

FMH28N50E

FUJI POWER MOSFET

Super FAP-E³ series

N-CHANNEL SILICON POWER MOSFET

■ Features

Maintains both low power loss and low noise Lower $R_{DS}(on)$ characteristic More controllable switching dv/dt by gate resistance Smaller V_{GS} ringing waveform during switching Narrow band of the gate threshold voltage $(3.0\pm0.5V)$ High avalanche durability

■ Applications

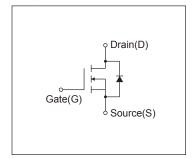
Switching regulators UPS (Uninterruptible Power Supply) DC-DC converters

■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings at Tc=25°C (unless otherwise specified)

TO-3P(Q) 15.5 (2.6.1) 1.5.4 (2.6.1) 1.5.1 (2

■ Equivalent circuit schematic



Description	Symbol	Characteristics	Unit	Remarks	
Dunin Course Voltage	VDS	500	V		
Drain-Source Voltage	VDSX	500	V	V _{GS} = -30V	
Continuous Drain Current	I _D	±28	Α		
Pulsed Drain Current	IDP	±112	Α		
Gate-Source Voltage	V _{GS}	±30	V		
Repetitive and Non-Repetitive Maximum AvalancheCurrent	Iar	28	Α	Note*1	
Non-Repetitive Maximum Avalanche Energy	Eas	1033.1	mJ	Note*2	
Repetitive Maximum Avalanche Energy	Ear	40	mJ	Note*3	
Peak Diode Recovery dV/dt	dV/dt	10.9	kV/μs	Note*4	
Peak Diode Recovery -di/dt	-di/dt	100	A/µs	Note*5	
Maximum Power Dissipation	P□	2.50	10/	Ta=25°C	
		400	W	Tc=25°C	
Operating and Storage Temperature range	Tch	150	°C		
	T _{stq}	-55 to + 150	°C		

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

Description	Symbol	Conditions	Conditions		typ.	max.	Unit	
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V		500	-	-	V	
Gate Threshold Voltage	V _{GS} (th)	In=250µA, Vns=Vgs		2.5	3.0	3.5	V	
Zero Gate Voltage Drain Current		V _{DS} =500V, V _{GS} =0V	T _{ch} =25°C	-	-	25	μА	
	Ipss	V _{DS} =400V, V _{GS} =0V	T _{ch} =125°C	-	-	250		
Gate-Source Leakage Current	Igss	V _{GS} =±30V, V _{DS} =0V	V _{GS} =±30V, V _{DS} =0V		10	100	nA	
Drain-Source On-State Resistance	R _{DS} (on)	I _D =14A, V _{GS} =10V		-	0.16	0.19	Ω	
Forward Transconductance	g _{fs}	In=14A, Vns=25V	I _D =14A, V _{DS} =25V		32	-	S	
Input Capacitance	Ciss	V _{DS} =25V V _{GS} =0V		-	4400	6600	pF	
Output Capacitance	Coss			-	420	630		
Reverse Transfer Capacitance	Crss	f=1MHz		-	32	48	1	
Turn-On Time	td(on)	V _{cc} =300V V _{cs} =10V I _D =14A R _{cs} =5.1Ω		-	26	39	ns	
	tr			-	14	21		
Turn-Off Time	td(off)			-	144	216		
	tf			-	24	36		
Total Gate Charge	Q _G	Vcc=250V	Vcc=250V		130	195	nC	
Gate-Source Charge	Q _{GS}	I _D =28A V _{GS} =10V		-	30	45		
Gate-Drain Charge	Q _{GD}			-	40	60		
Avalanche Capability	lav	L=1.04mH, Tch=25°C		28	-	-	А	
Diode Forward On-Voltage	V _{SD}	I _F =28A, V _{GS} =0V, T _{ch} =25°C		-	0.90	1.35	V	
Reverse Recovery Time	trr	I _F =28A, V _{GS} =0V		-	0.72	-	μS	
Reverse Recovery Charge	Qrr	-di/dt=100A/µs, Tch=25°C		-	11.2	-	μC	

Thermal Characteristics

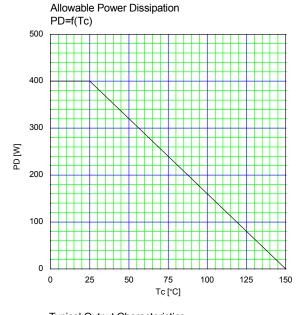
Description	Symbol	Test Conditions	min.	typ.	max.	Unit
Thermal resistance	Rth (ch-c)	Channel to Case			0.313	°C/W
	Rth (ch-a)	Channel to Ambient			50.0	°C/W

