



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

EFC6601R — 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

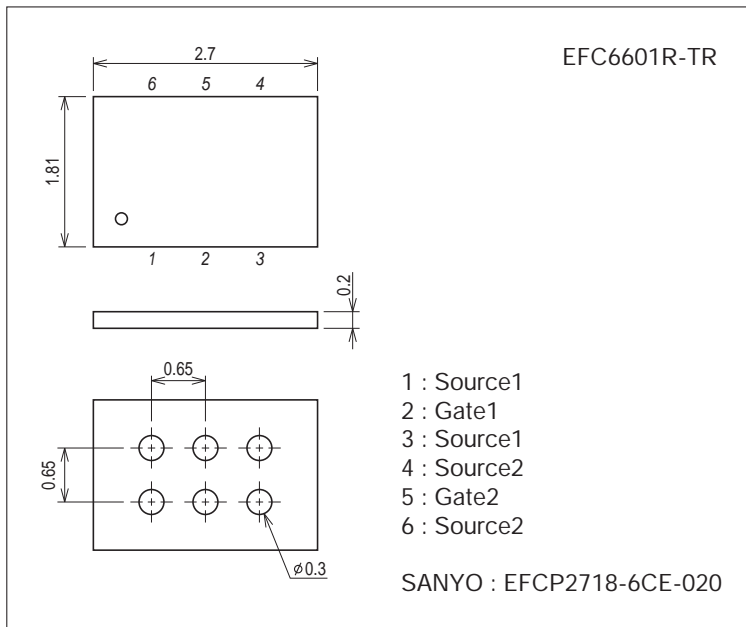
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Source-to-Source Voltage	VSSS		24	V
Gate-to-Source Voltage	VGSS		±12	V
Source Current (DC)	IS		13	A
Source Current (Pulse)	ISP	PW≤10μs, duty cycle≤1%	60	A
Total Dissipation	PT	When mounted on ceramic substrate (5000mm²×0.8mm)	2.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Package Dimensions

unit : mm (typ)

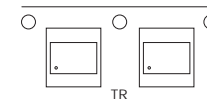
7073-001



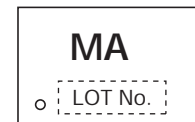
Product & Package Information

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

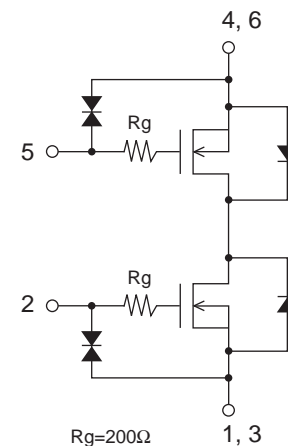
Taping Type : TR



Marking



Electrical Connection



EFC6601R

Electrical Characteristics at Ta=25°C

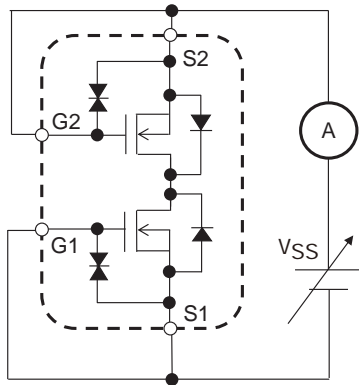
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Source-to-Source Breakdown Voltage	V(BR)SSS	IS=1mA, VGS=0V Test Circuit 1	24			V
Zero-Gate Voltage Source Current	ISSS	VSS=20V, VGS=0V Test Circuit 1			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VSS=0V Test Circuit 2			±1	μA
Cutoff Voltage	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		15.5		S
Static Source-to-Source On-State Resistance	RSS(on)1	IS=3A, VGS=4.5V Test Circuit 5	6.6	9.5	11.5	mΩ
	RSS(on)2	IS=3A, VGS=4.0V Test Circuit 5	7.0	10	12	mΩ
	RSS(on)3	IS=3A, VGS=3.8V Test Circuit 5	7.3	10.5	13	mΩ
	RSS(on)4	IS=3A, VGS=3.1V Test Circuit 5	8.0	11.5	15	mΩ
	RSS(on)5	IS=3A, VGS=2.5V Test Circuit 5	9.0	13	17	mΩ
Turn-ON Delay Time	td(on)	VDD=10V, VGS=4.5V, IS=3A Test Circuit 7		280		ns
Rise Time	tr			630		ns
Turn-OFF Delay Time	td(off)			53000		ns
Fall Time	tf			47000		ns
Total Gate Charge	Qg		VDD=10V, VGS=4.5V, IS=13A Test Circuit 8		48	
Forward Source-to-Source Voltage	VF(S-S)	IS=3A, VGS=0V Test Circuit 6		0.76	1.2	V

