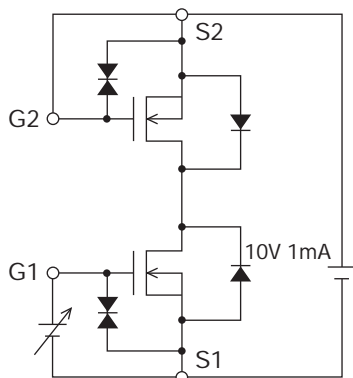
IGSS(+)/(-)



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Test Circuit 3

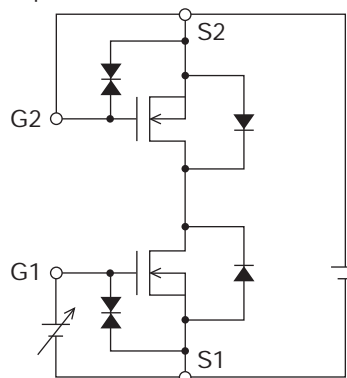
VGS(off)



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Test Circuit 4

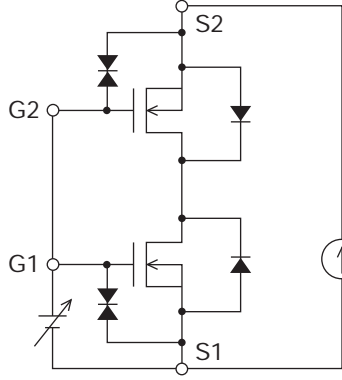
|yfs|



IT11568

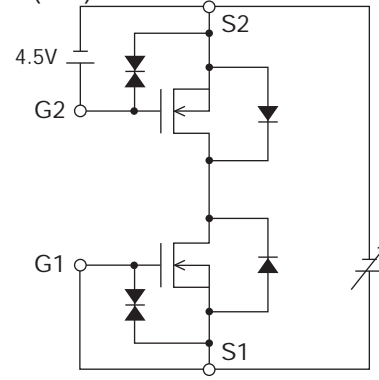
\* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.

Test Circuit 5  
RSS(on)



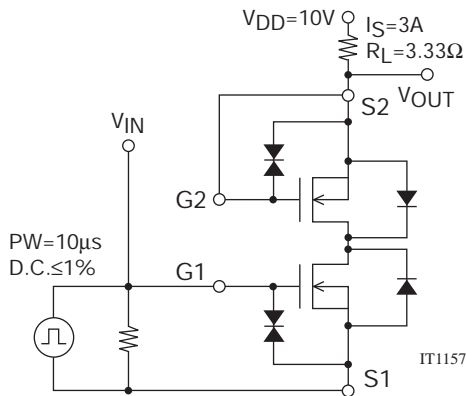
IT11569

Test Circuit 6  
VF(S-S)



