

FMV10N60E

FUJI POWER MOSFET

Super FAP-E³ series

N-CHANNEL SILICON POWER MOSFET

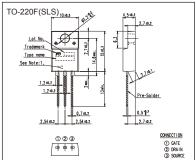
■ Features

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±0.5V) High avalanche durability

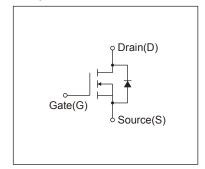
Applications

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

■ Outline Drawings [mm]



■ Equivalent circuit schematic



Maximum Ratings and Characteristics

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

Description	Symbol	Characteristics	Unit	Remarks	
Drain Sauras Valtara	V _{DS}	600	V		
Drain-Source Voltage	V _{DSX}	600	V	V _{GS} = -30V	
Continuous Drain Current	ID	±10	Α		
Pulsed Drain Current	IDP	±40	Α		
Gate-Source Voltage	V _G s	±30	V		
Repetitive and Non-Repetitive Maximum AvalancheCurrent	IAR	10	А	Note*1	
Non-Repetitive Maximum Avalanche Energy	Eas	416	mJ	Note*2	
Repetitive Maximum Avalanche Energy	Ear	6.0	mJ	Note*3	
Peak Diode Recovery dV/dt	dV/dt	4.4	kV/μs	Note*4	
Peak Diode Recovery -di/dt	-di/dt	100	A/µs	Note*5	
Manifester Barrer Biantentian	PD	2.16	W	Ta=25°C	
Maximum Power Dissipation		60	VV	Tc=25°C	
O	Tch	150	°C		
Operating and Storage Temperature range	T _{stg}	-55 to + 150	°C		
Isolation Voltage	Viso	2	kVrms	t = 60sec, f = 60Hz	

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

Description	Symbol	Conditions	Conditions		typ.	max.	Unit
Drain-Source Breakdown Voltage	BVDSS	In=250µA, Vgs=0V	I _D =250µA, V _{GS} =0V		-	-	V
Gate Threshold Voltage	V _{GS} (th)	In=250µA, Vns=Vgs	I _D =250µA, V _{DS} =V _{GS}		3.0	3.5	V
Zero Gate Voltage Drain Current		V _{DS} =600V, V _{GS} =0V	Tch=25°C	-	-	25	μA
	IDSS	V _{DS} =480V, 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	Ros (on)	I _D =5A, V _{GS} =10V	I _D =5A, V _{GS} =10V		0.675	0.79	Ω
Forward Transconductance	g fs	I _D =5A, V _{DS} =25V	I _D =5A, V _{DS} =25V		12	-	S
Input Capacitance	Ciss	V _{DS} =25V		-	1800	2700	pF
Output Capacitance	Coss	V _{GS} =0V	V _{GS} =0V		140	210	
Reverse Transfer Capacitance	Crss	f=1MHz -		10.5	16		
Turn-On Time	td(on)	V _{cc} =300V V _{GS} =10V I _D =5A R _G =15Ω		-	20	30	ns
	tr			-	9	13.5	
Turn-Off Time	td(off)			-	100	150	
	tf			-	18	27	
Total Gate Charge	Q _G	Vcc=300V	V _∞ =300V		47	70.5	nC
Gate-Source Charge	QGS	I _D =10A V _{GS} =10V		-	10.5	16	
Gate-Drain Charge	Q _{GD}			-	13.5	20	
Avalanche Capability	lav	L=3.05mH, Tch=25°C	L=3.05mH, Tch=25°C		-	-	Α
Diode Forward On-Voltage	V _{SD}	I _F =10A, V _{GS} =0V, T _{ch} =25°	I _F =10A, V _{GS} =0V, T _{ch} =25°C		0.86	1.30	V
Reverse Recovery Time	trr	I _F =10A, V _{GS} =0V	I _F =10A, V _{GS} =0V		0.51	-	μS
Reverse Recovery Charge	Qrr	-di/dt=100A/µs, Tch=25°C		-	5.4	-	μC

Thermal Characteristics

Description	Symbol	Test Conditions	min.	typ.	max.	Unit
Thermal resistance	Rth (ch-c)	Channel to Case			2.083	°C/W
	Rth (ch-a)	Channel to Ambient			58.0	°C/W

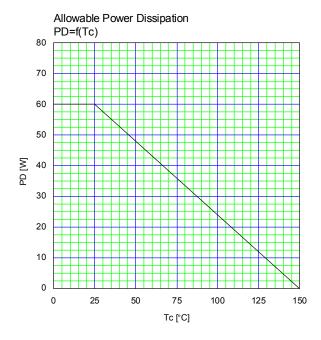
Note *1 : Tch≤150°C

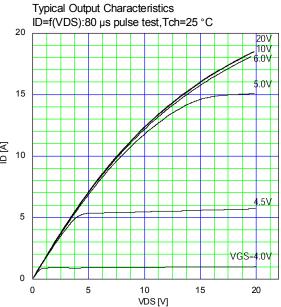
Note *2 : Stating Tch=25°C, Ias=4A, L=47.7mH, Vcc=60V, Rc=50Ω
Eas limited by maximum channel temperature and avalanche current.
See to 'Avalanche Energy' graph.

