

FMV06N90E

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 (4.0±0.5V) High avalanche durability

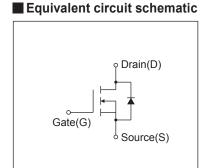
Applications

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

Maximum Ratings and Characteristics

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

■ Outline Drawings [mm] TO-220F(SLS)



Description	Symbol	Characteristics	Unit	Remarks	
Proin Source Voltoge	V _{DS}	900	V		
Drain-Source Voltage	V _{DSX}	900	V	V _{GS} = -30V	
Continuous Drain Current	I _D	±6	А		
Pulsed Drain Current	I _{DP}	±24	А	Note*1	
Gate-Source Voltage	V _{GS}	±30	V		
Repetitive and Non-Repetitive Maximum AvalancheCurrent	Iar	6	А		
Non-Repetitive Maximum Avalanche Energy	Eas	323.6	mJ	Note*2 Note*3 Note*4	
Repetitive Maximum Avalanche Energy	Ear	4.8	mJ		
Peak Diode Recovery dV/dt	dV/dt	2.0	kV/μs		
Peak Diode Recovery -di/dt	-di/dt	100	A/µs	Note*5	
Mandanian Danier Distriction	Po	2.16	10/	Ta=25°C	
Maximum Power Dissipation		48	W	Tc=25°C	
O	Tch	150	°C		
Operating and Storage Temperature range	Tstg	-55 to + 150	°C		
Isolation	V _{ISO}	2	KVrms	t=60sec, f=60H	

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

Description	Symbol	Conditions		min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BVDSS	I _D =250μA, V _{GS} =0V		900	-	-	V
Gate Threshold Voltage	V _{GS} (th)	I _D =250µA, V _{DS} =V _{GS}		3.5	4.0	4.5	V
Zero Gate Voltage Drain Current	Ipss	V _{DS} =900V, V _{GS} =0V	T _{ch} =25°C	-	-	25	μA
	IDSS	V _{DS} =720V, 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 =3A, V _{GS} =10V		-	2.1	2.5	Ω
Forward Transconductance	g _{fs}	I _D =3.0A, V _{DS} =25V		3.5	7.0	-	S
Input Capacitance	Ciss	V _{DS} =25V V _{GS} =0V f=1MHz		-	980	1500	pF
Output Capacitance	Coss			-	95	150	
Reverse Transfer Capacitance	Crss			-	6.5	10	
Turn-On Time	td(on)	V _{cc} =600V V _{ds} =10V I _D =3.0A R ₆ =39Ω		-	33	50	ns
	tr			-	32	48	
Turn-Off Time	td(off)			-	100	150	
	tf			-	32	48	
Total Gate Charge	Q _G	V _{cc} =450V I _D =6A V _{GS} =10V		-	33	50	nC
Gate-Source Charge	Qss			-	10	15	
Drain-Source Crossover Charge	Qsw			-	3.5	5.5	
Gate-Drain Charge	Q _{GD}			-	11	17	
Avalanche Capability	lav	L=6.59mH, Tch=25°C		6	-	-	А
Diode Forward On-Voltage	V _{SD}	I _F =6A, V _{GS} =0V, T _{ch} =25°C		-	0.90	1.35	V
Reverse Recovery Time	trr	I _F =6A, V _{GS} =0V		-	1.6	-	μS
Reverse Recovery Charge	Qrr	-di/dt=100A/μs, Tch=25°C		-	9.5	-	μC

Thermal Characteristics

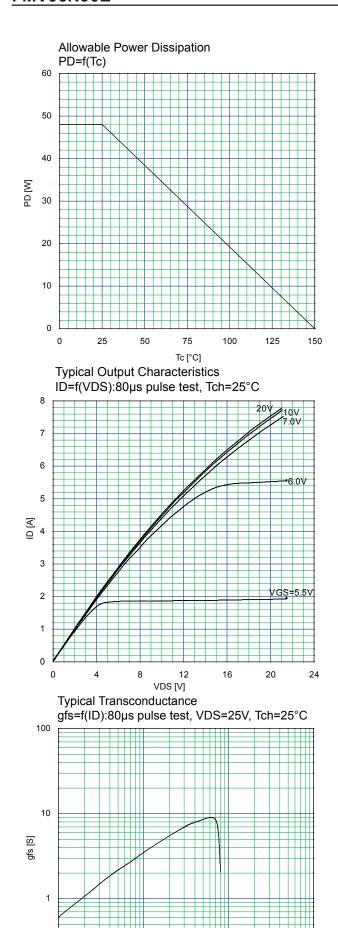
Description	Symbol Test Conditions		min.	typ.	max.	Unit
Thermal resistance	Rth (ch-c)	Channel to case			0.862	°C/W
	Rth (ch-a)	Channel to ambient			50.0	°C/W

