

F5033

FUJI Intelligent Power MOSFET

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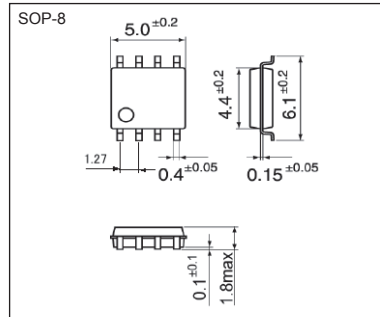
■ Features

- Two N-ch power MOSFET circuits
- Over temperature protection
- Short circuit protection
- Low on-resistance
- High speed switching

■ Applications

- Solenoid driver
- Lamp driver
- Replacements for fuse and relay

■ Outline drawings [mm]



■ Connection

- ① SOURCE 1
- ② GATE 1
- ③ SOURCE 2
- ④ GATE 2
- ⑤ ⑥ DRAIN 2
- ⑦ ⑧ DRAIN 1

■ Maximum ratings and characteristics

● Absolute maximum ratings (at Tc=25°C, unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V _{DSS}	40	V	DC
Gate-source voltage	V _{GSS}	-0.3~7.0	V	DC
Continuous drain current	I _D	1	A	—
Maximum power dissipation	P _D	1.5	W	*
Operating junction temperature	T _J	150	°C	—
Storage temperature range	T _{stg}	-55 ~ 150	°C	—
Single pulse inductive load switch-off energy dissipation	E _{CL}	25	mJ	T _J =150°C, I _D =0.5A Single pulse, dv/dt≤10V/μs

Note * : Surface mounted on 1000mm²PCB (FR-4), 2ch on simultaneously

● Electrical characteristics (at Tc=25°C unless otherwise specified)

Description	Symbol	Conditions	min.	typ.	max.	Unit
Drain-source clamp voltage	V _{DSS}	I _D =1mA, V _{GS} =0V	40	—	60	V
Gate threshold voltage	V _{GS(th)}	I _D =10mA, V _{DS} =13V	1.0	—	2.8	V
Operation gate voltage (protection circuit operates)	V _{GS(p)}	—	2.8	—	7.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	—	—	55	μA
Gate-source leakage current	I _{GS(n)}	V _{GS} =5V**	—	—	250	μA
	I _{GS(un)}	V _{GS} =5V, T _J >150°C***	—	—	350	μA
Drain-source on-state resistance	R _{DS(on)}	I _D =0.5A, V _{GS} =5V	—	—	600	mΩ
Turn-on time	t _{on}	V _{DS} =13V, I _D =0.5A, V _{GS} =5V	—	—	50	μs
Turn-off time	t _{off}	V _{DS} =13V, I _D =0.5A, V _{GS} =5V	—	—	50	μs
Over-temperature protection	T _{rip}	V _{GS} =5V	150	—	—	°C
Short circuit protection	I _{OC}	V _{GS} =5V	1.0	—	—	A

Note ** : Under normal operation

Note *** : Under self protection (Short circuit ~ Short circuit protection ~ Over-temperature protection)

● Electrical characteristics (at Tc=-40~105°C unless otherwise specified)

Description	Symbol	Conditions	min.	typ.	max.	Unit
Drain-source clamp voltage	V _{DSS}	I _D =1mA, V _{GS} =0V	38	—	62	V
Gate threshold voltage	V _{GS(th)}	I _D =10mA, V _{DS} =13V	1.0	—	3.0	V
Operation gate voltage (protection circuit operates)	V _{GS(p)}	—	3.0	—	6.7	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	—	—	95	μA
Gate-source leakage current	I _{GS(n)}	V _{GS} =5V**	—	—	300	μA
	I _{GS(un)}	V _{GS} =5V, T _J >150°C***	—	—	350	μA
Drain-source on-state resistance	R _{DS(on)}	I _D =5A, V _{GS} =5V	—	—	920	mΩ
Turn-on time	t _{on}	V _{DS} =13V, I _D =0.5A, V _{GS} =5V	—	—	70	μs
Turn-off time	t _{off}	V _{DS} =13V, I _D =0.5A, V _{GS} =5V	—	—	55	μs
Short circuit protection	I _{OC}	V _{CC} =13V, V _{GS} =5V	0.7	—	—	A