Ordering Information

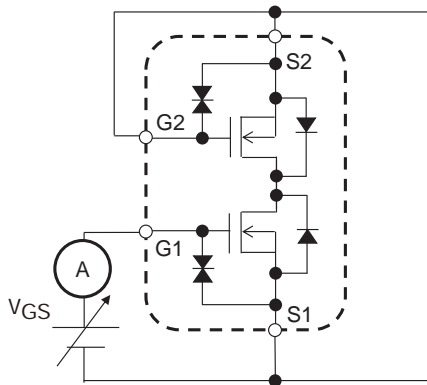
Device	Package	Shipping	memo
EFC6601R-TR	EFCP	5,000pcs./reel	Pb Free and Halogen Free

Test circuits are example of measuring FET1 side

Test Circuit 1
I_{SSS}

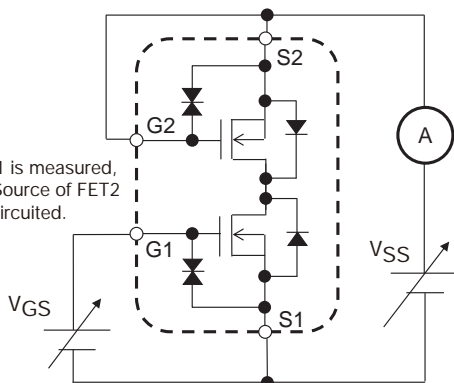


Test Circuit 2
I_{GSS}



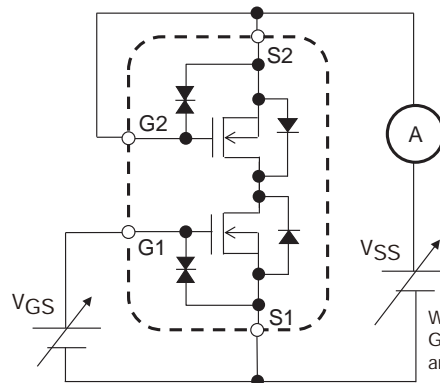
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 3
V_{GS(off)}



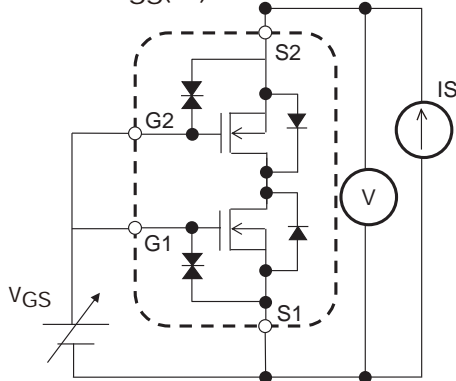
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 4
|y_{fs}|

