



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

EFC6602R — N-Channel Silicon MOSFET

Lithium-ion battery charging and discharging switch

Features

- 2.5V drive
- Common-drain type
- 2KV ESD HBM
- Protection diode in
- Halogen free compliance

Specifications

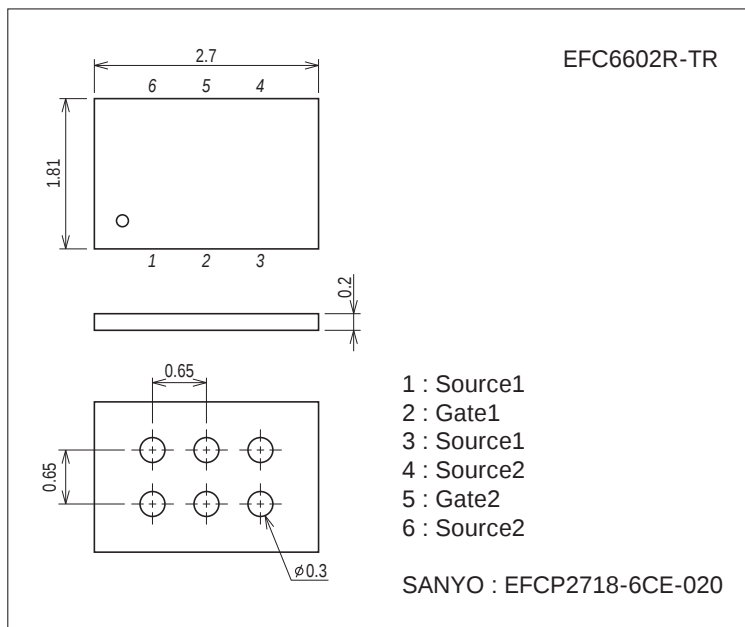
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Source-to-Source Voltage	V _{SS}		12	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Source Current (DC)	I _S		18	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)	2.0	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

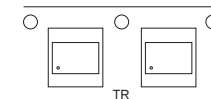
7073-001



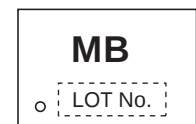
Product & Package Information

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

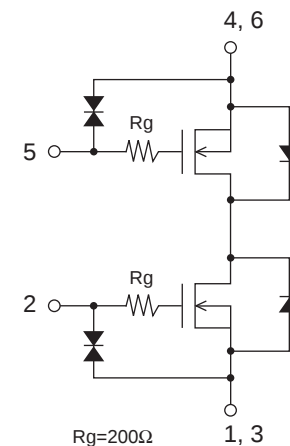
Taping Type : TR



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

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

EFC6602R

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	12			V
Zero-Gate Voltage Source Current	I_{SSS}	$V_{SS}=10V$, $V_{GS}=0V$ Test Circuit 1			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$, $V_{SS}=0V$ Test Circuit 2			± 1	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{SS}=6V$, $I_S=1mA$ Test Circuit 3	0.5		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{SS}=6V$, $I_S=3A$ Test Circuit 4		13		S
Static Source-to-Source On-State Resistance	$R_{SS(on)1}$	$I_S=3A$, $V_{GS}=4.5V$ Test Circuit 5	3.1	4.5	5.9	$m\Omega$
	$R_{SS(on)2}$	$I_S=3A$, $V_{GS}=4.0V$ Test Circuit 5	3.3	4.8	6.3	$m\Omega$
	$R_{SS(on)3}$	$I_S=3A$, $V_{GS}=3.8V$ Test Circuit 5	3.5	5	6.5	$m\Omega$
	$R_{SS(on)4}$	$I_S=3A$, $V_{GS}=3.1V$ Test Circuit 5	4.0	5.8	8.2	$m\Omega$
	$R_{SS(on)5}$	$I_S=3A$, $V_{GS}=2.5V$ Test Circuit 5	5.2	7.5	11	$m\Omega$
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD}=6V$, $V_{GS}=4.5V$, $I_S=3A$ Test Circuit 7		530		ns
Rise Time	t_r			2100		ns
Turn-OFF Delay Time	$t_{d(off)}$			6200		ns
Fall Time	t_f			5500		ns
Total Gate Charge	Q_g	$V_{DD}=6V$, $V_{GS}=4.5V$, $I_S=18A$ Test Circuit 8		55		nC
Forward Source-to-Source Voltage	$V_{F(S-S)}$	$I_S=3A$, $V_{GS}=0V$ Test Circuit 6		0.76	1.2	V