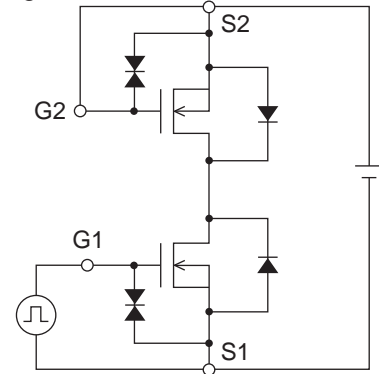
IT11570

Test Circuit 7  
td(on), tr, td(off), tf



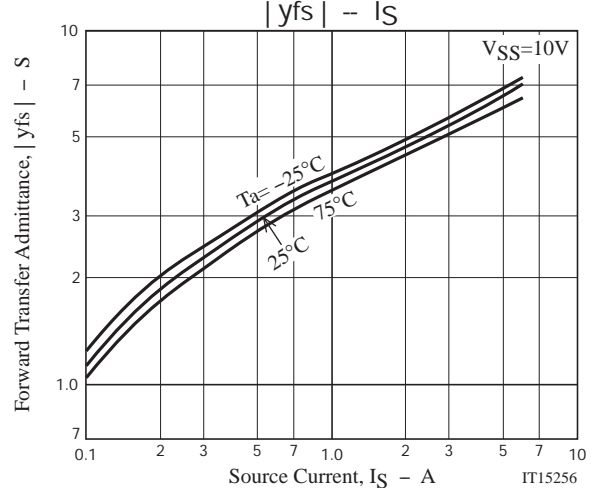
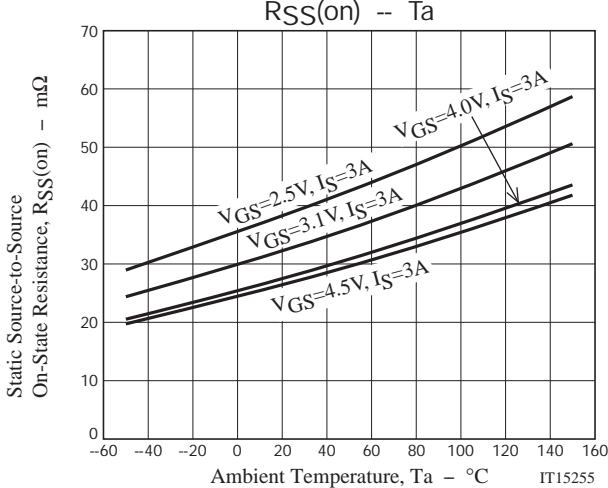
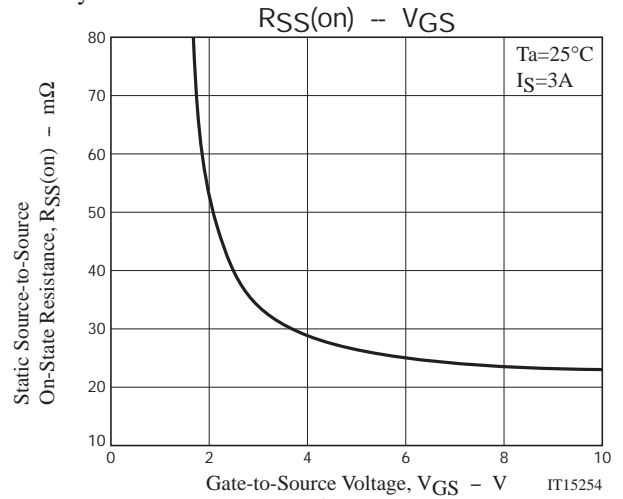
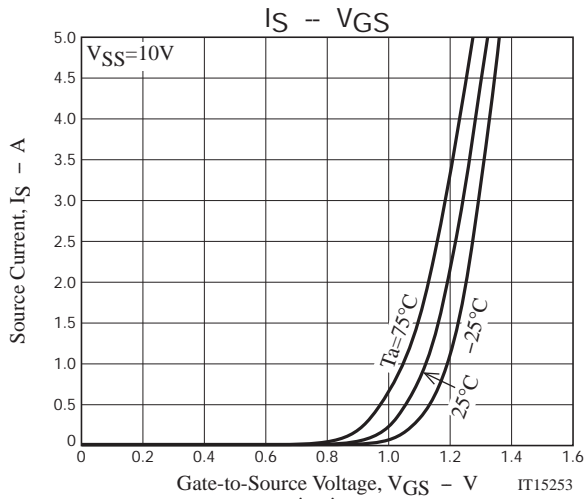
IT11571