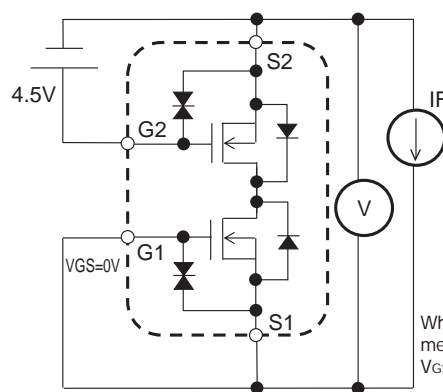


When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 5
R_{SS(on)}

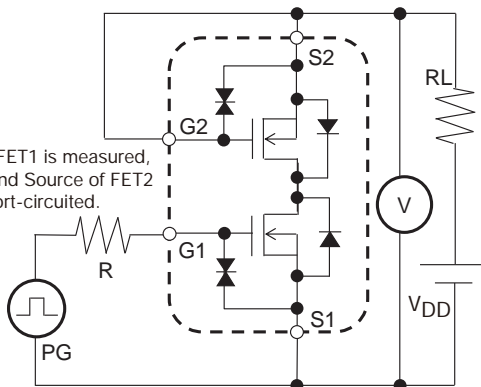


Test Circuit 6
V_{F(S-S)}



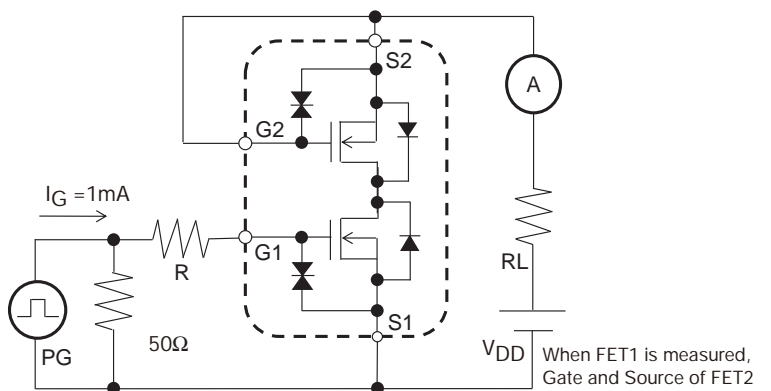
When FET1 is measured, +4.5V is added to V_{GS} of FET2.