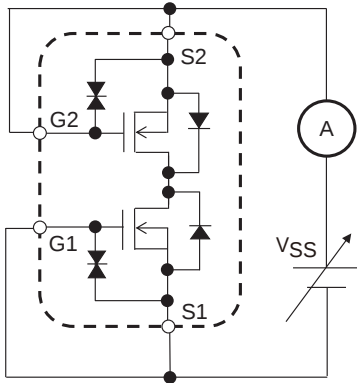
Ordering Information

Device	Package	Shipping	memo
EFC6602R-TR	EFCP	5,000pcs./reel	Pb Free and Halogen Free

Test circuits are example of measuring FET1 side

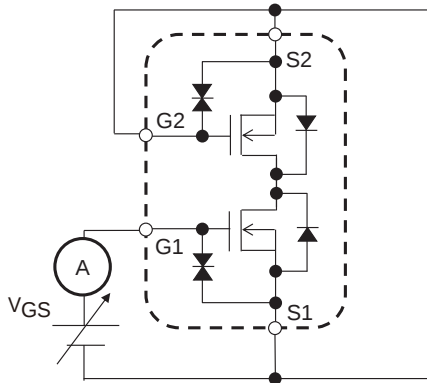
Test Circuit 1

I_{SSS}



Test Circuit 2

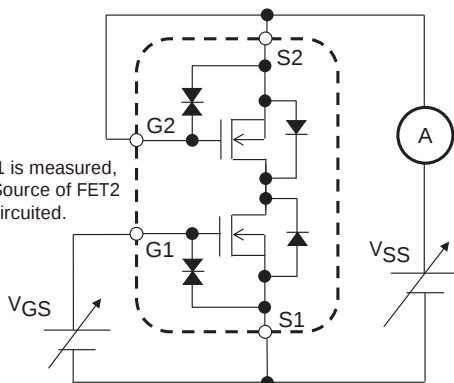
I_{GSS}



When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 3

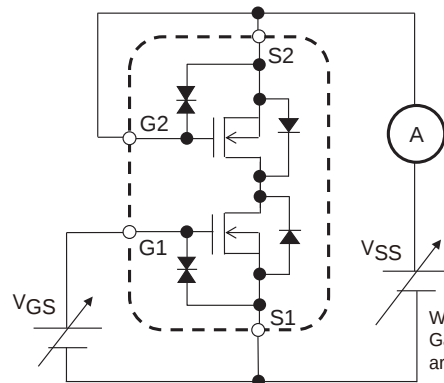
$V_{GS(off)}$



When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 4

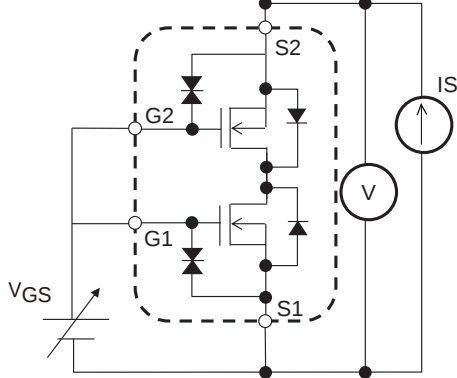
$|y_{fs}|$



When FET1 is measured, Gate and Source of FET2 are short-circuited.

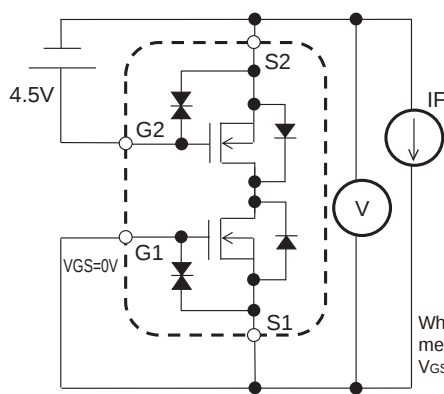
Test Circuit 5

$R_{SS(on)}$



Test Circuit 6

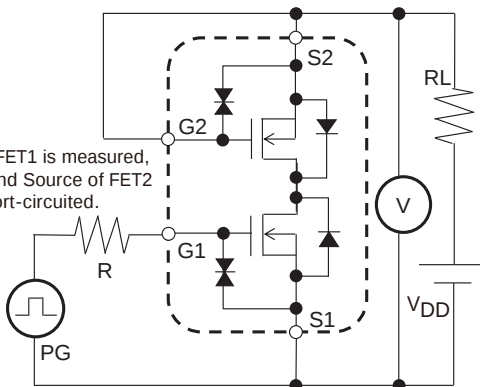
$V_F(S-S)$



When FET1 is measured, +4.5V is added to V_{GS} of FET2.

