FMV24N25G

FUJI POWER MOSFET

Super FAP-G series

N-CHANNEL SILICON POWER MOSFET

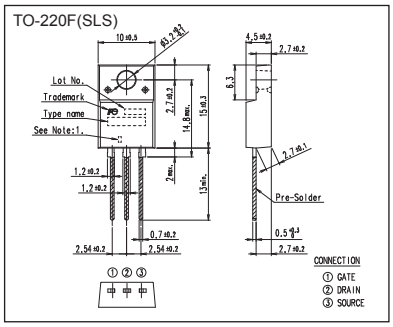
Features

High speed switching
Low on-resistance
No secondary breadown
Low driving power
Avalanche-proof

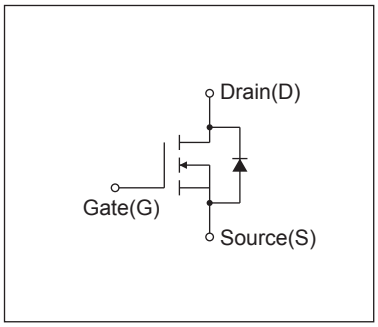
Applications

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-Source Voltage	V_{DS}	250	V	
	V_{DSX}	220	V	V_{GS} = -30V
Continuous Drain Current	I_D	±24	A	
Pulsed Drain Current	I_{DP}	±96	A	
Gate-Source Voltage	V_{GS}	±30	V	
Repetitive and Non-Repetitive Maximum AvalancheCurrent	I_{AR}	24	A	Note*1
Non-Repetitive Maximum Avalanche Energy	E_{AS}	192	mJ	Note*2
Maximum Drain-Source dV/dt	dVds/dt	20	kV/μs	VDS=≤200V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note*3
Maximum Power Dissipation	P_D	2.16	W	Ta=25°C
		65		Tc=25°C
Operating and Storage Temperature range	T_{ch}	150	°C	
	T_{stg}	-55 to +150	°C	
Isolation	V_{ISO}	2	KVrms	t=60sec, f=60Hz

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

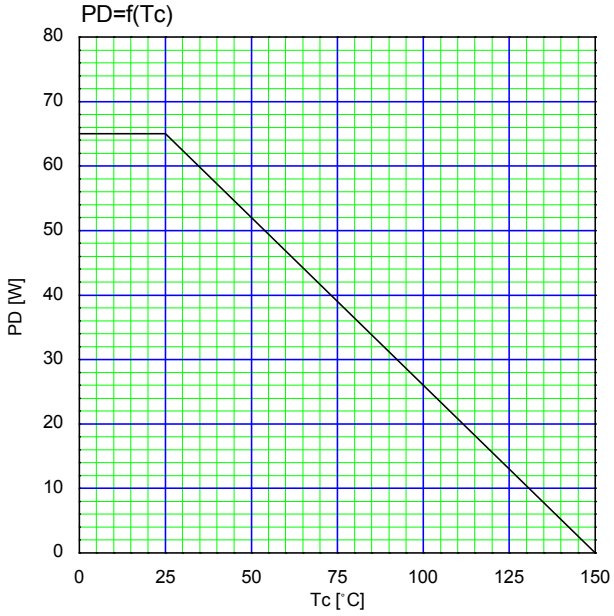
Description	Symbol	Conditions		min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V		250	-	-	V
Gate Threshold Voltage	V_{GS} (th)	I_D=250μA, V_{DS}=V_{GS}		3.0	-	5.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=250V, V_{GS}=0V	T_{ch}=25°C	-	-	25	μA
		V_{DS}=200V, V_{GS}=0V	T_{ch}=125°C	-	-	250	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V		-	10	100	nA
Drain-Source On-State Resistance	R_{DS} (on)	I_D=12A, V_{GS}=10V		-	0.11	0.13	Ω
Forward Transconductance	g_{fs}	I_D=12A, V_{DS}=25V		8	16	-	S
Input Capacitance	Ciss	V_{DS}=75V		-	1150	1725	pF
Output Capacitance	Coss	V_{GS}=0V		-	200	300	
Reverse Transfer Capacitance	Crss	f=1MHz		-	13	19.5	
Turn-On Time	td(on)	V_{cc}=72V		-	27	40.5	ns
	tr	V_{GS}=10V		-	22	33	
Turn-Off Time	td(off)	I_D=12A		-	35	52.5	
	tf	R_G=10Ω		-	14	21	
Total Gate Charge	Q_G	V_{cc}=72V		-	36	54	nC
Gate-Source Charge	Q_{GS}	I_D=24A		-	14.5	21.8	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V		-	11.5	17.3	
Avalanche Capability	I_{AV}	L=560uH, T_{ch}=25°C		24	-	-	A
Diode Forward On-Voltage	V_{SD}	I_F=24A, V_{GS}=0V, T_{ch}=25°C		-	1.0	1.5	V
Reverse Recovery Time	trr	I_F=24A, V_{GS}=0V		-	0.23	-	μS
Reverse Recovery Charge	Qrr	-di/dt=100A/μs, Tch=25°C		-	2.5	-	μC