Test Circuit 7
t_{d(on)}, t_r, t_{d(off)}, t_f



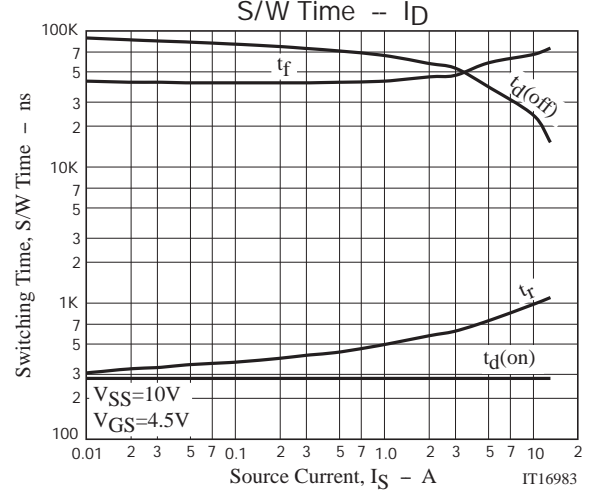
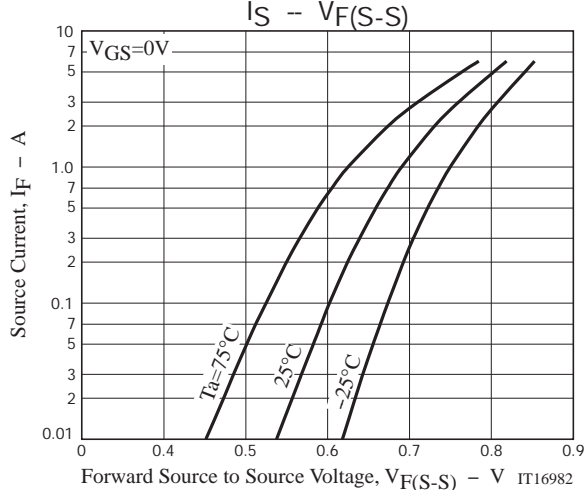
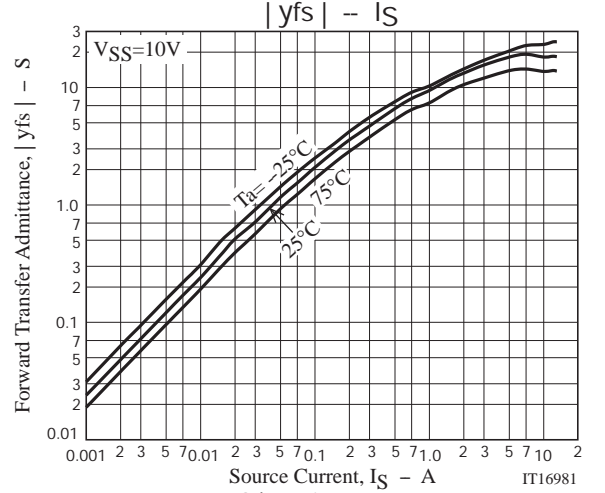
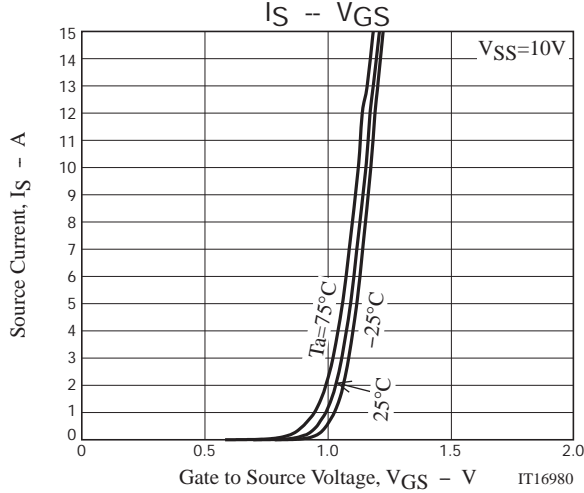
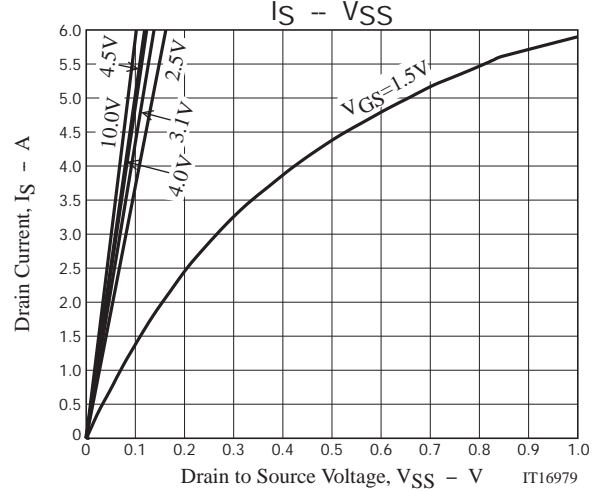
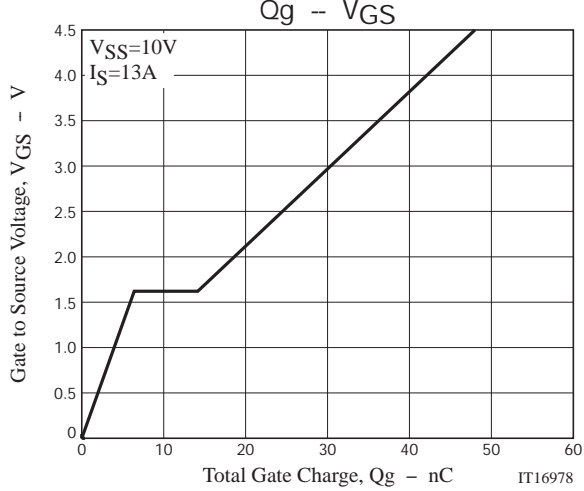
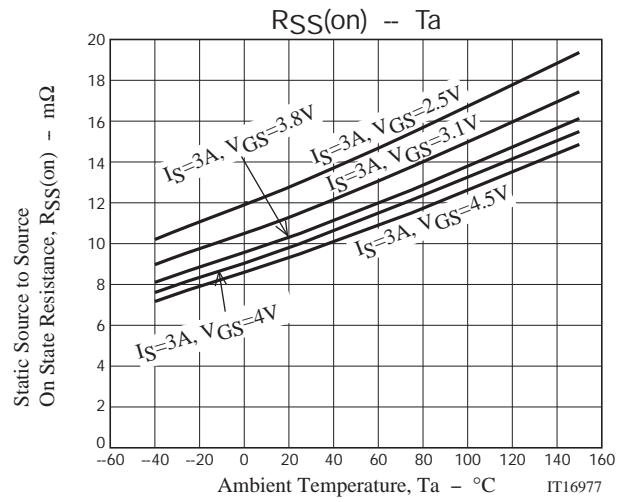
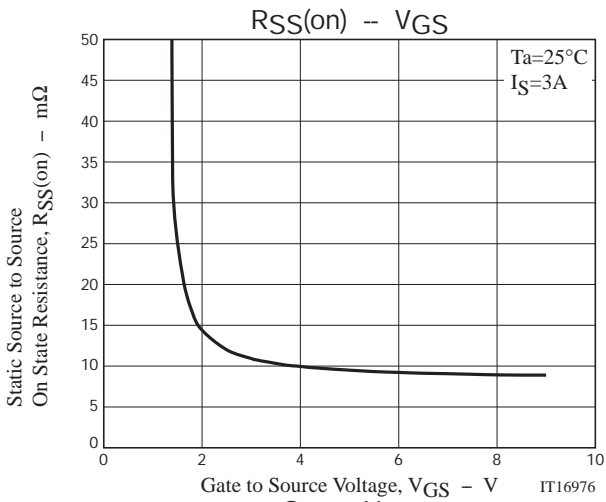
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 8
Q_g