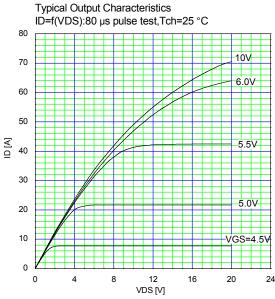
Note *1 : Tch≤150°C

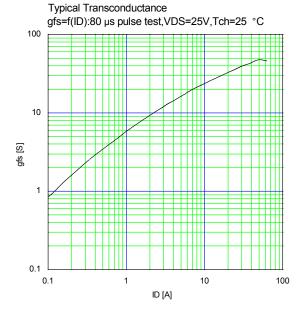
Note '2 : Stating Tch=25°C, Ias=12A, L=13.2mH, Vcc=50V, Ro=50Ω
Eas limited by maximum channel temperature and avalanche current.
See to 'Avalanche Energy' graph.

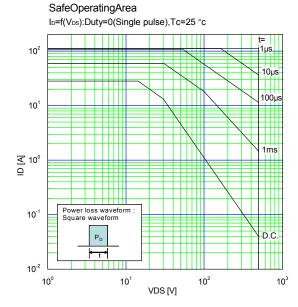
Note *3 : Repetitive rating : Pulse width limited by maximum channel temperature.

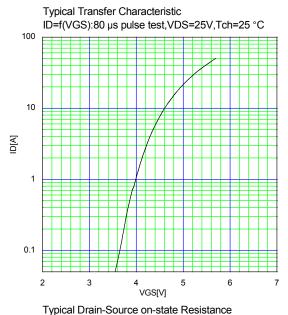
See to the 'Transient Themal impeadance' graph. Note *4 : Ir≤-Ip, -di/dt=100A/µs, Vcc≤BVbss, Tch≤150°C. Note *5 : Ir≤-Ip, dv/dt=10.9kV/µs, Vcc≤BVbss, Tch≤150°C.

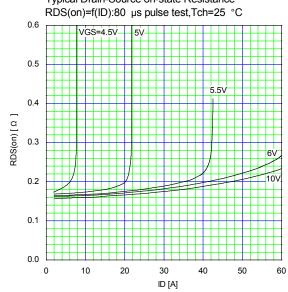






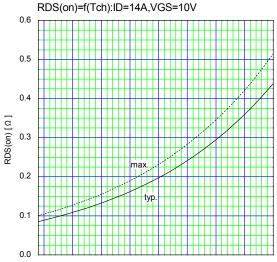




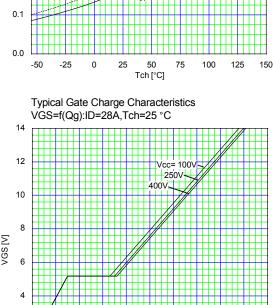


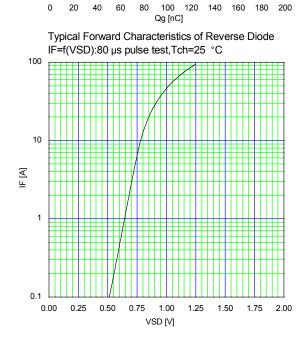
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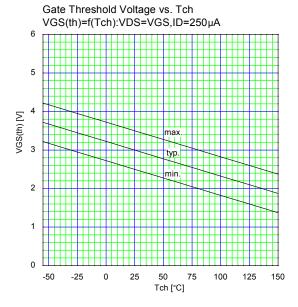
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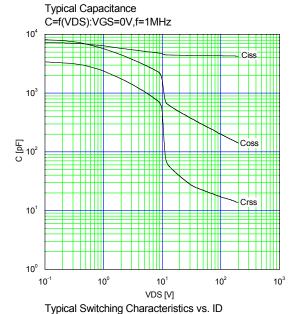


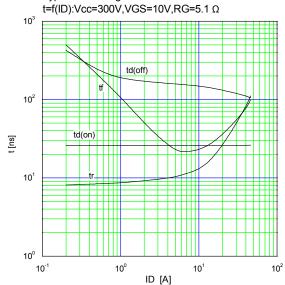
Drain-Source On-state Resistance

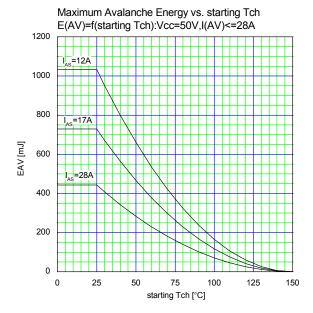


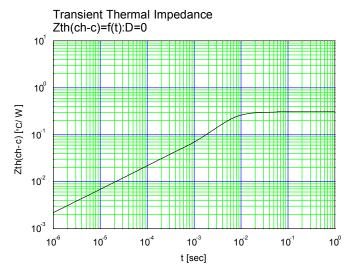












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