



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## EFC4612R — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

### Features

- 2.5V drive
- Built-in gate protection resistor
- Best suited for LiB charging and discharging switch
- Common-drain type
- Halogen free compliance

### Specifications

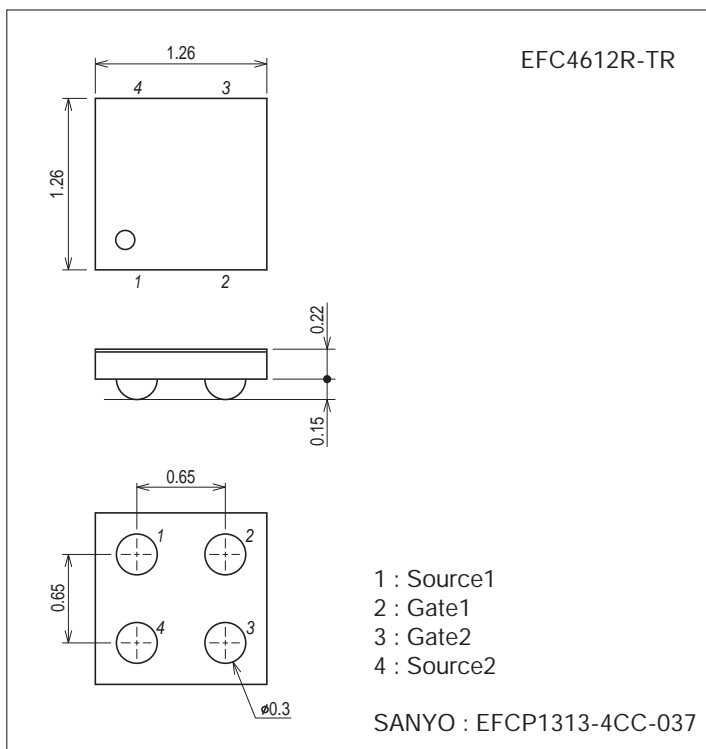
Absolute Maximum Ratings at Ta=25°C

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)

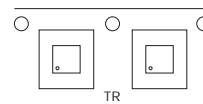
7064-001



### Product & Package Information

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

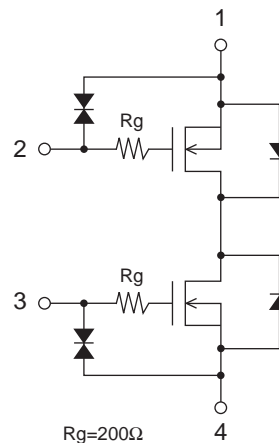
Taping Type : TR



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

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

# EFC4612R

## 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		3.1		S
Static Source-to-Source On-State Resistance	RSS(on)1	IS=3A, VGS=4.5V Test Circuit 5	24	39	45	mΩ
	RSS(on)2	IS=3A, VGS=4.0V Test Circuit 5	25	41	48	mΩ
	RSS(on)3	IS=3A, VGS=3.7V Test Circuit 5	27.5	43	50	mΩ
	RSS(on)4	IS=3A, VGS=3.1V Test Circuit 5	31.5	48	57	mΩ
	RSS(on)5	IS=3A, VGS=2.5V Test Circuit 5	33.5	58	72	mΩ
Turn-ON Delay Time	td(on)	See specified Test Circuit. Test Circuit 7		20		ns
Rise Time	tr			230		ns
Turn-OFF Delay Time	td(off)			130		ns
Fall Time	tf			210		ns
Total Gate Charge	Qg		VSS=10V, VGS=4.5V, IS=6A		7	
Forward Source-to-Source Voltage	VF(S-S)	IS=3A, VGS=0V Test Circuit 6		0.8	1.2	V

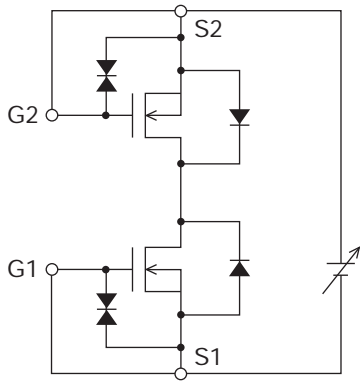
## Ordering Information

Device	Package	Shipping	memo
EFC4612R-TR	EFCP	5,000pcs./reel	Pb Free and Halogen Free

