



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

EFC4615R — 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

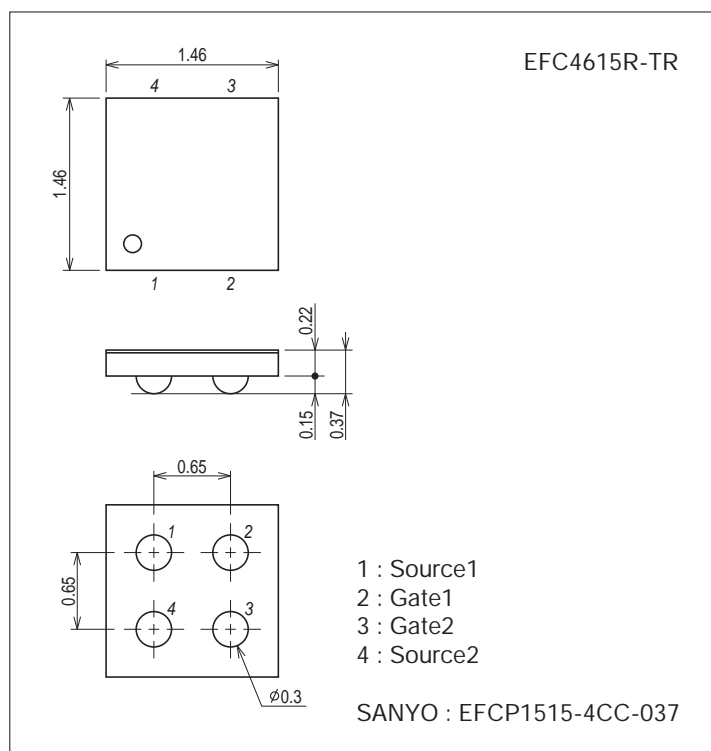
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Source-to-Source Voltage	V _{SS}		24	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Source Current (DC)	I _S		6	A
Source Current (Pulse)	I _{SP}	PW≤10μs, duty cycle≤1%	60	A
Total Dissipation	P _T	When mounted on ceramic substrate (5000mm ² ×0.8mm)	1.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

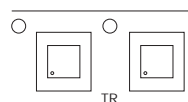
7067-001



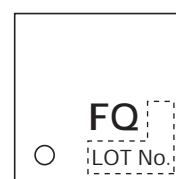
Product & Package Information

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

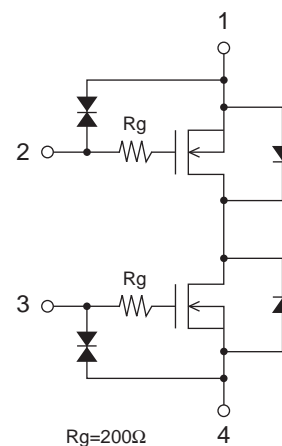
Taping Type : TR



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://www.sanyosemi.com/en/network/>

EFC4615R

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Source-to-Source Breakdown Voltage	$V_{(BR)SSS}$	$I_S=1mA$, $V_{GS}=0V$ Test Circuit 1	24			V
Zero-Gate Voltage Source Current	I_{SSS}	$V_{SS}=20V$, $V_{GS}=0V$ Test Circuit 1			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$, $V_{SS}=0V$ Test Circuit 2			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{SS}=10V$, $I_S=1mA$ Test Circuit 3	0.5		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{SS}=10V$, $I_S=3A$ Test Circuit 4		5.4		S
Static Source-to-Source On-State Resistance	$R_{SS(on)1}$	$I_S=3A$, $V_{GS}=4.5V$ Test Circuit 5	19	27	31	$m\Omega$
	$R_{SS(on)2}$	$I_S=3A$, $V_{GS}=4.0V$ Test Circuit 5	21	28	33	$m\Omega$
	$R_{SS(on)3}$	$I_S=3A$, $V_{GS}=3.1V$ Test Circuit 5	24	33	44	$m\Omega$
	$R_{SS(on)4}$	$I_S=3A$, $V_{GS}=2.5V$ Test Circuit 5	28	39	52	$m\Omega$
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit. Test Circuit 7		13		ns
Rise Time	t_r			235		ns
Turn-OFF Delay Time	$t_{d(off)}$			335		ns
Fall Time	t_f			360		ns
Total Gate Charge	Q_g	$V_{SS}=10V$, $V_{GS}=4.5V$, $I_S=6A$		8.8		nC
Forward Source-to-Source Voltage	$V_{F(S-S)}$	$I_S=6A$, $V_{GS}=0V$ Test Circuit 6		1	1.2	V