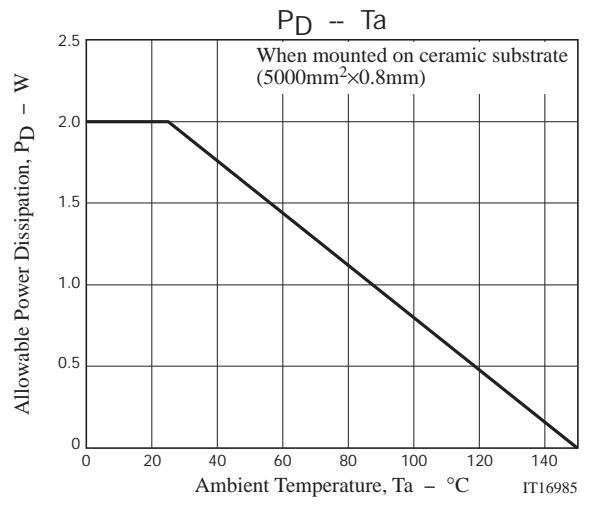
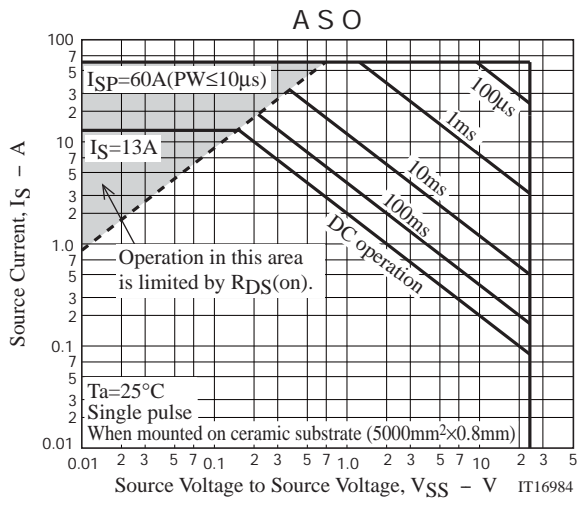


When FET1 is measured, Gate and Source of FET2 are short-circuited.