Test circuits are example of measuring FET1 side

Test Circuit 1

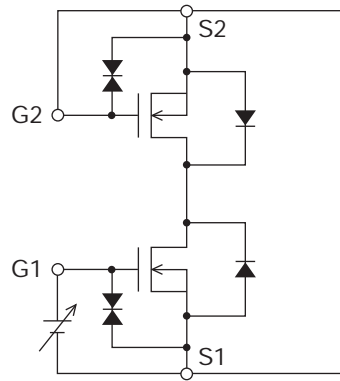
$V_{SSS} / I_{SS}$



IT11565

Test Circuit 2

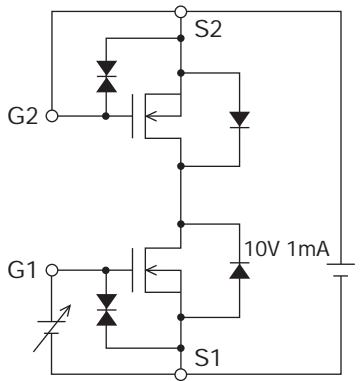
$I_{GSS(+)} / (-)$



IT11566

Test Circuit 3

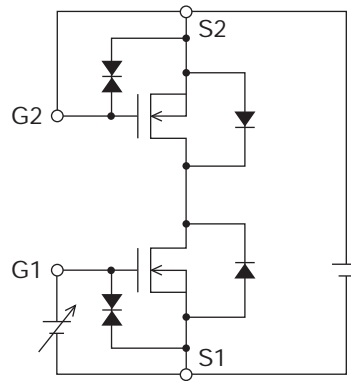
$V_{GS(off)}$