Test Circuit 7

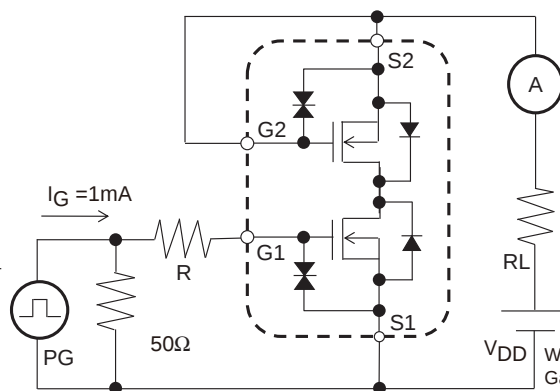
$t_d(on), t_r, t_d(off), t_f$



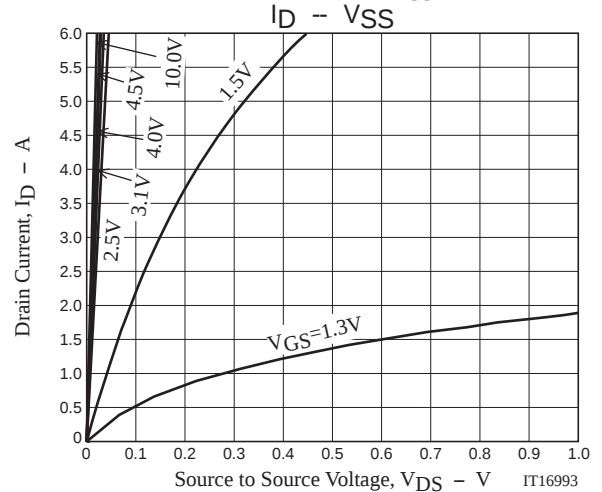
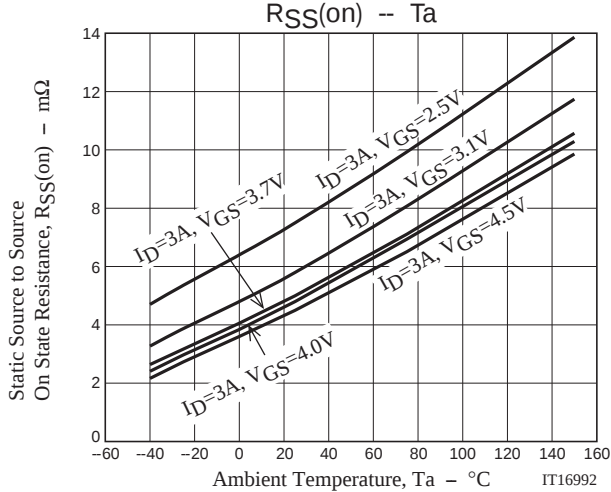
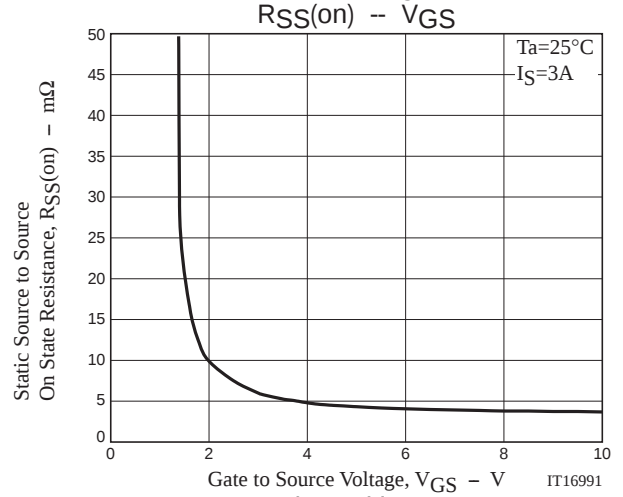
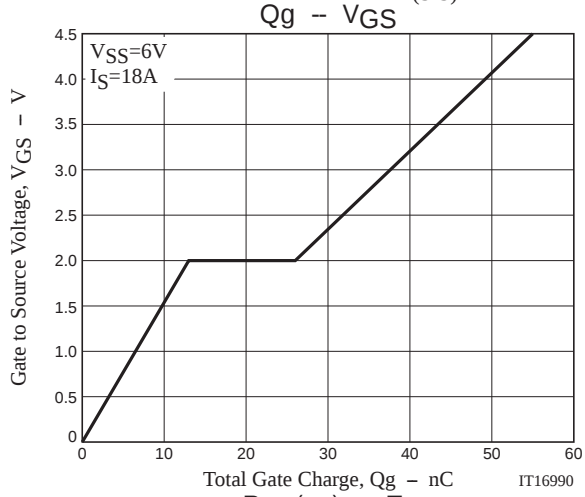