Note ** : Under normal operation

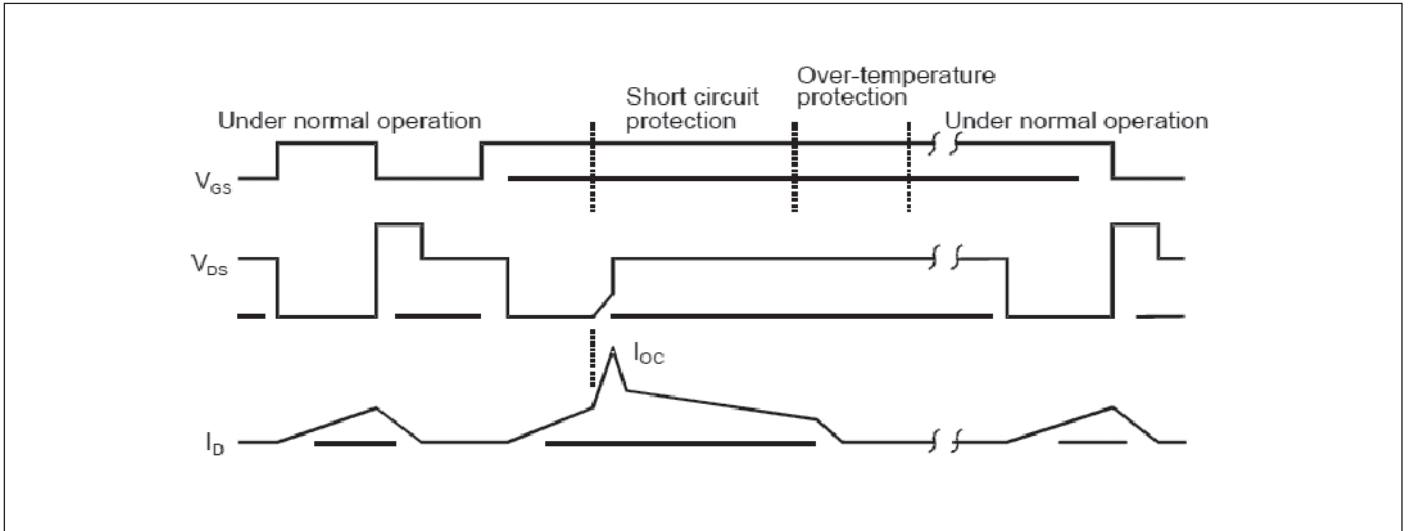
Note *** : Under self protection (Short circuit ~ Short circuit protection ~ Over-temperature protection)

● Thermal resistance

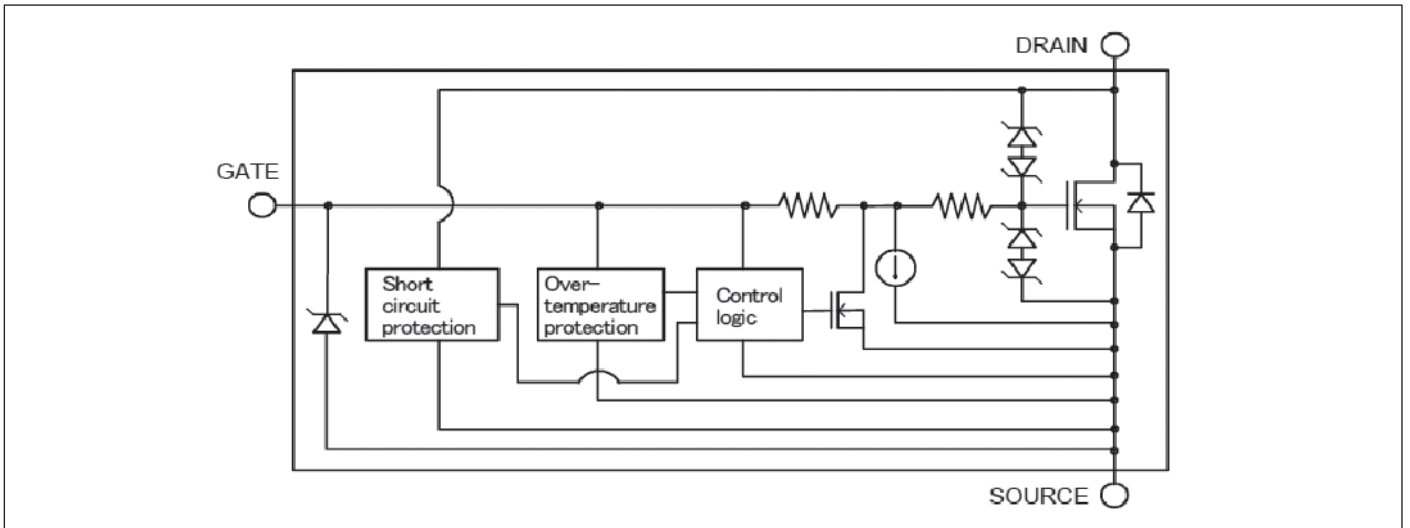
Description	Symbol	Test conditions	min.	typ.	max.	Unit
Thermal resistance	R _{th(j-a)}	Junction-ambient*	—	—	83	°C/W