IT11567

Test Circuit 4

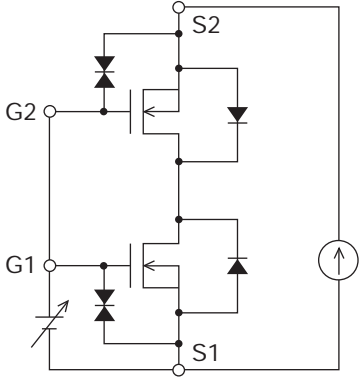
$|y_{fs}|$



IT11568

Test Circuit 5

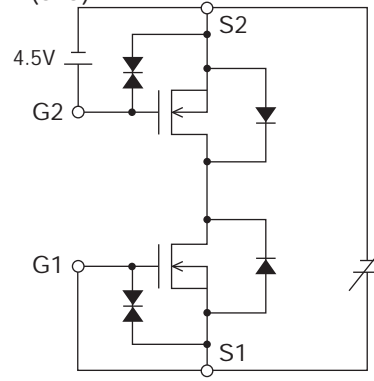
$R_{SS(on)}$



IT11569

Test Circuit 6

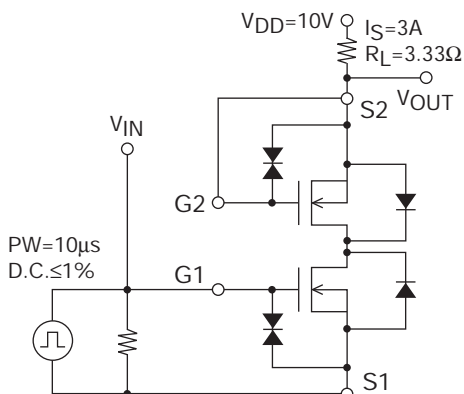
$V_{F(S-S)}$



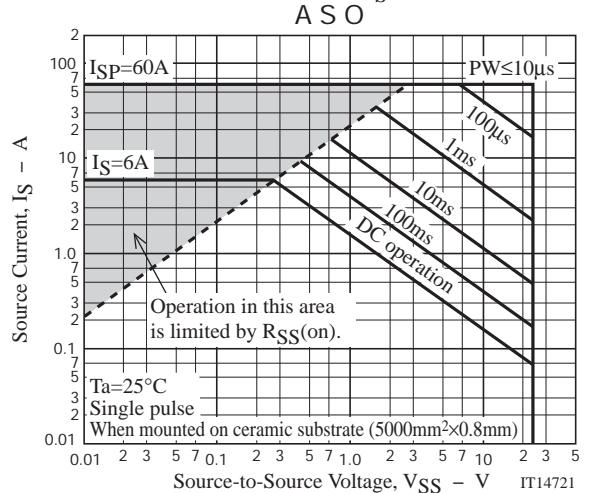