Thermal Characteristics

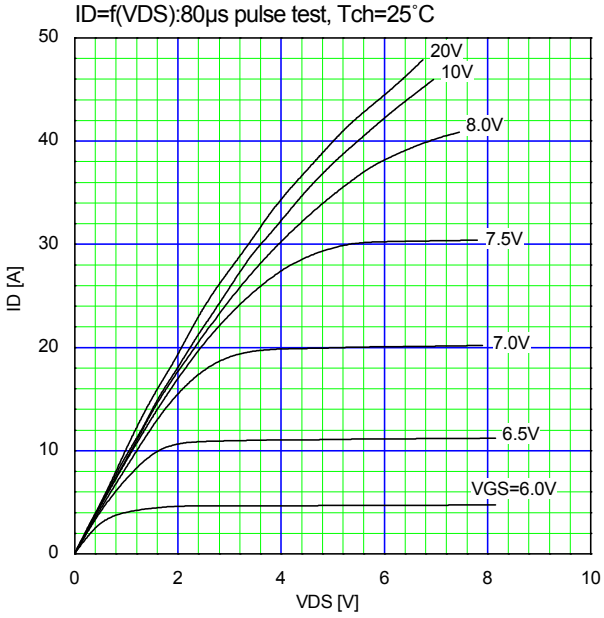
Description	Symbol	min.	typ.	max.	Unit
Channel to Case	Rth (ch-c)			1.923	°C/W
Channel to Ambient	Rth (ch-a)			58.0	°C/W

Note *1 : Tch≤150°C
Note *2 : Stating Tch=25°C, I_{AS}=A, L=560uH, Vcc=48V, R_G=50Ω,
E_{AS} limited by maximum channel temperature and avalanche current.
Note *3 : I_F≤-I_D, -di/dt=50A/μs, Vcc≤BV_{DSS}, Tch≤150°C.

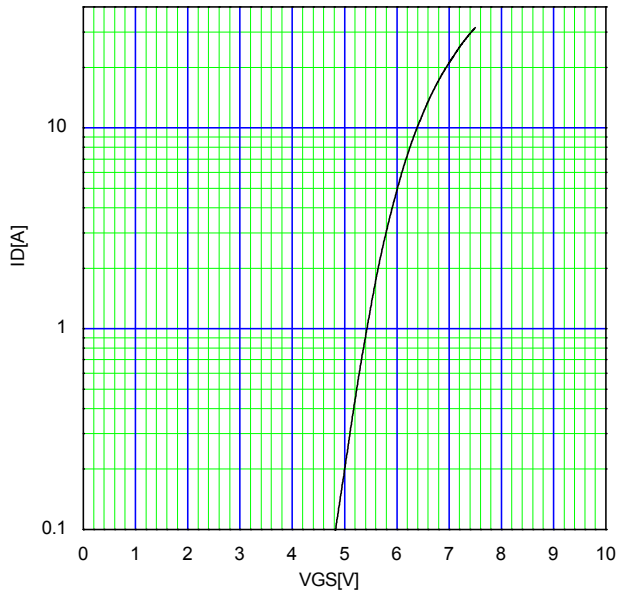
AllowablePowerDissipation
PD=f(Tc)



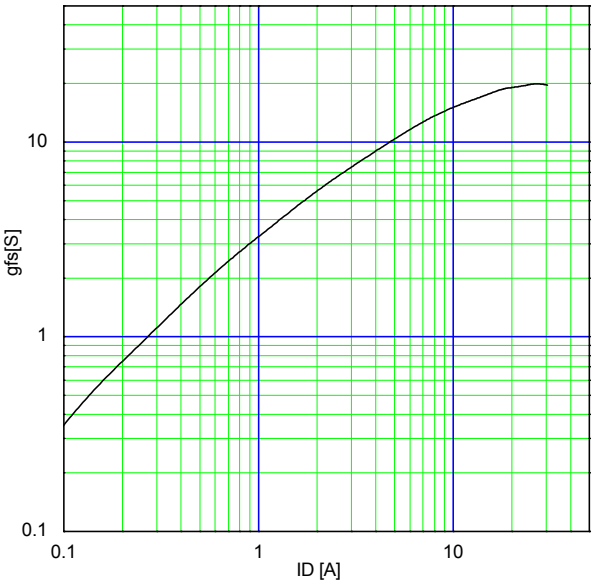
Typical Output Characteristics
ID=f(VDS):80µs pulse test, Tch=25°C