Test Circuit 8  
Qg

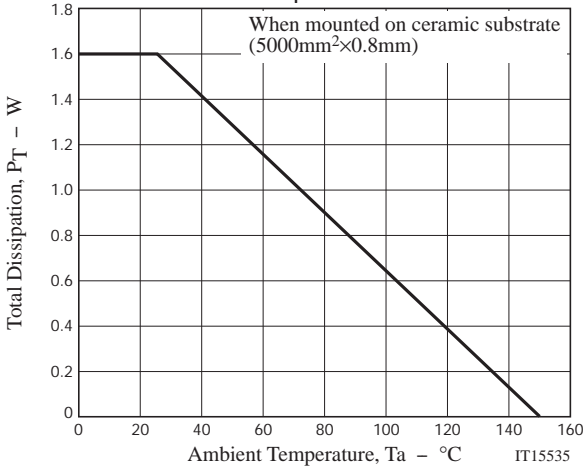
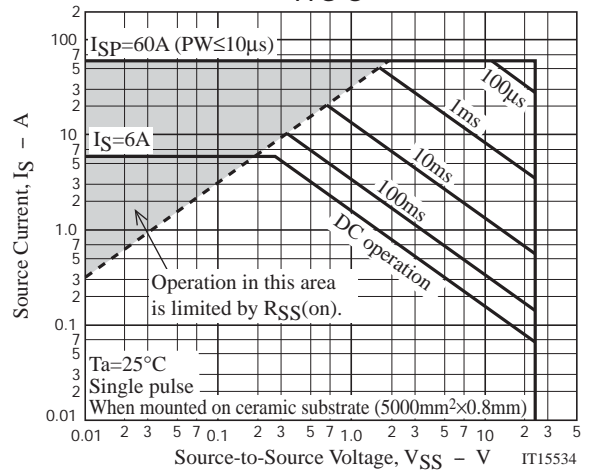
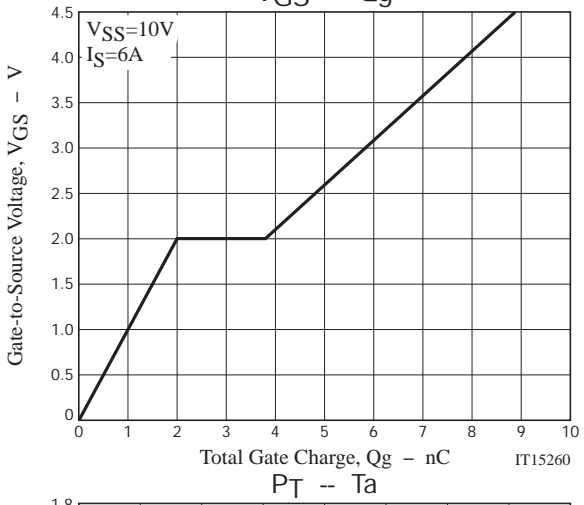
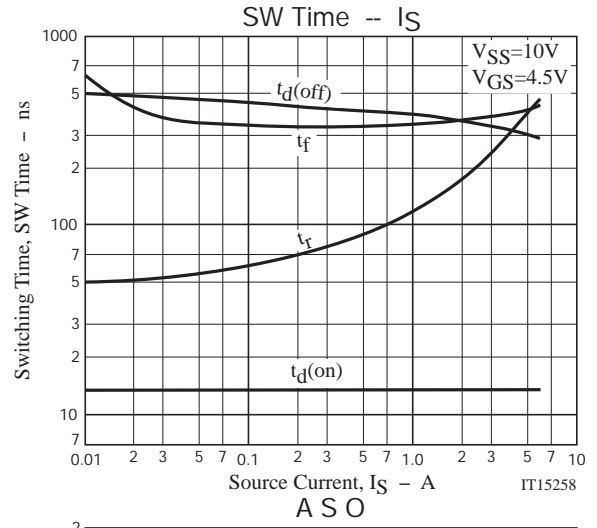
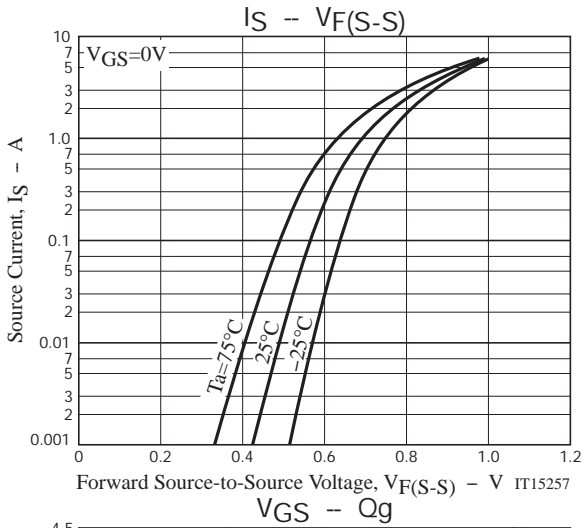