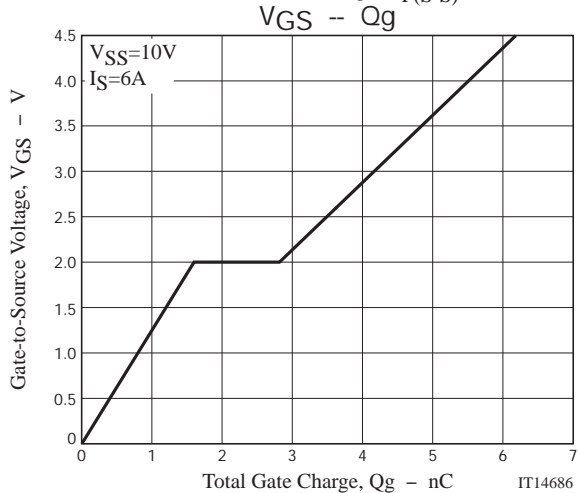
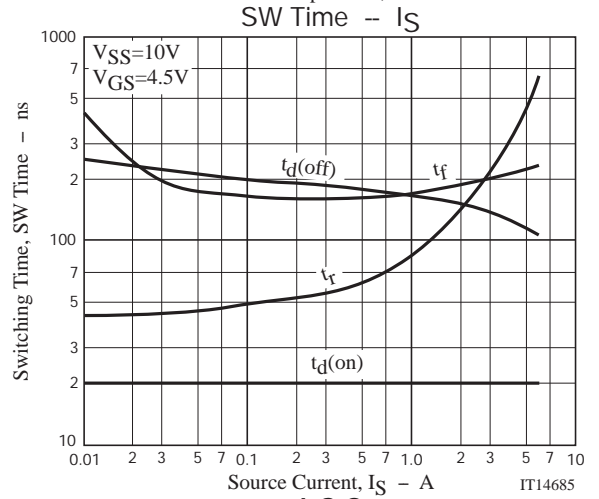
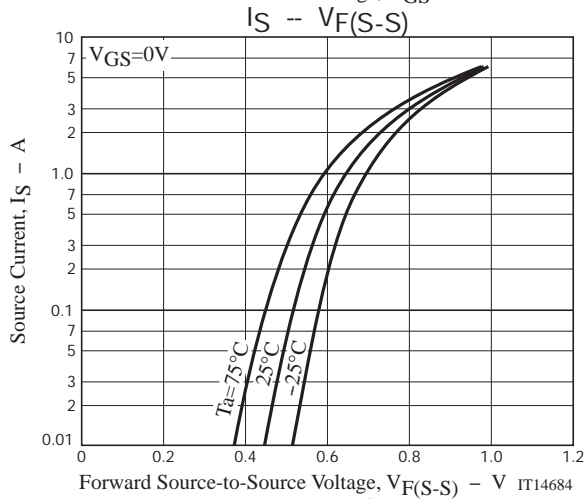
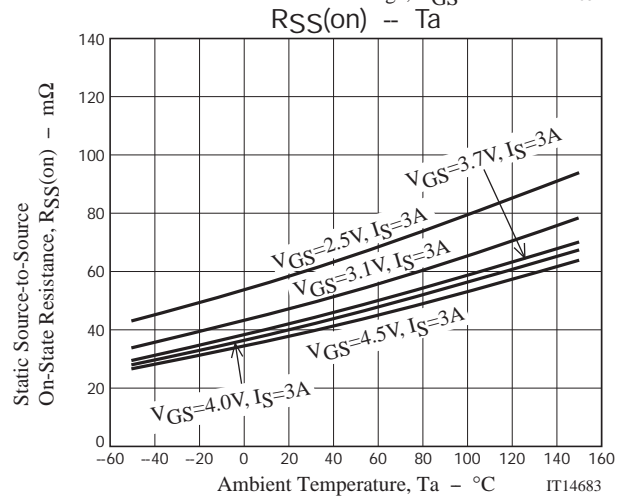
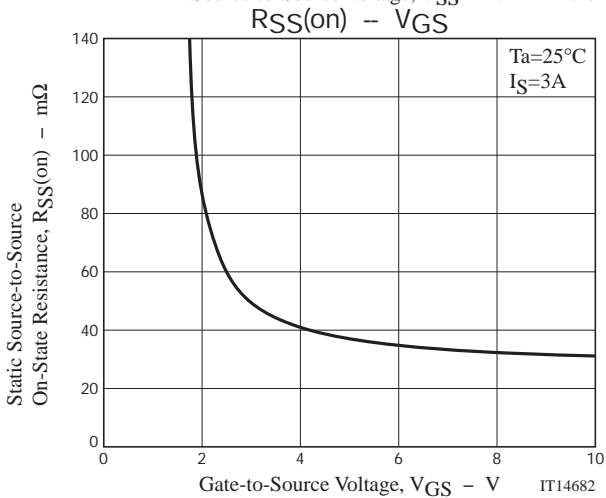
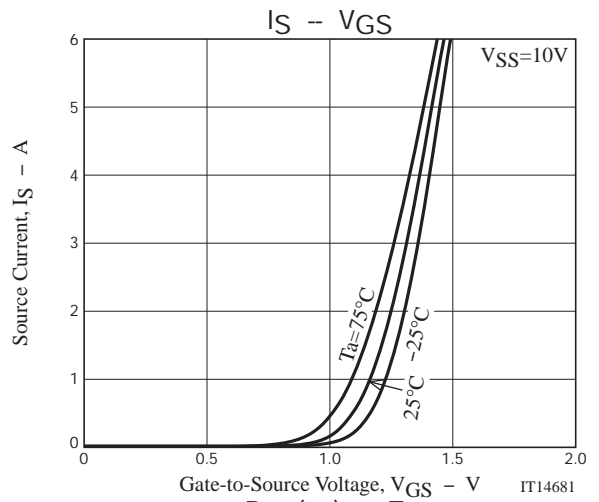
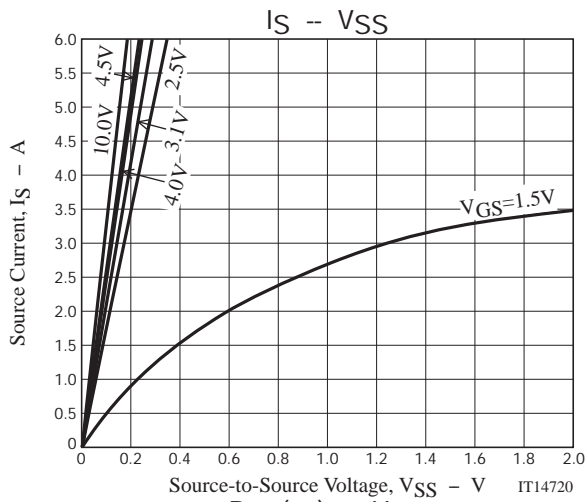
IT11570