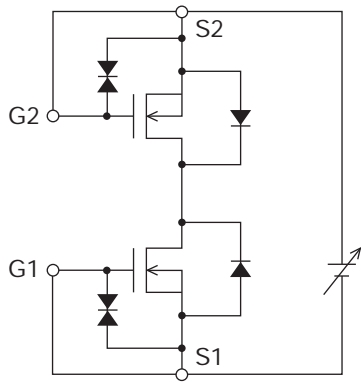
Ordering Information

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

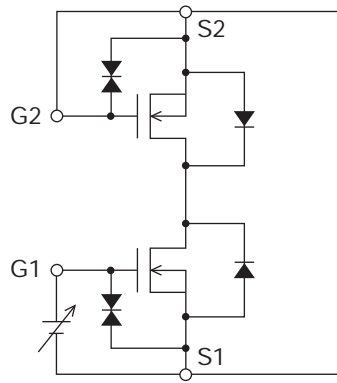
V_{SSS} / I_{SSS}



IT11565

Test Circuit 2

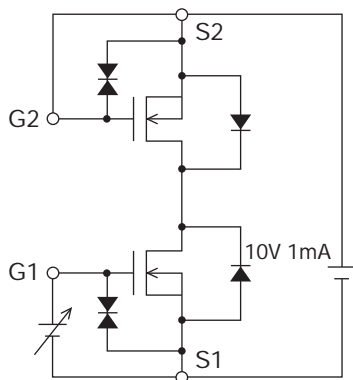
$I_{GSS}(+) / (-)$



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Test Circuit 3

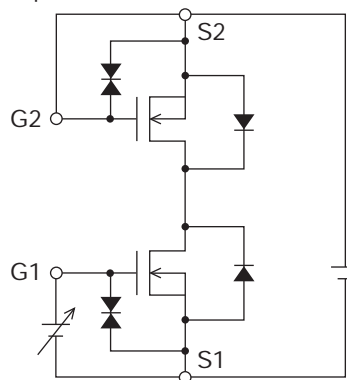
$V_{GS(off)}$



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Test Circuit 4

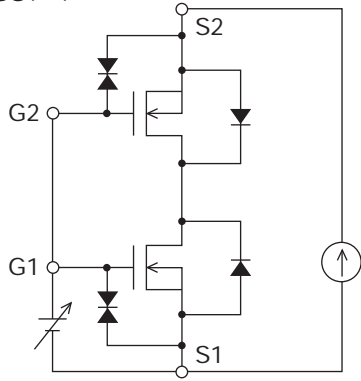
$|y_{fs}|$



IT11568

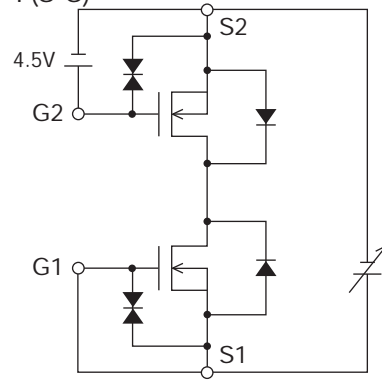
* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.