IT15409

\* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.



# EFC4615R



# EFC4615R

## Taping Specification

### EFC4615R-TR

#### 1. Packing Format

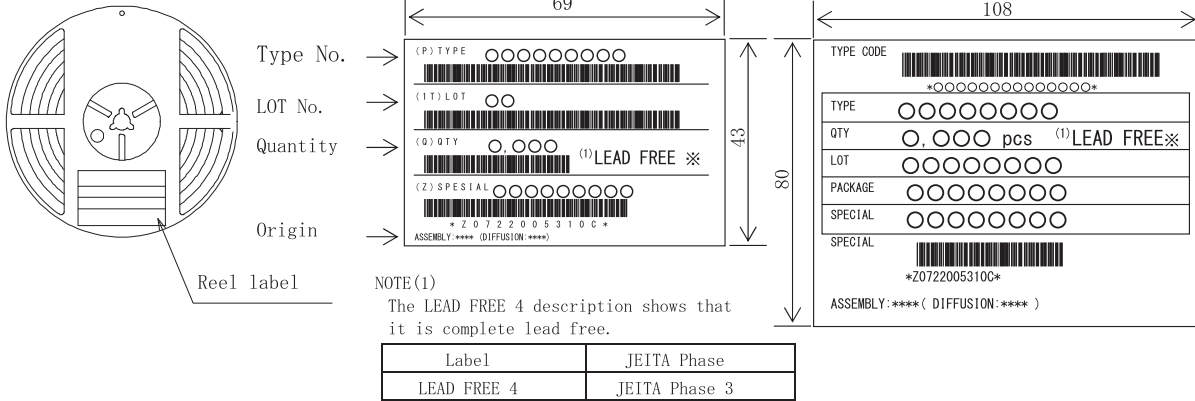
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX(C-1)	Outer BOX(A-7)
EFCP1515-4CC-037	CARR(165X055)	5,000	25,000	150,000	5 reels contained Dimensions :mm(external) 183 X 72 X 185	6 inner boxes contained Dimensions :mm(external) 440 X 195 X 210