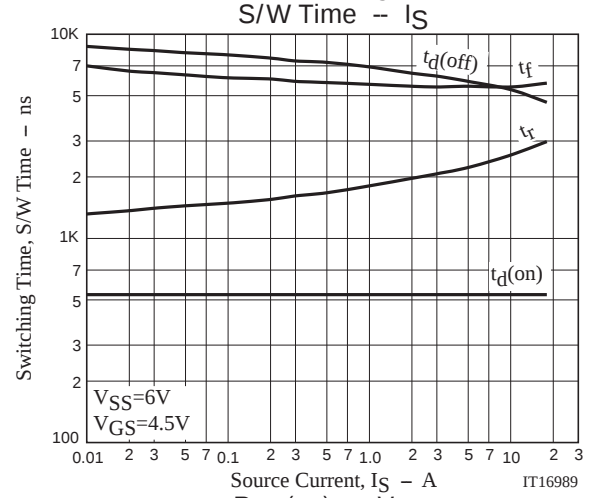
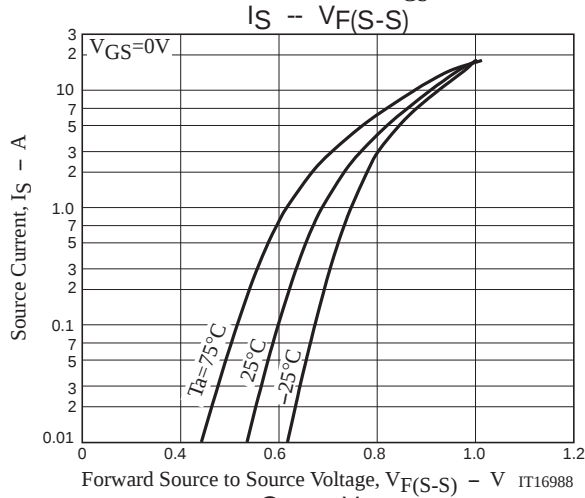
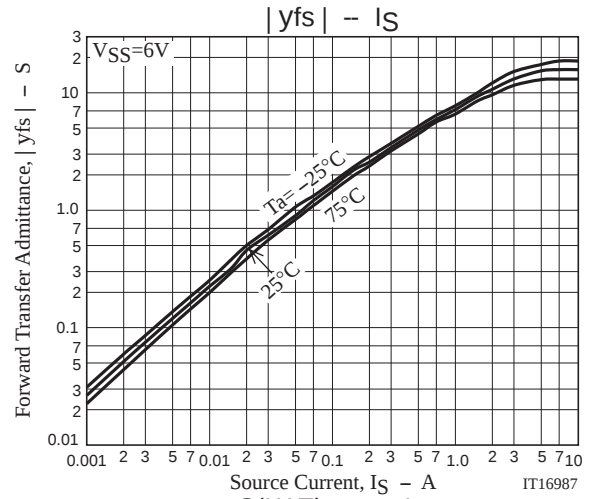
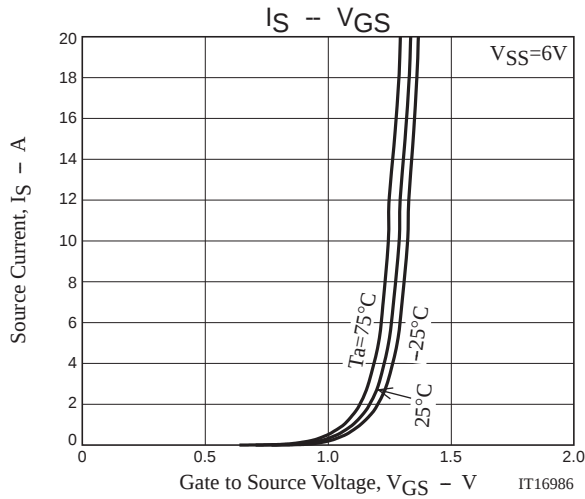
When FET1 is measured, Gate and Source of FET2 are short-circuited.