Test Circuit 5
RSS(on)



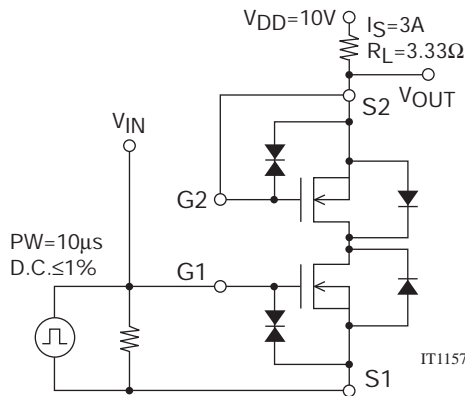
IT11569

Test Circuit 6
VF(S-S)



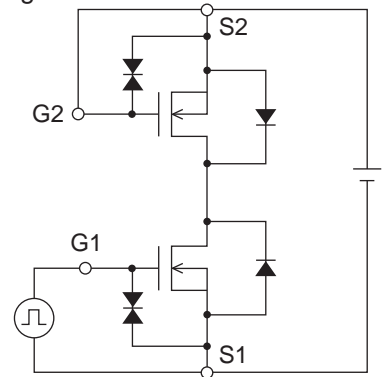
IT11570

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



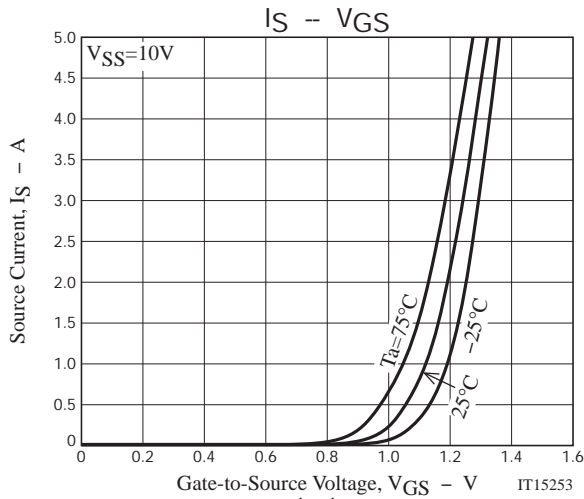
IT11571

Test Circuit 8
Qg

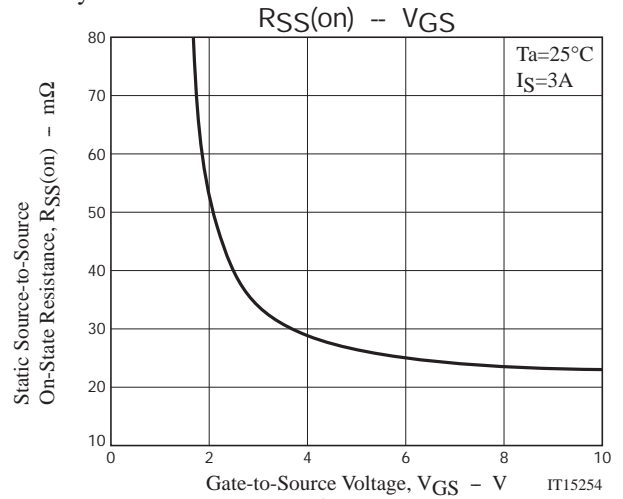


IT15409

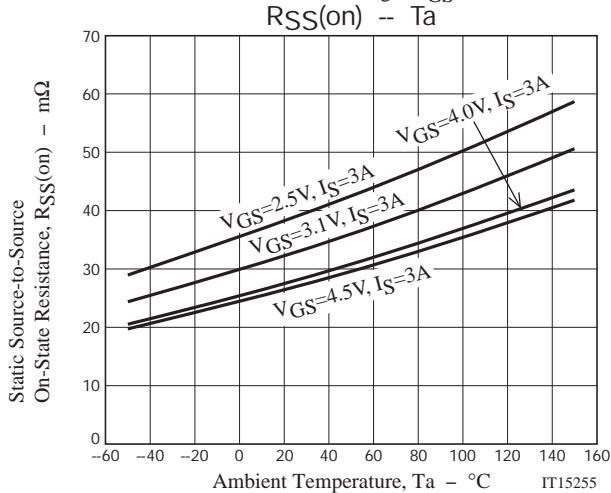
* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.