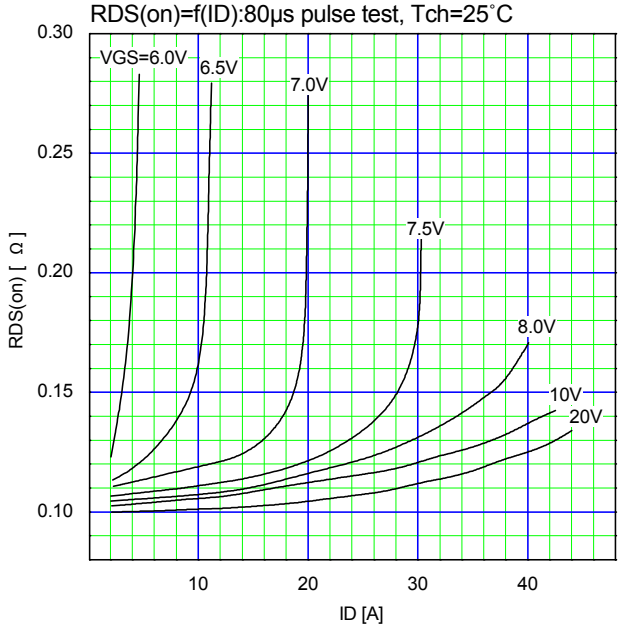
Typical Transfer Characteristic
ID=f(VGS):80µs pulse test, VDS=25V, Tch=25°C



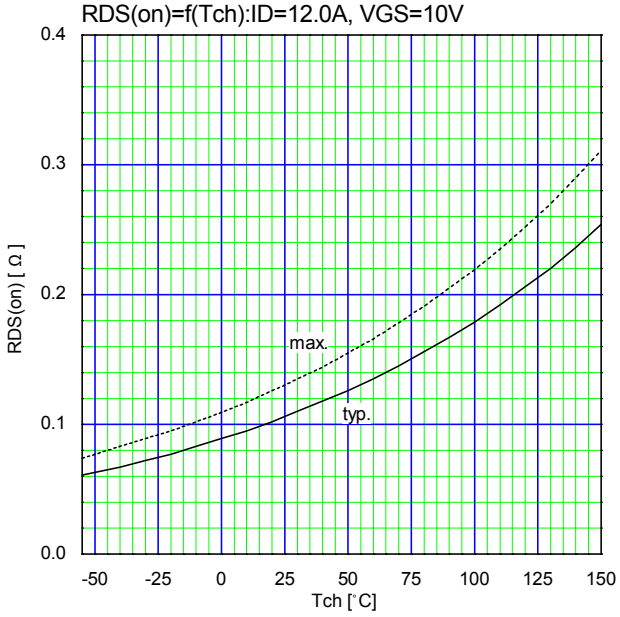
Typical Transconductance
gfs=f(ID):80 µs pulse test, VDS=25V, Tch=25°C



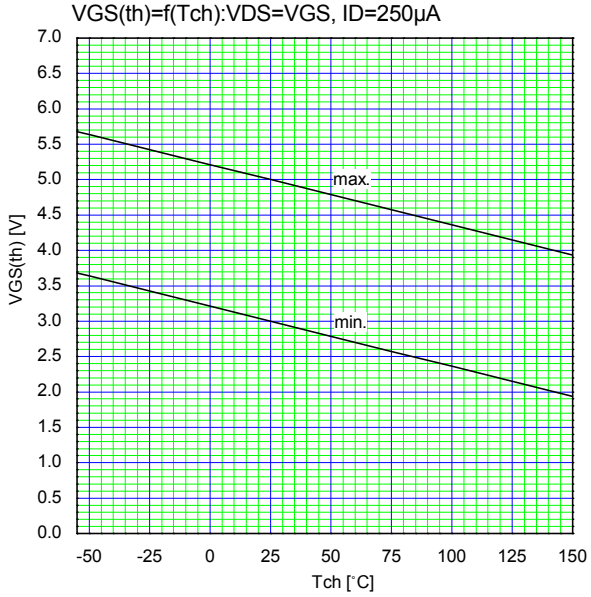
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80µs pulse test, Tch=25°C



