

MTMF8231

Silicon N-channel MOSFET

For Li-ion battery protection circuit

Overview

MTMF8231 is low R_{on} N-channel MOSFET designed for Li-ion battery circuit of notebook computers.

Features

- Super Low on resistance: $R_{on} = 3 \text{ m}\Omega$ (typ.) ($V_{GS} = 10 \text{ V}$, $I_D = 5.0 \text{ A}$)
- Thin flat-lead package
- Incorporating a built-in gate protection-diode

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

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V_{DSS}	30	V
Gate-source surrender voltage	V_{GSS}	± 20	V
Drain current	I_D	18	A
Peak drain current	I_{DP}	72	A
Avalanche current	I_{AS}	18	A
Power dissipation *	P_D	1.0	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note) *: Measuring on cglass epoxy board at $25.4 \text{ mm} \times 25.4 \text{ mm} \times 0.8 \text{ mm}$

Absolute maximum rating without heat sink for P_D is 500 mA

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}	$I_D = 1 \text{ mA}$, $V_{GS} = 0$	30			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 30 \text{ V}$, $V_{GS} = 0$			10	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$			± 10	μA
Gate threshold voltage	V_{TH}	$I_D = 1.0 \text{ mA}$, $V_{DS} = 10.0 \text{ V}$	1.4		2.5	V
Drain-source ON resistance	$R_{DS(on)}$	$I_D = 5.0 \text{ A}$, $V_{GS} = 4.5 \text{ V}$		6.5	9.8	$\text{m}\Omega$
		$I_D = 5.0 \text{ A}$, $V_{GS} = 10 \text{ V}$		3.0	4.2	
Forward transfer admittance	$ Y_{fs} $	$I_D = 5.0 \text{ A}$, $V_{DS} = 10 \text{ V}$	10			S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$		6 000		pF
Short-circuit output capacitance (Common source)	C_{oss}				690	pF
Reverse transfer capacitance (Common source)	C_{rss}				420	pF
Avalanche energy capability	EAS	$V_{DD} = 24 \text{ V}$, $V_{GS} = 10 \text{ V}$ to 0 V , $I_D = 18 \text{ A}$ $L = 0.5 \text{ mH}$, $R_g = 25\Omega$, $T_{ch} = 25^\circ\text{C}$ (initial)		162		mJ
Turn-on delay time *	$t_{d(on)}$	$V_{DD} = 15 \text{ V}$, $V_{GS} = 0 \text{ V}$ to 10 V , $I_D = 5.0 \text{ A}$		20		ns
Turn-off delay time *	$t_{d(off)}$	$V_{DD} = 15 \text{ V}$, $V_{GS} = 0 \text{ V}$ to 10 V , $I_D = 5.0 \text{ A}$		30		ns
Rise time *	t_r	$V_{DD} = 15 \text{ V}$, $V_{GS} = 10 \text{ V}$ to 0 V , $I_D = 5.0 \text{ A}$		400		ns
Fall time *	t_f	$V_{DD} = 15 \text{ V}$, $V_{GS} = 10 \text{ V}$ to 0 V , $I_D = 5.0 \text{ A}$		420		ns