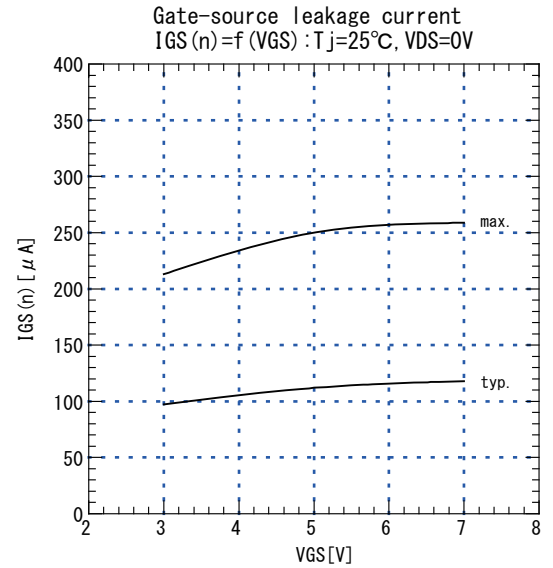
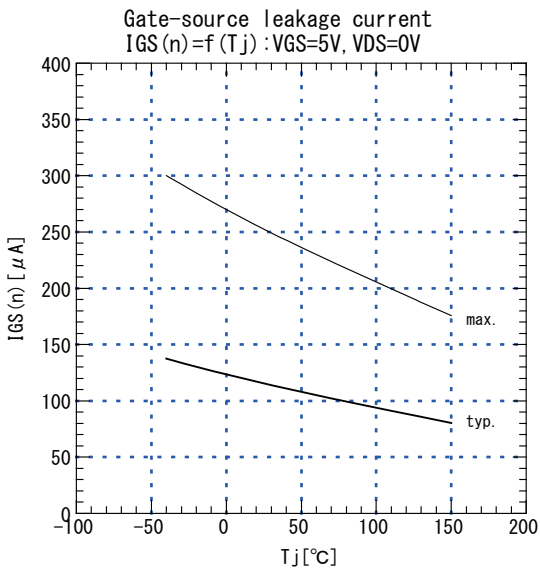
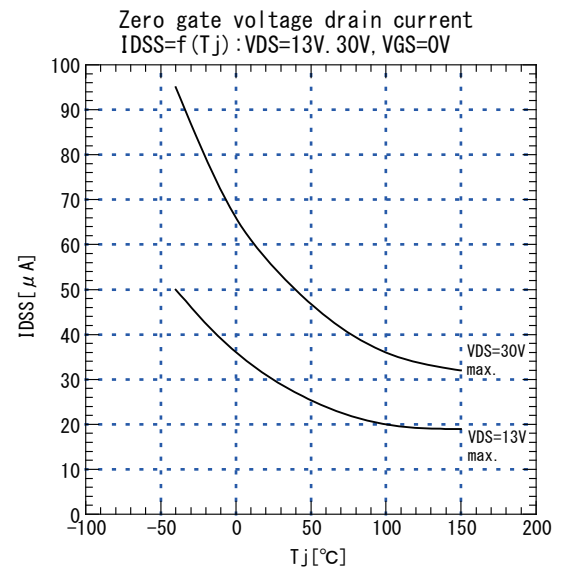
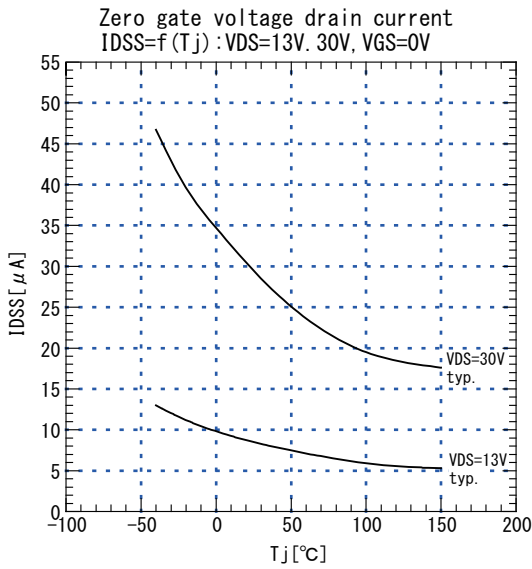
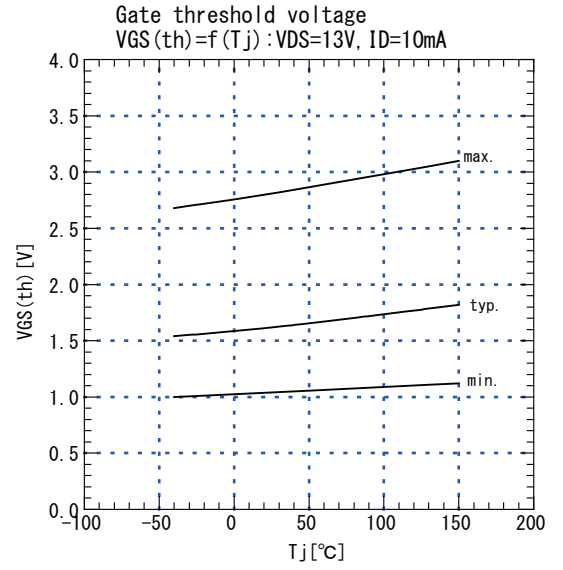