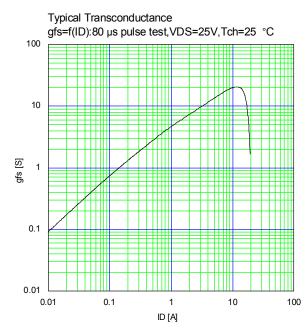
Note $^{\star}3\,$: Repetitive rating : Pulse width limited by maximum channel temperature.

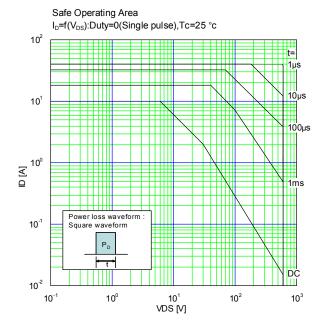
See to the 'Transient Themal impeadance' graph. Note *4 : IF≤-ID, -di/dt=100A/µs, Vcc≤BVDSS, Tch≤150°C

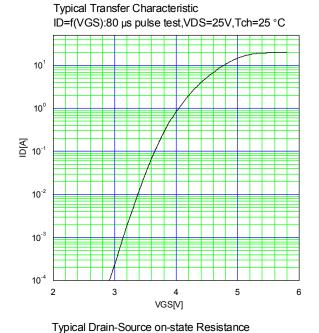
Note *5 : IF≤-ID, dv/dt=4.4kV/µs, Vcc≤BVDss, Tch≤150°C.

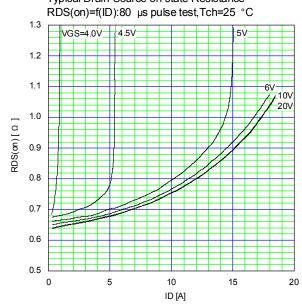


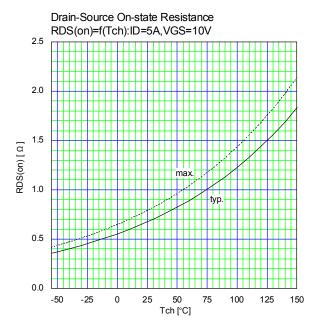


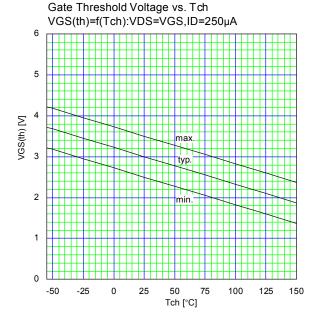


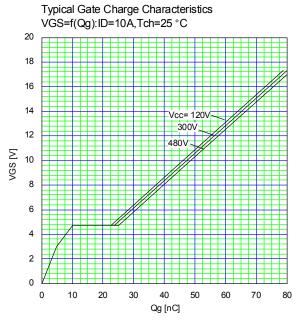


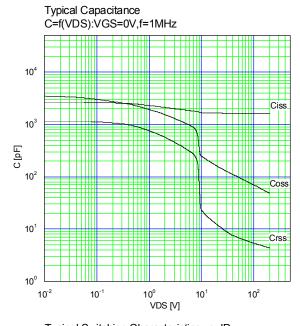


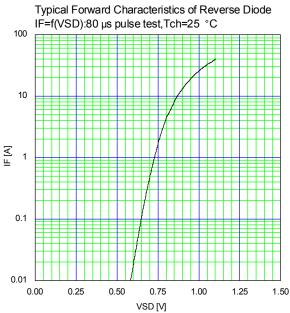


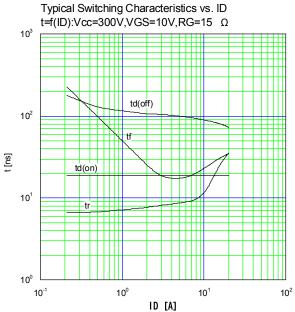


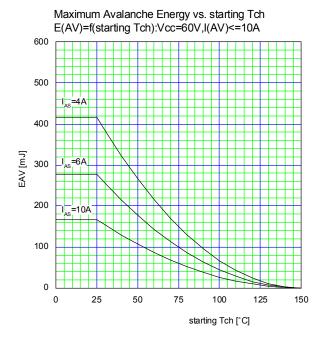


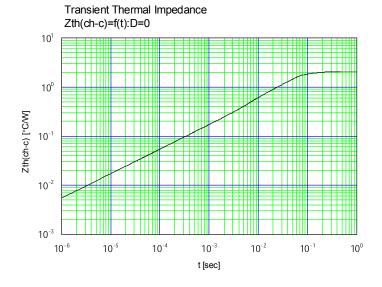












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