

# FC8V2204

## Silicon N-channel MOS FET

For lithium-ion secondary battery protection circuits

### ■ Overview

N-channel dual type MOS FET in a compact surface mount type package.

### ■ Features

- Low drain-source ON resistance:  $R_{DS(on)}$  typ. = 10.5 m $\Omega$  ( $V_{GS} = 4.5$  V)
- Small size surface mounting package: WMini8-F1
- Drain common 2 elements
- Contributes to miniaturization of sets, mount area reduction
- Eco-friendly Halogen-free package

### ■ Packaging

Embossed type (Thermo-compression sealing): 3000 pcs / reel (standard)

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	24	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 12$	V
Drain current	$I_D$	8.0	A
Peak drain current	$I_{DP}$	48	A
Power dissipation	$P_{D1}^{*1}$	1.0	W
	$P_{D2}^{*1, *2}$	1.2	
	$P_{D3}^{*3}$	0.4	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*1: Glass epoxy board: 25.4 mm  $\times$  25.4 mm  $\times$  0.8 mm  
 Copper foil of the drain portion should have a area of 300 mm<sup>2</sup> or more  
 Absolute maximum rating without heat sink for  $P_D$  is 400 mW  
 \*2:  $t = 10$  s  
 \*3: Stand-alone (without the board)