EFC6601R



EFC6601R



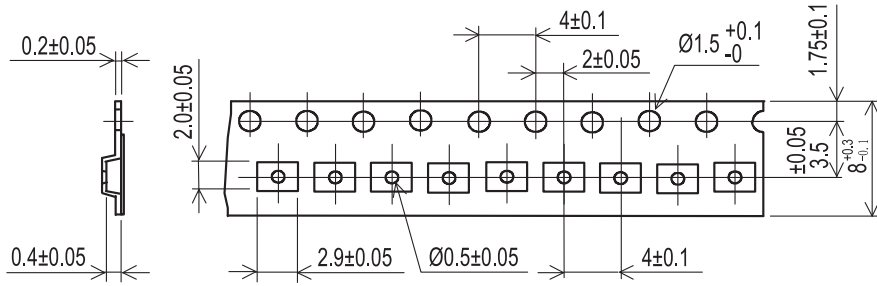
EFC6601R

Taping Specification

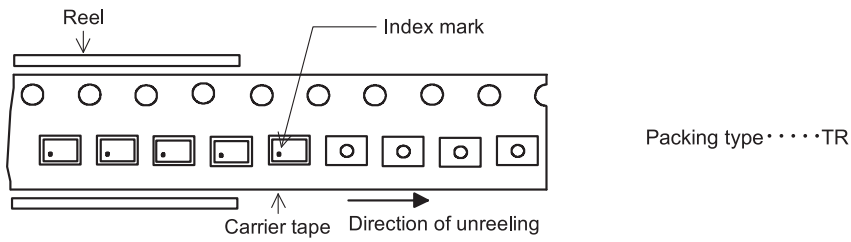
EFC6601R-TR

1. Taping Configuration

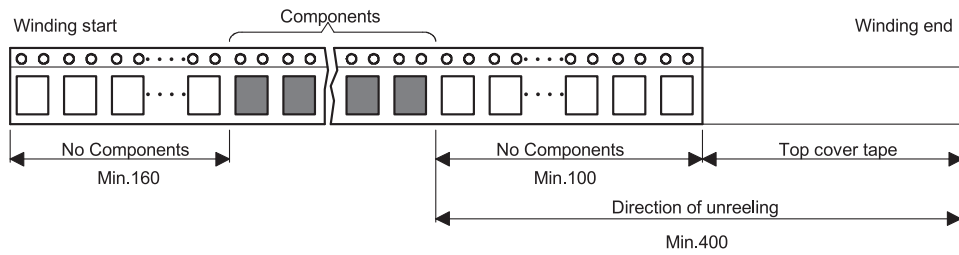
1-1 .Carrier Tape Size (unit:mm)



1-2 .Device Placement Direction



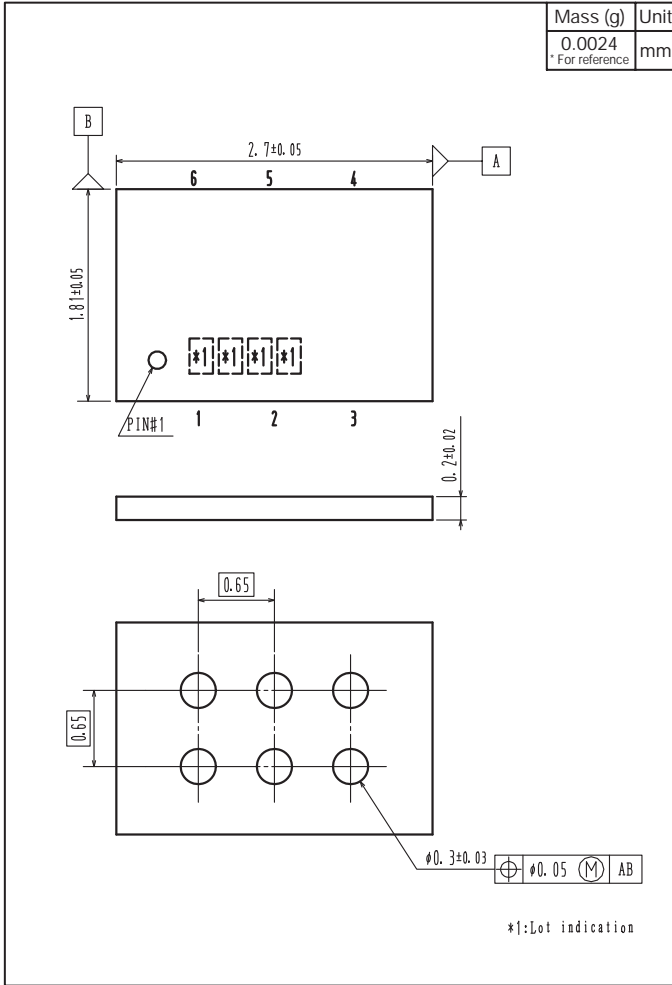
1-3 .Leader portion and Trailer portion (unit:mm)



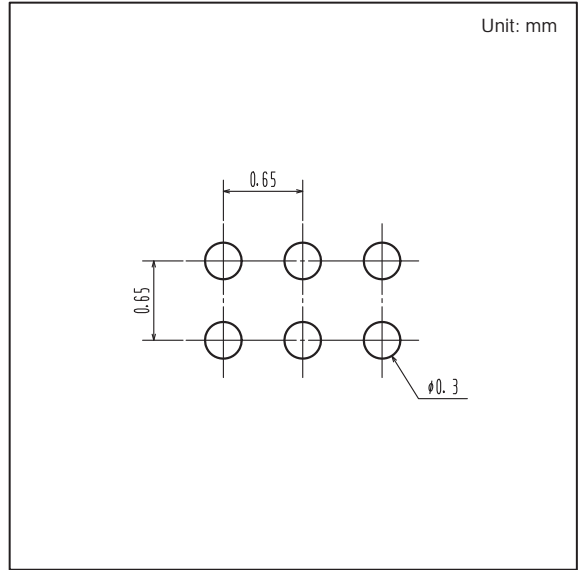
EFC6601R

Outline Drawing

EFC6601R-TR



Land Pattern Example



Note on usage : Since the EFC6601R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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