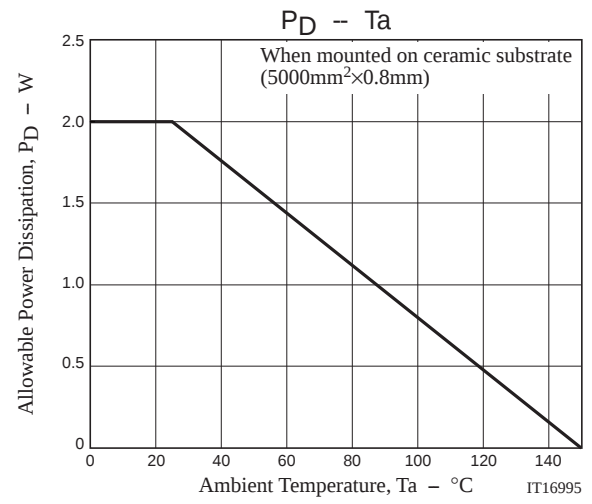
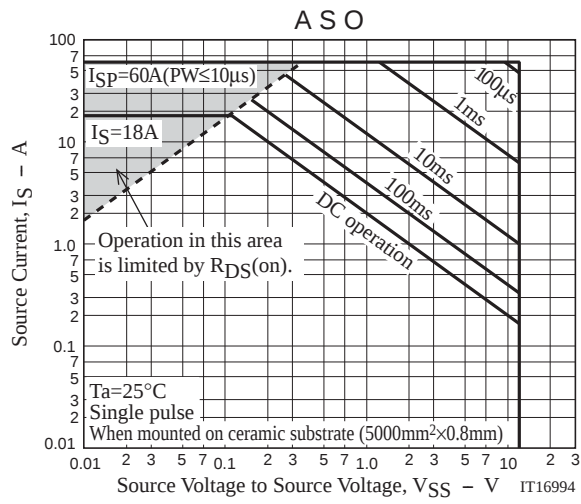
Test Circuit 8

Q_g



When FET1 is measured, Gate and Source of FET2 are short-circuited.