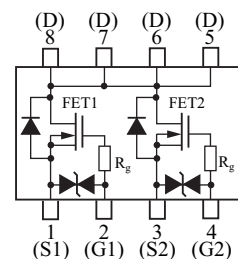
### ■ Package

- Code  
WMini8-F1
- Pin Name
 

1: Source-1	5: Drain
2: Gate-1	6: Drain
3: Source-2	7: Drain
4: Gate-2	8: Drain

### ■ Marking Symbol: 4C

### ■ Internal Connection



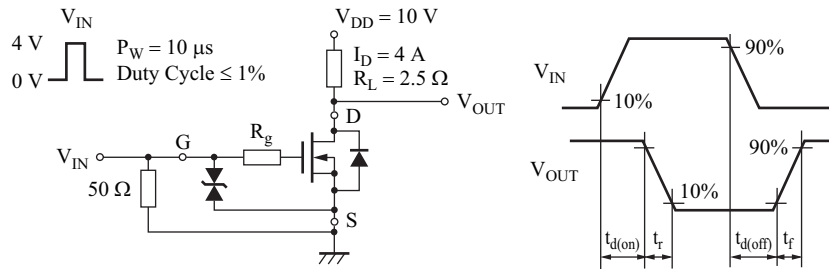
Resistance value	$R_g$	1	k $\Omega$
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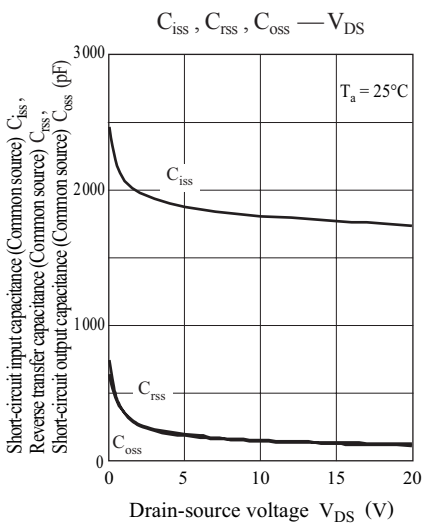
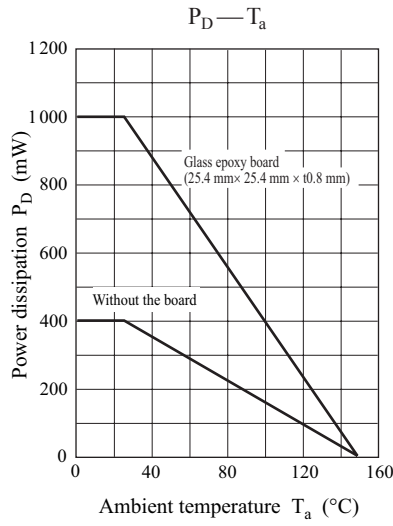
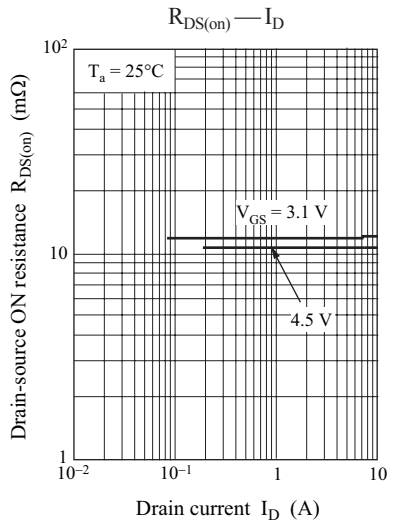
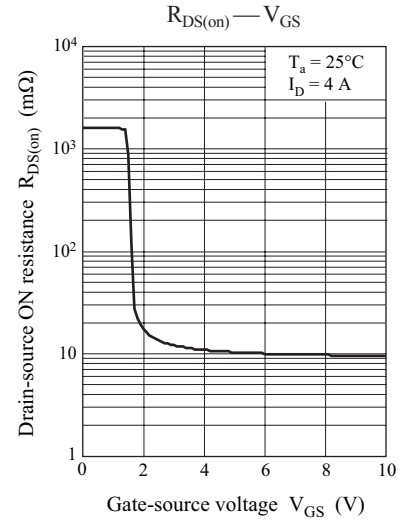
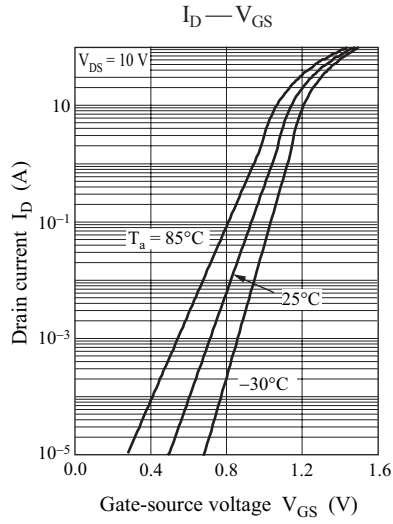
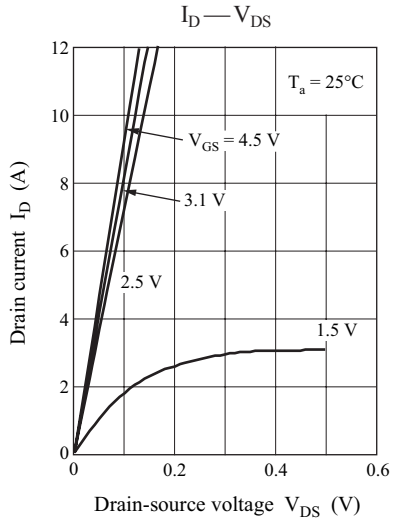
■ Electrical Characteristics  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1.0 \text{ mA}, V_{GS} = 0 \text{ V}$	24			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$			1.0	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 8.0 \text{ V}, V_{DS} = 0 \text{ V}$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{TH}$	$I_D = 1.0 \text{ mA}, V_{DS} = 10 \text{ V}$	0.40	0.85	1.50	V
Drain-source ON resistance	$R_{DS(on)1}$	$I_D = 4.0 \text{ A}, V_{GS} = 4.5 \text{ V}$	7.0	10.5	15	m $\Omega$
	$R_{DS(on)2}$	$I_D = 4.0 \text{ A}, V_{GS} = 4.0 \text{ V}$	7.2	11.0	16	
	$R_{DS(on)3}$	$I_D = 4.0 \text{ A}, V_{GS} = 3.1 \text{ V}$	7.5	12.0	18	
	$R_{DS(on)4}$	$I_D = 4.0 \text{ A}, V_{GS} = 2.5 \text{ V}$	8.0	13.5	20	
Turn-on delay time *	$t_{d(on)}$	$V_{DD} = 10 \text{ V}, V_{GS} = 0 \text{ V to } 4 \text{ V},$ $I_D = 4.0 \text{ A}$		0.6		$\mu\text{s}$
Rise time *	$t_r$			1.5		$\mu\text{s}$
Turn-off delay time *	$t_{d(off)}$	$V_{DD} = 10 \text{ V}, V_{GS} = 4 \text{ V to } 0 \text{ V},$ $I_D = 4.0 \text{ A}$		4.4		$\mu\text{s}$
Fall time *	$t_f$			2.8		$\mu\text{s}$
<b>Body diode characteristics</b>						
Drain-source voltage	$V_{SD}$	$I_S = 4.0 \text{ A}, V_{GS} = 0 \text{ V}$		0.8	1.2	V