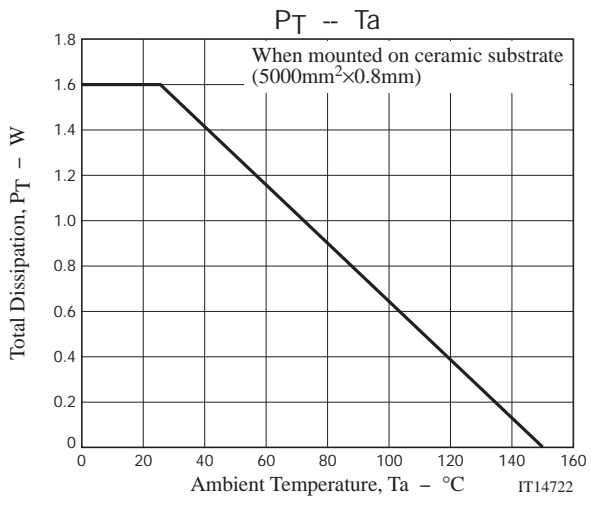
Test Circuit 7

$t_{d(on)}, t_r, t_{d(off)}, t_f$



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





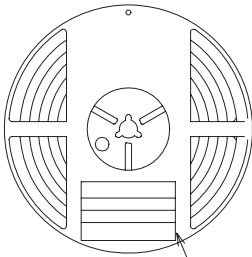
Taping Specification

EFC4612R-TR

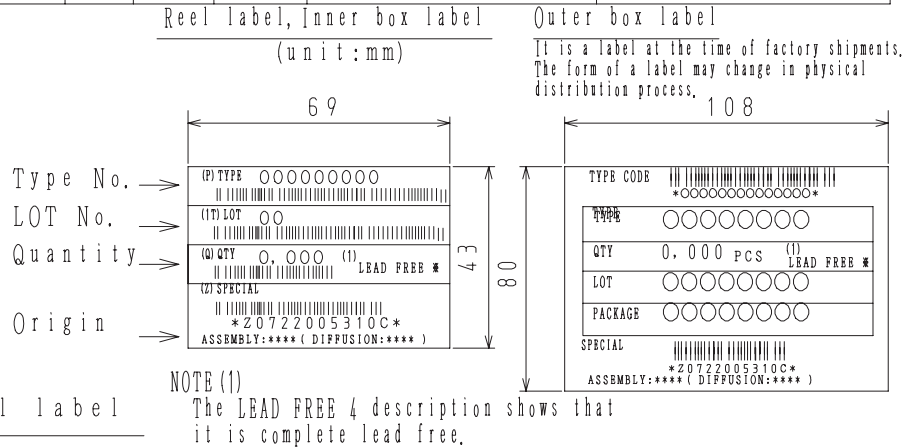
1. Packing Format

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)
EFCP1313 -4CC-037	145145×055	5,000	25,000	150,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



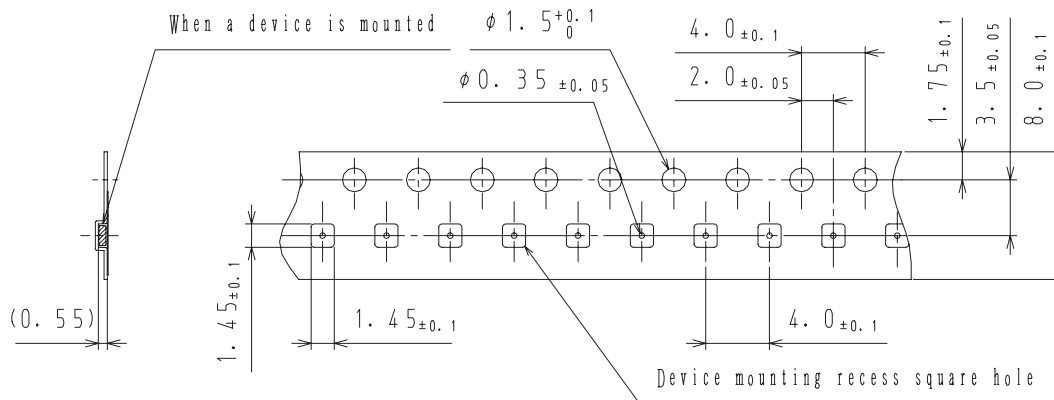
Reel label



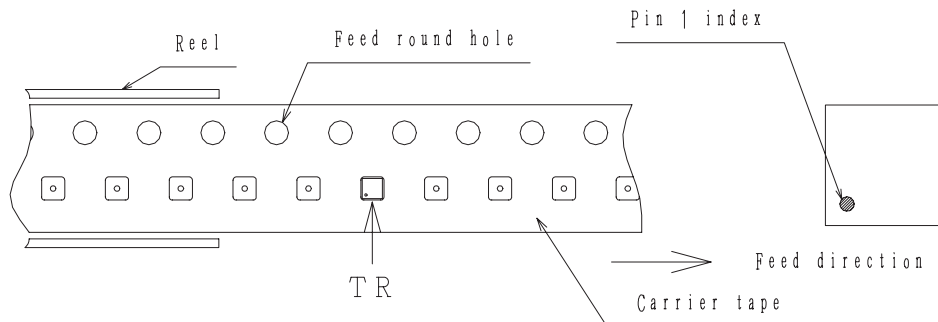
Label	JEITA Phase
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