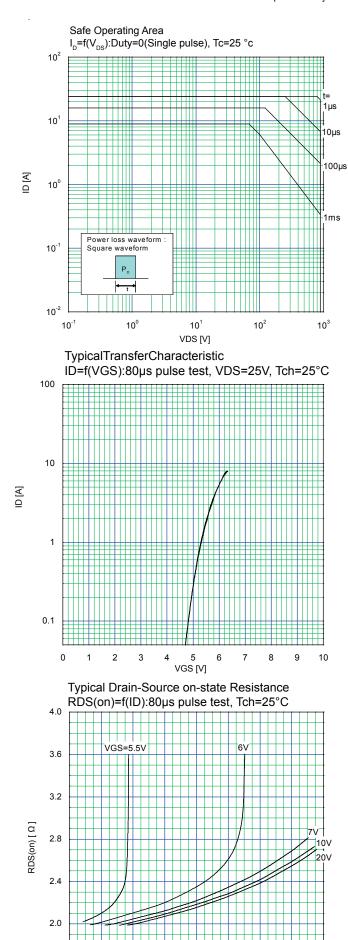
Note *1 : Tch≤150°C.

Note *2 : Stating Tch=25°C, Ias=2.4A, L=103mH, Vcc=90V, R $_{G}$ =10 Ω , Eas limited by maximum channel temperature and avalanche current. Note *3 : Repetitive rating : Pulse width limited by maximum channel temperature. Note *4 : $|F \le -l_D$, $-di/dt = 100A/\mu_S$, $Vcc \le BV_{DSS}$, $Tch \le 150^{\circ}C$. Note *5 : $|F \le -l_D$, $dv/dt = 2.0kV/\mu_S$, $Vcc \le BV_{DSS}$, $Tch \le 150^{\circ}C$.

0.1

0.1





100

10

ID [A]

1.6

0

3

4

ID [A]

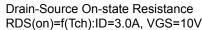
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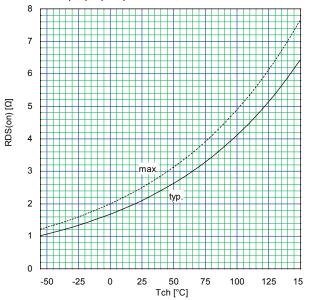
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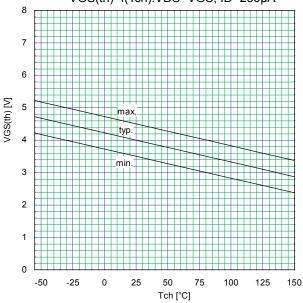
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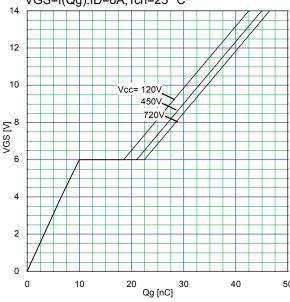




Gate Threshold Voltage vs. Tch VGS(th)=f(Tch):VDS=VGS, ID=250µA

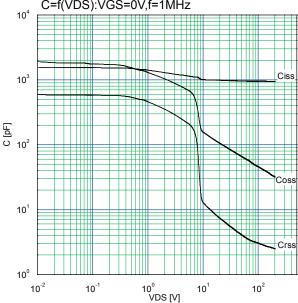


Typical Gate Charg e Characteristics VGS=f(Qg):ID=6A,Tch=25 °C

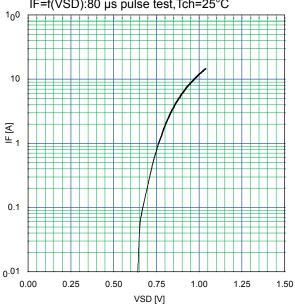


Typical Capacitance C=f(VDS):VGS=0V,f=1MHz

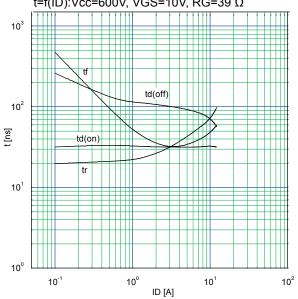
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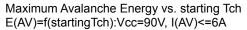
Typical Forward Characteristics of Reverse Diode IF=f(VSD):80 µs pulse test,Tch=25°C

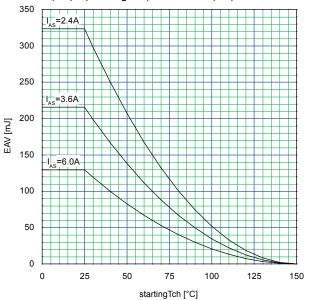


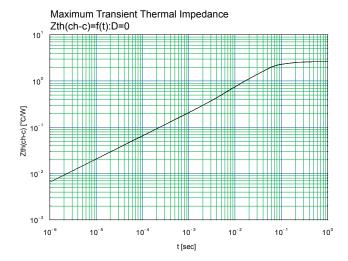
Typical Switching Characteristics vs. ID t=f(ID):Vcc=600V, VGS=10V, RG=39 Ω



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