#### Packing method

#### Reel label, Inner box label (unit: mm)

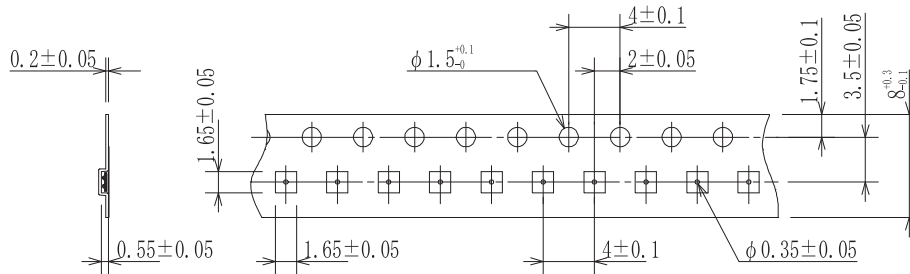
#### Outer box label

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

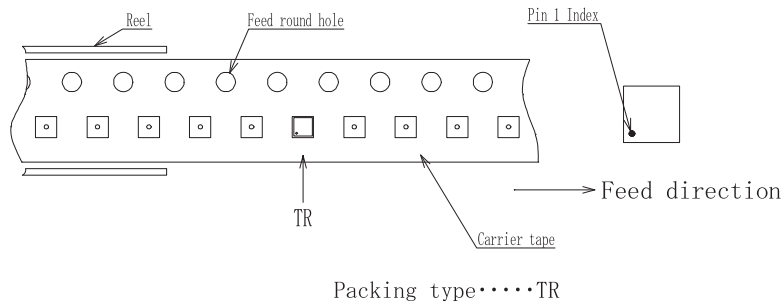


#### 2. Taping configuration

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



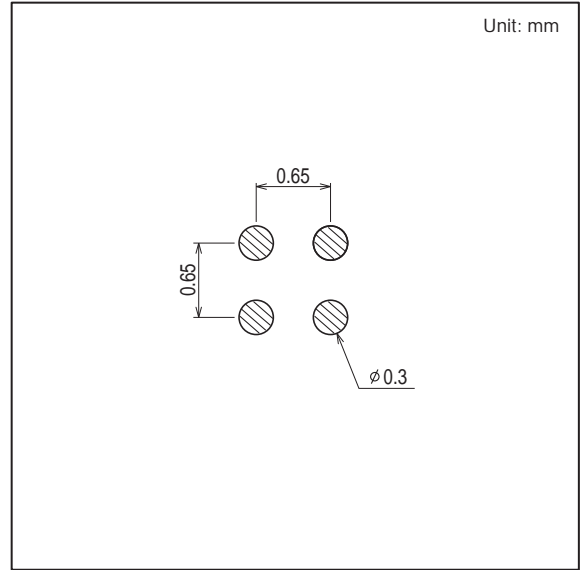
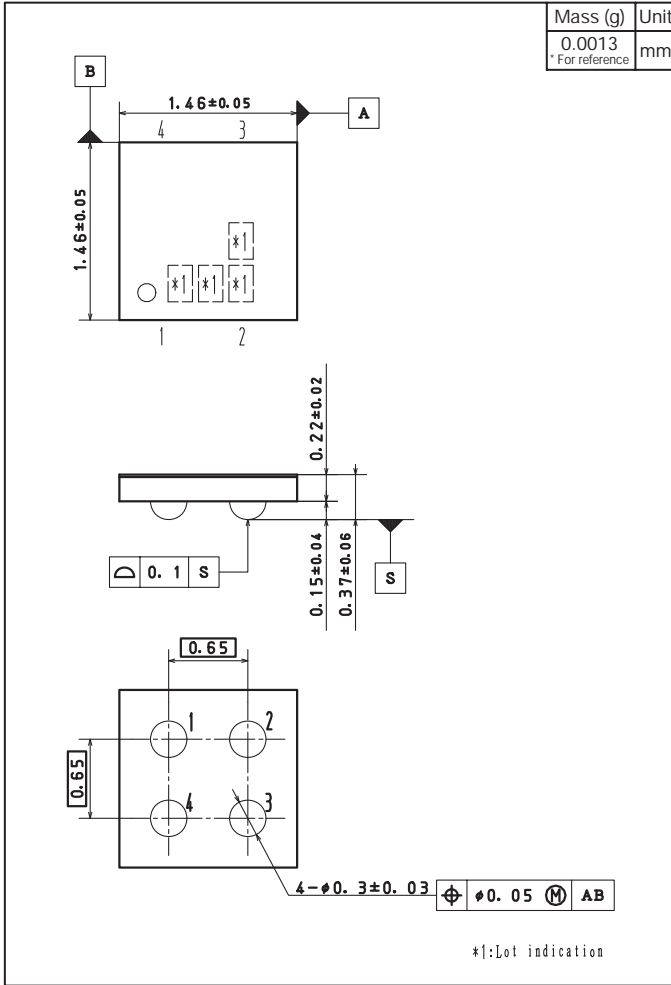
##### 2-2. Device placement direction



# EFC4615R

## Outline Drawing EFC4615R-TR

## Land Pattern Example



Note on usage : Since the EFC4615R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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