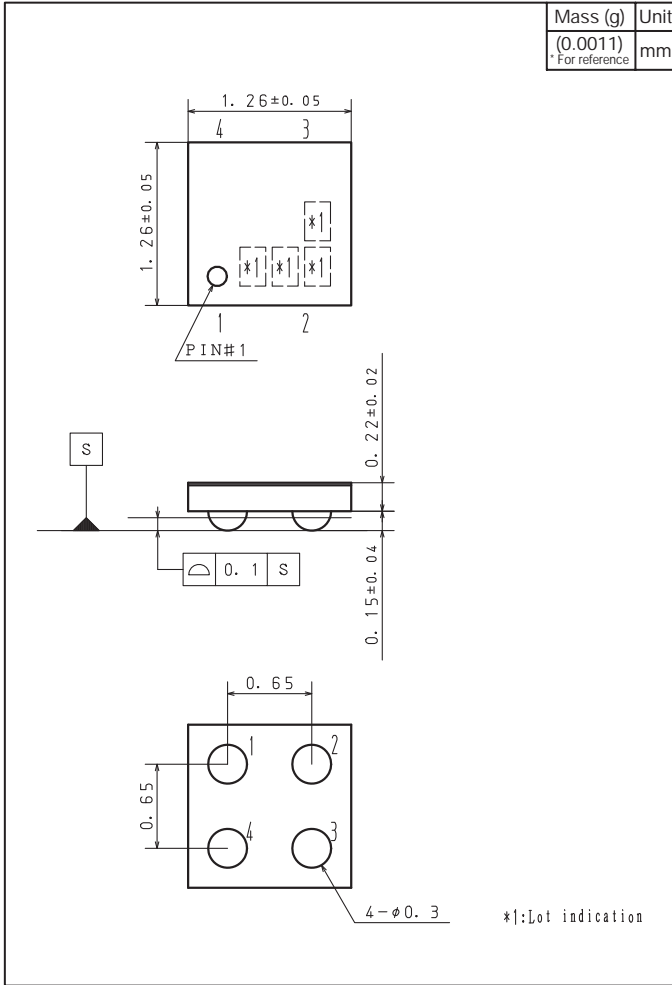


Those with pin 1 index on the opposite of feed hole.....TR

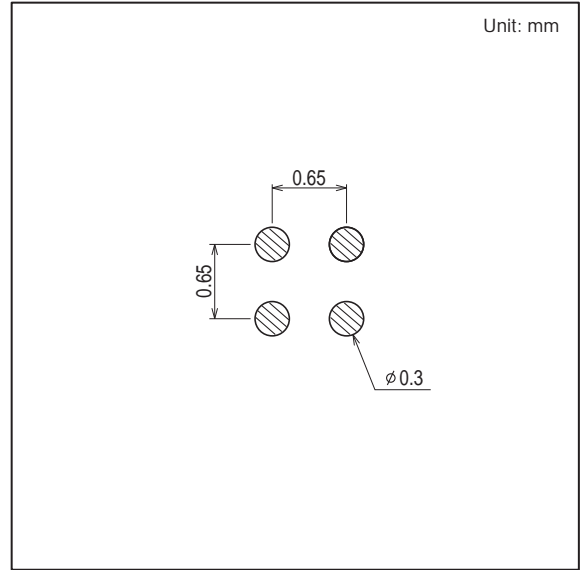
# EFC4612R

## Outline Drawing

EFC4612R-TR



## Land Pattern Example



Note on usage : Since the EFC4612R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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