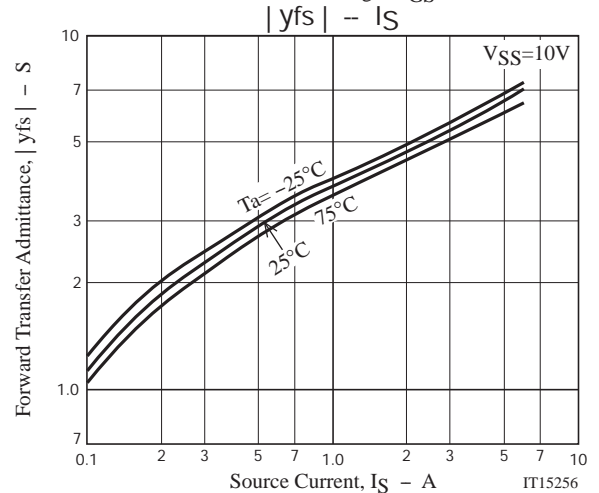
IT15253



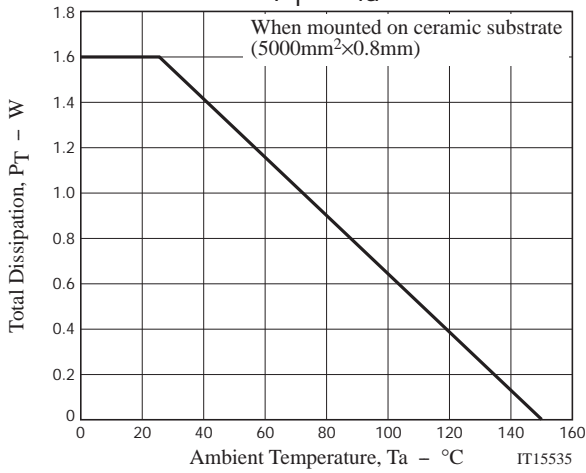
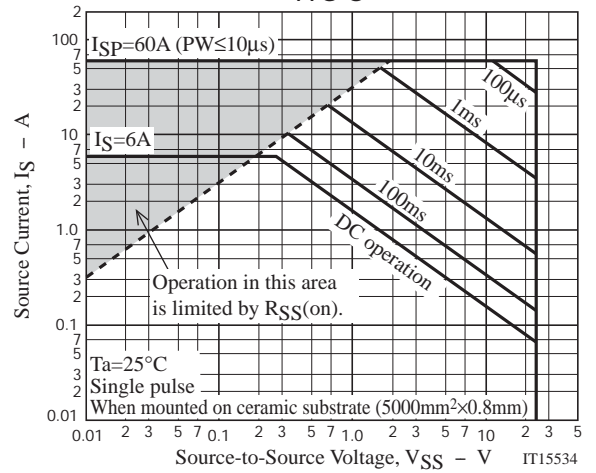
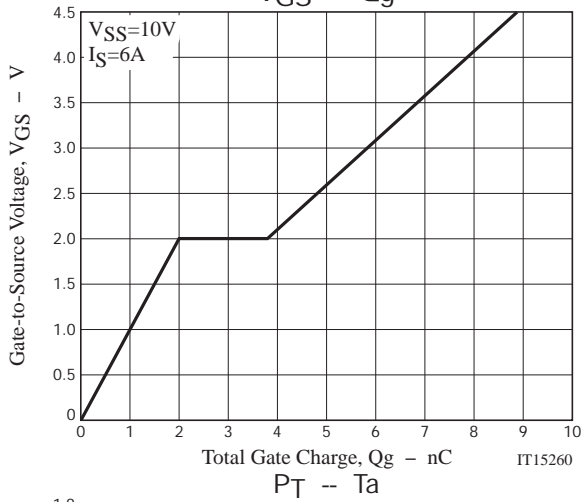
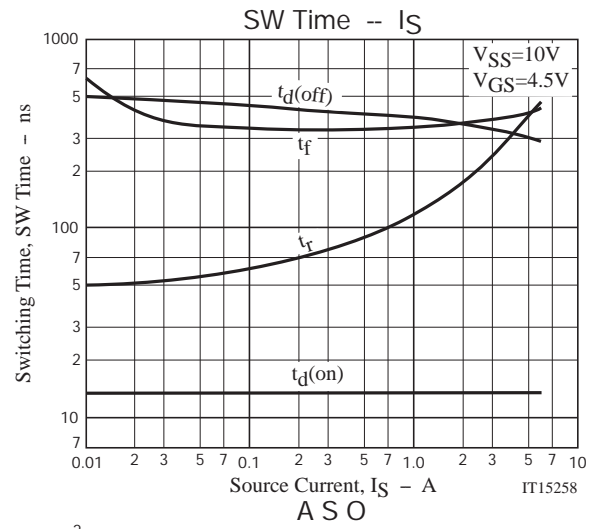
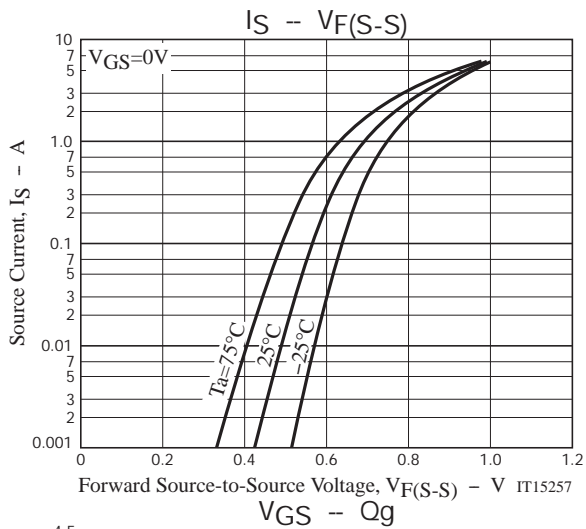
IT15254