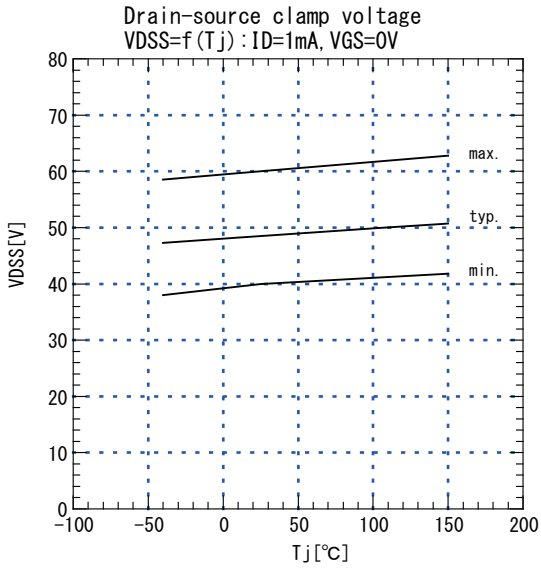
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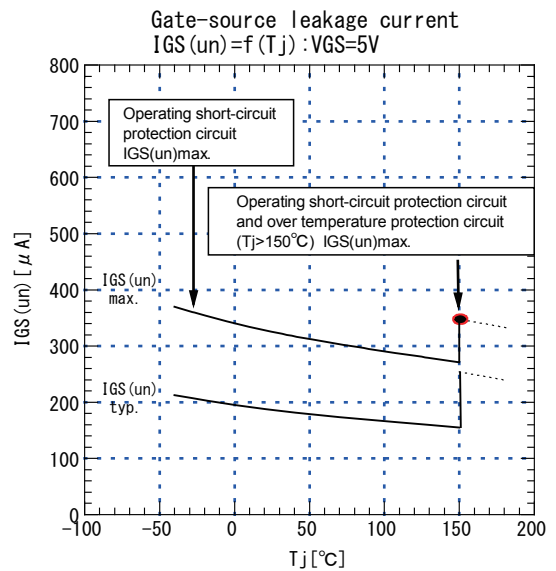
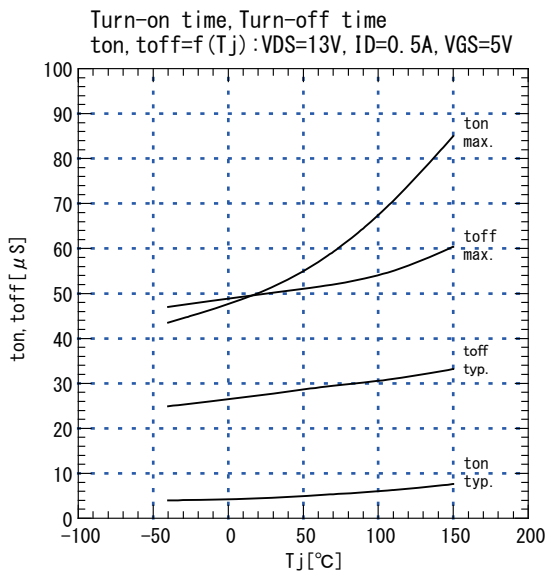
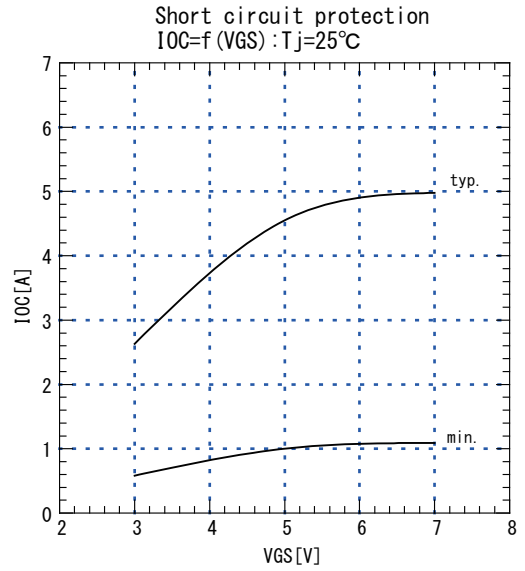