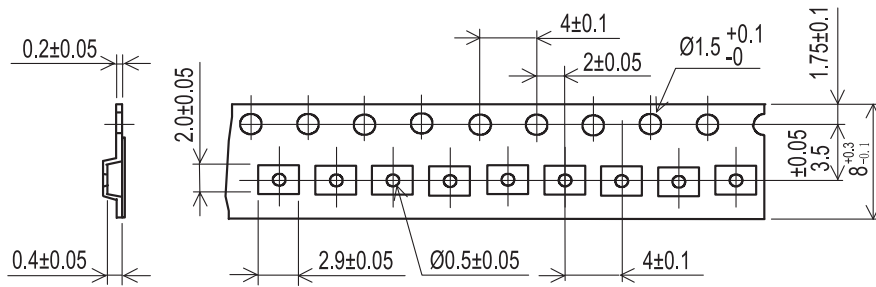


Taping Specification

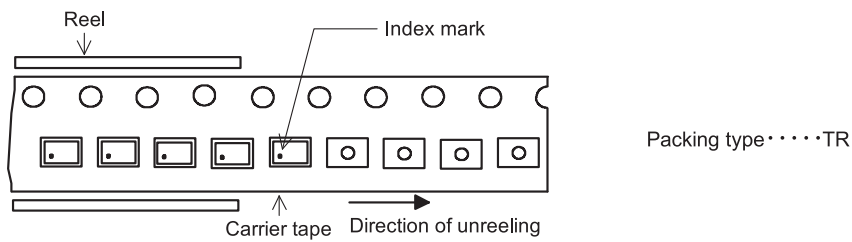
EFC6602R-TR

1. Taping Configuration

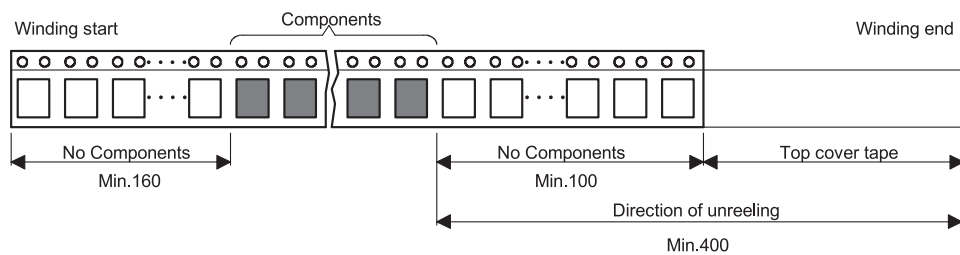
1-1 .Carrier Tape Size (unit:mm)



1-2 .Device Placement Direction

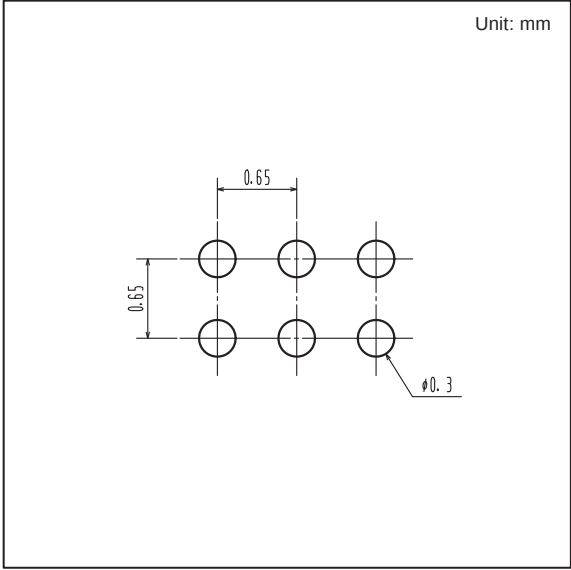
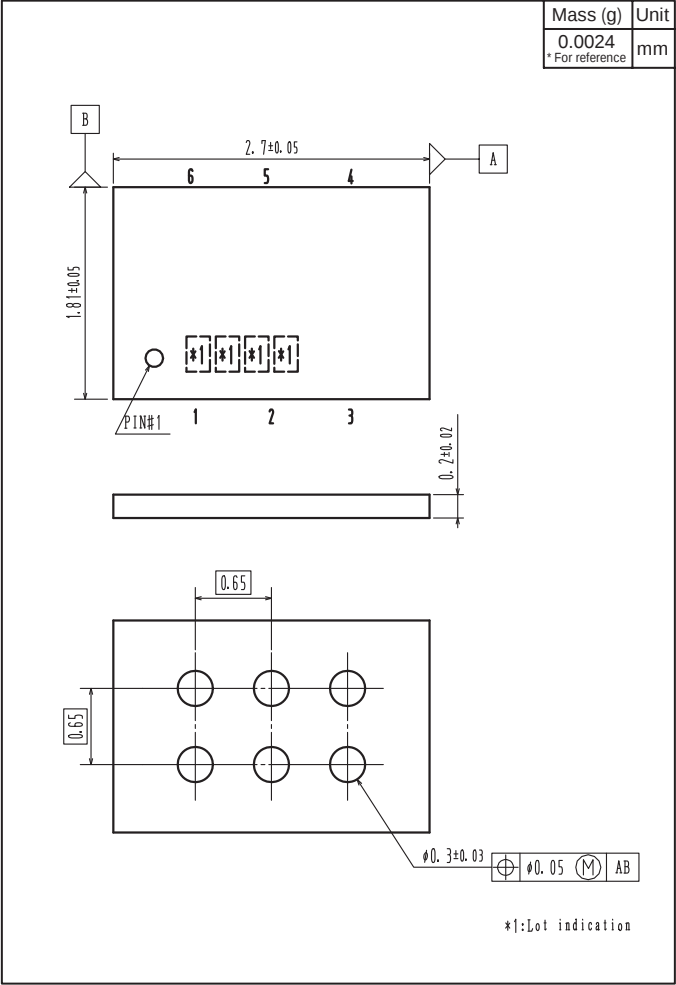


1-3 .Leader portion and Trailer portion (unit:mm)



Outline Drawing
EFC6602R-TR

Land Pattern Example



Note on usage : Since the EFC6602R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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