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

2. *: Measurement circuit

Package

Code

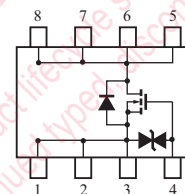
SO8-F1-B

Pin Name

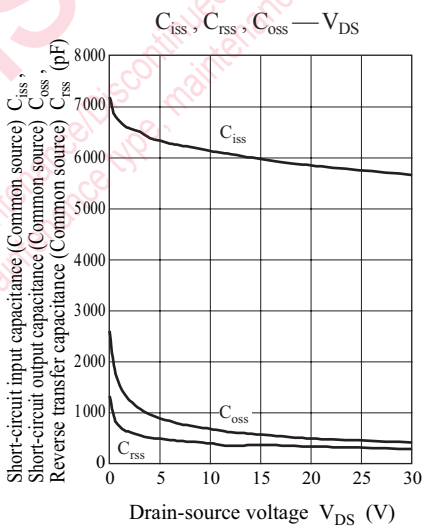
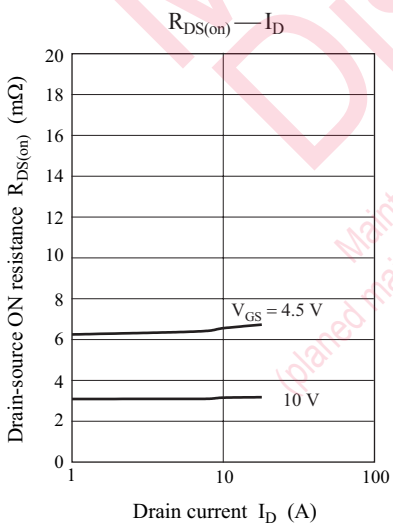
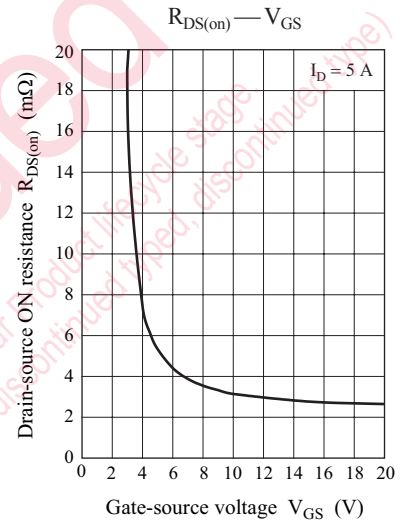
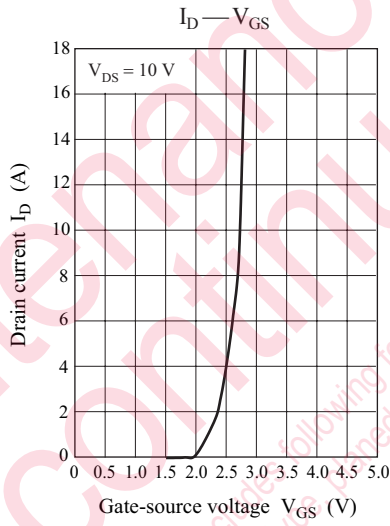
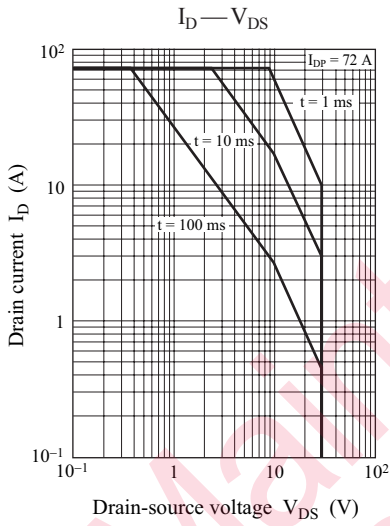
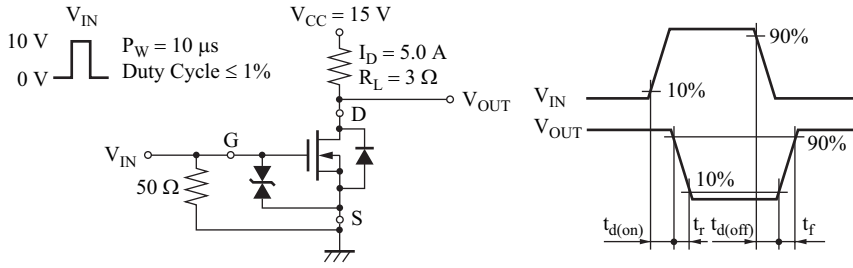
1: Source	2: Source
3: Source	4: Gate
5: Drain	6: Drain
7: Drain	8: Drain

Marking Symbol: AA

Internal Connection

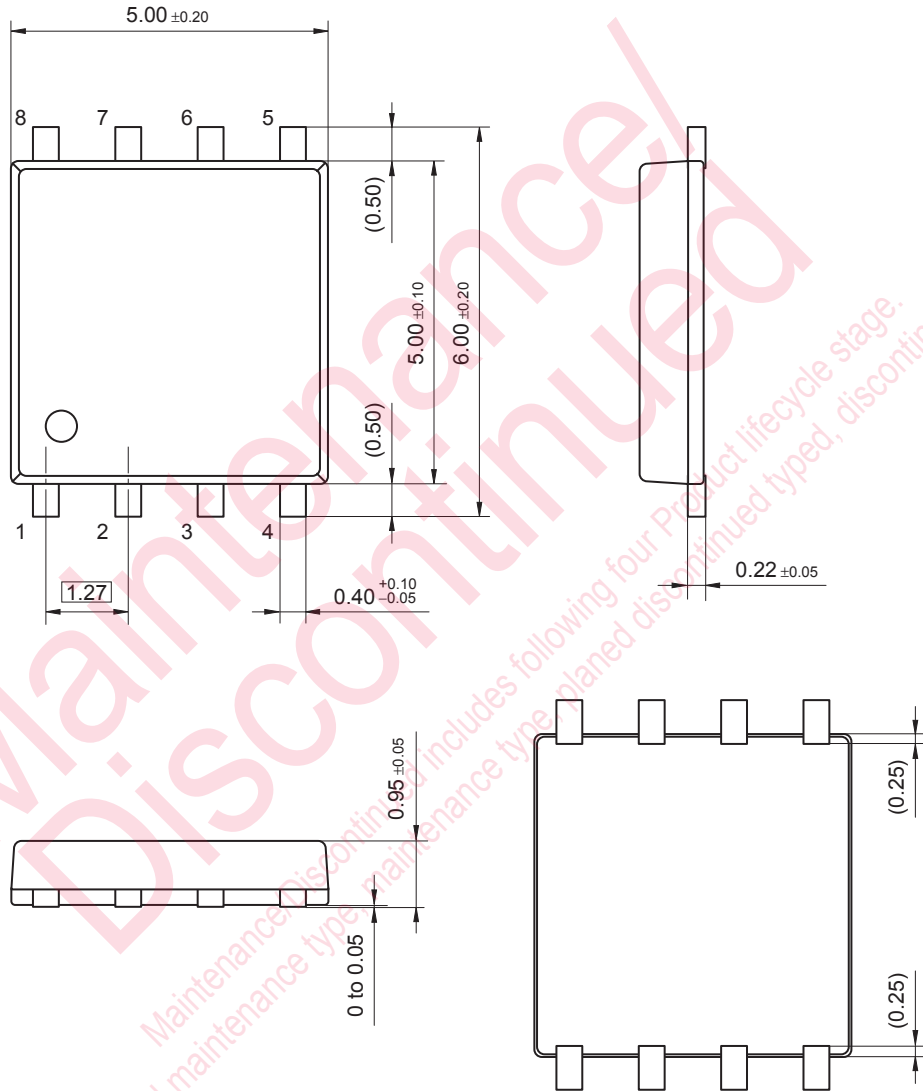


Measurement circuit



SO8-F1-B

Unit: mm



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