IT15255



IT15256



Taping Specification

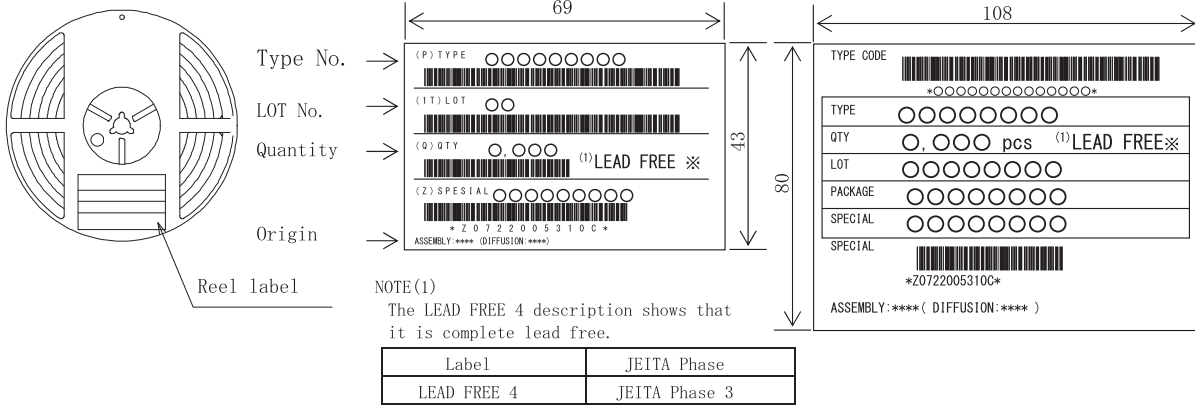
EFC4615R-TR

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

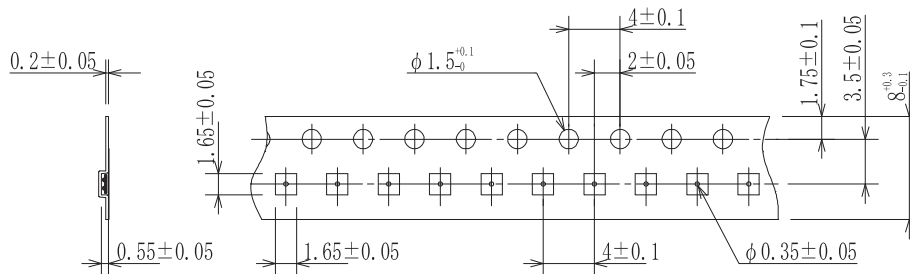
Packing methodReel label, Inner box label
(unit: mm)Outer box label