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

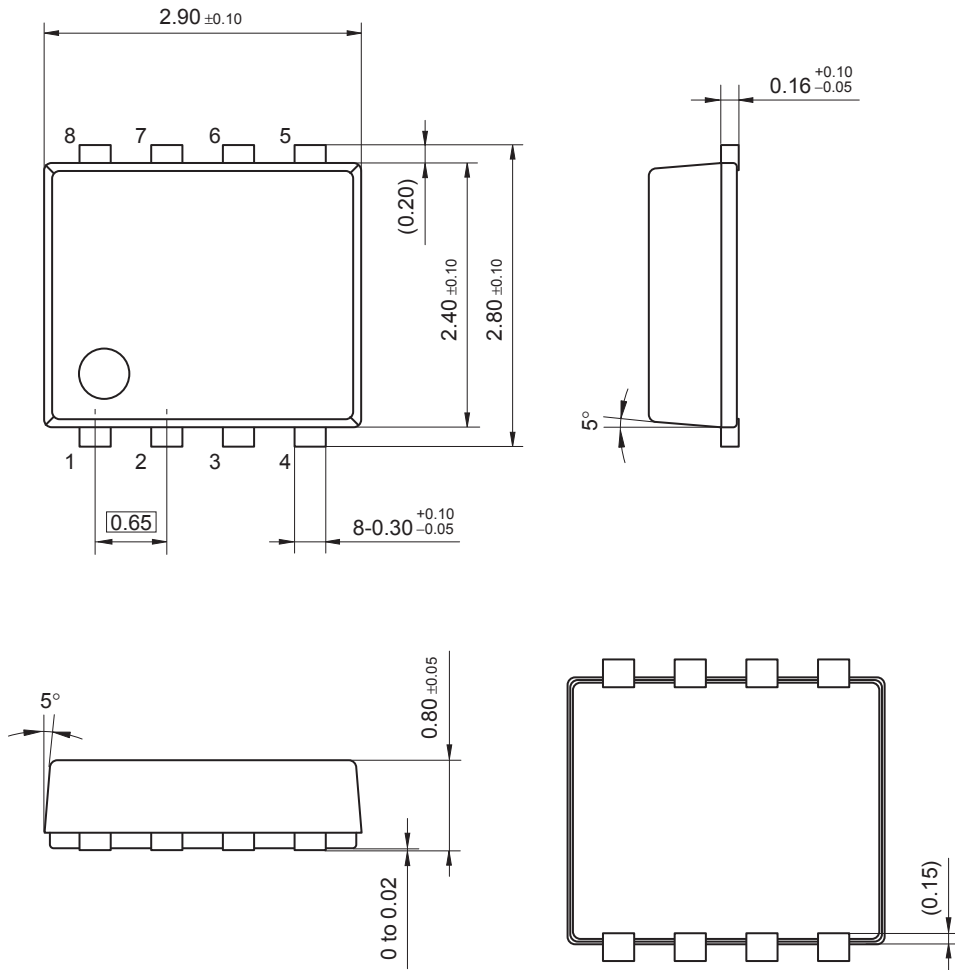
2. \*: Measurement circuit





# WMini8-F1

Unit: mm



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