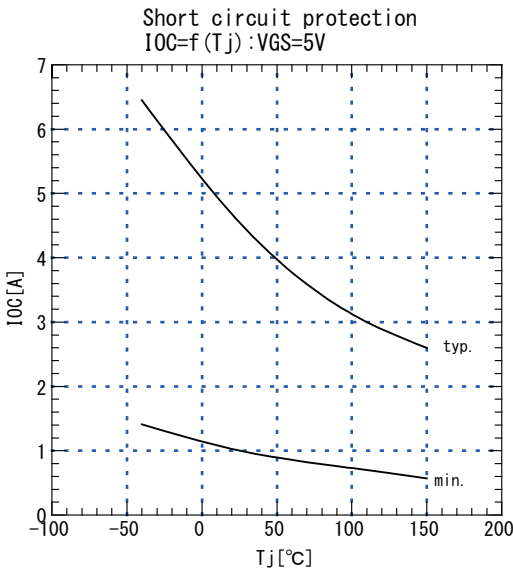
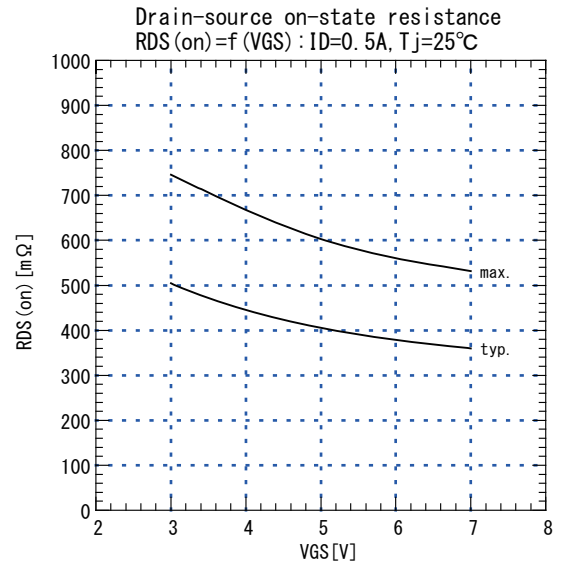
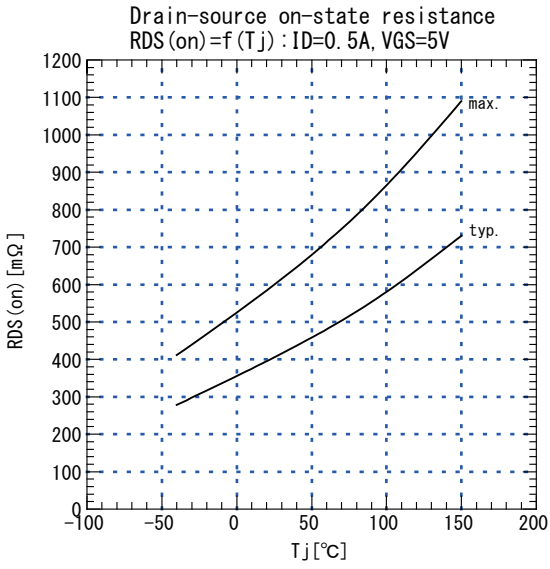
■ Timing chart



■ Circuit block diagram







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