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

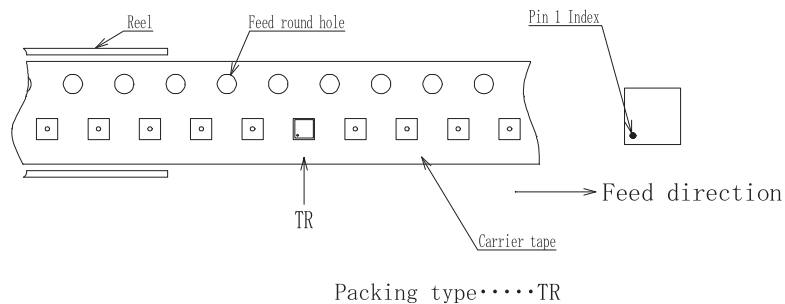


2. Taping configuration

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

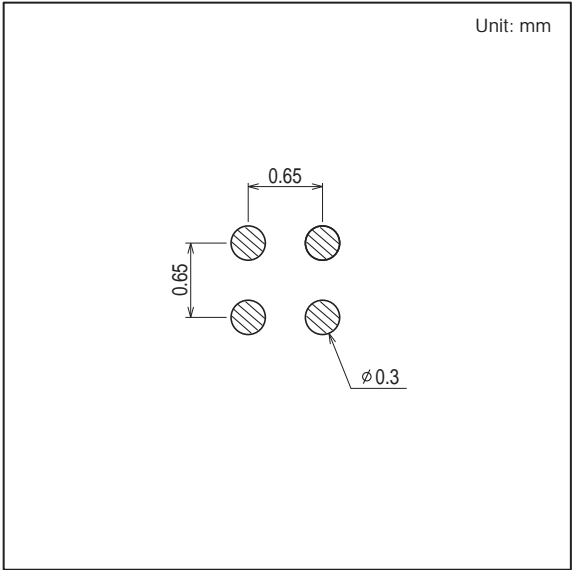
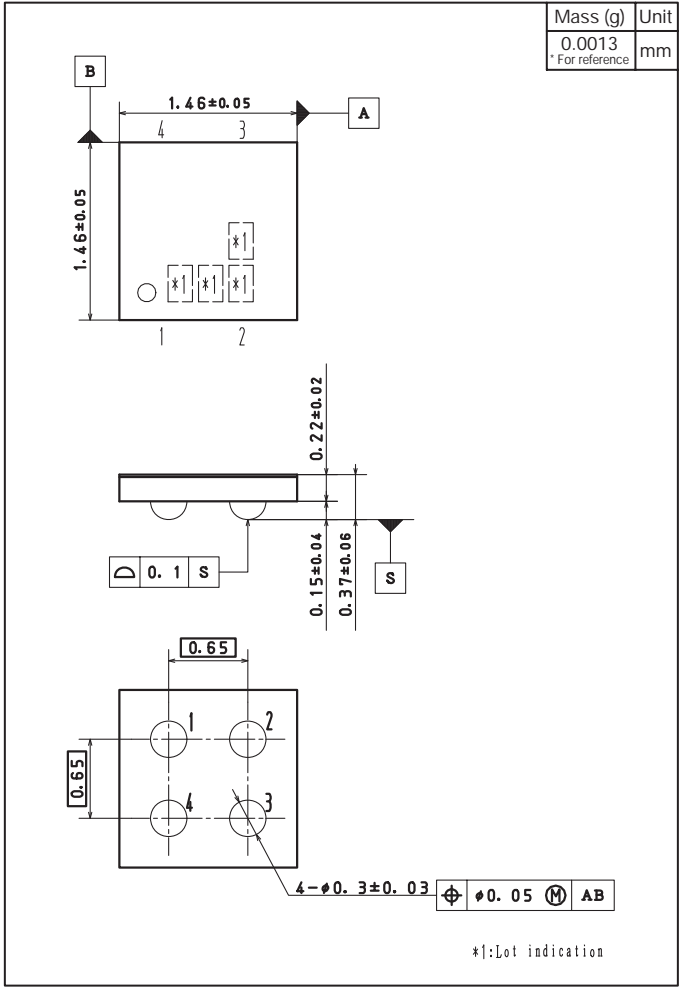


2-2. Device placement direction



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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