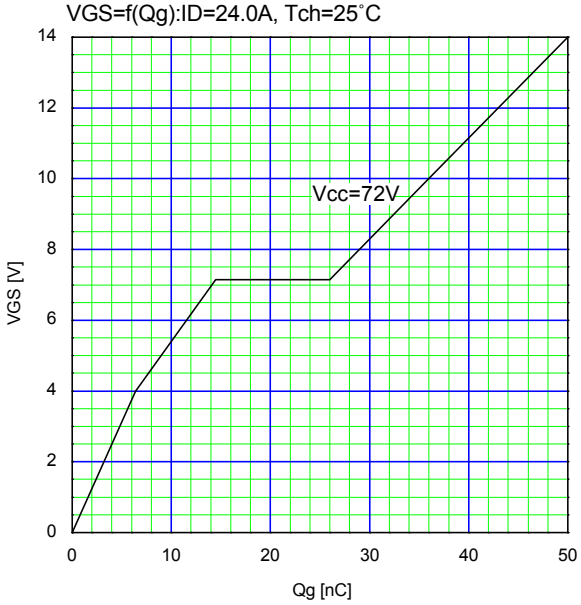
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=12.0A, VGS=10V



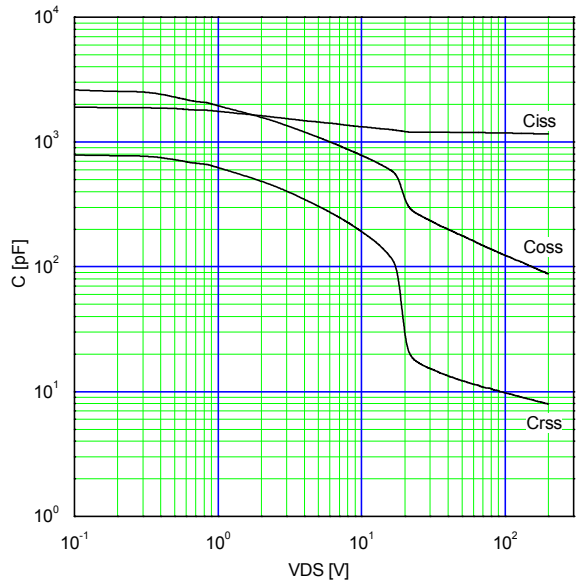
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS, ID=250μA



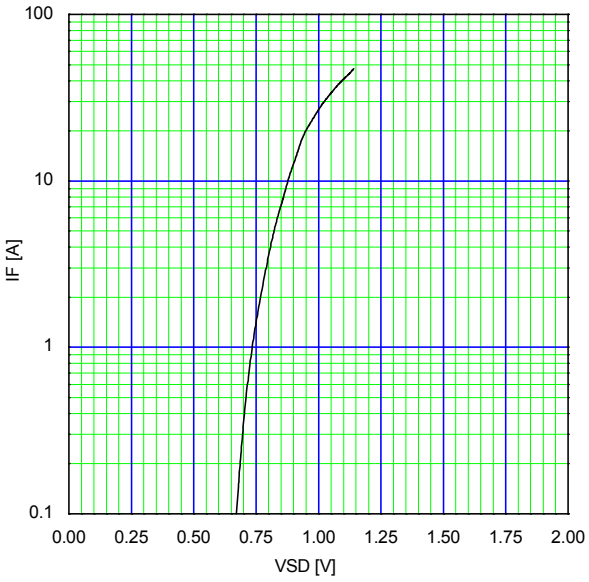
Typical Gate Charge Characteristics
VGS=f(Qg):ID=24.0A, Tch=25°C



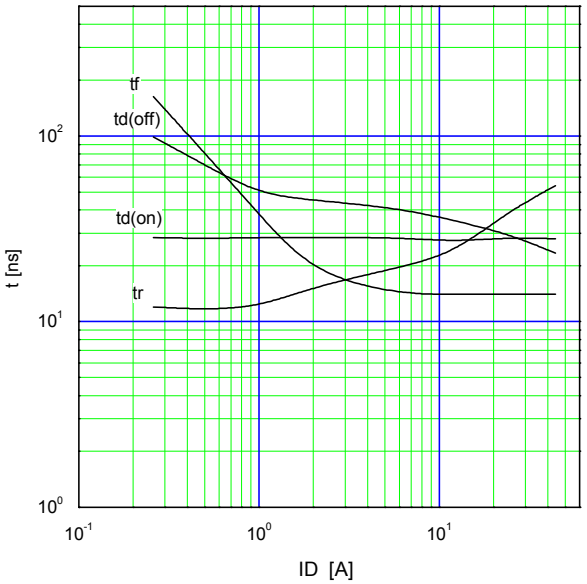
Typical Capacitance
C=f(VDS):VGS=0V, f=1MHz



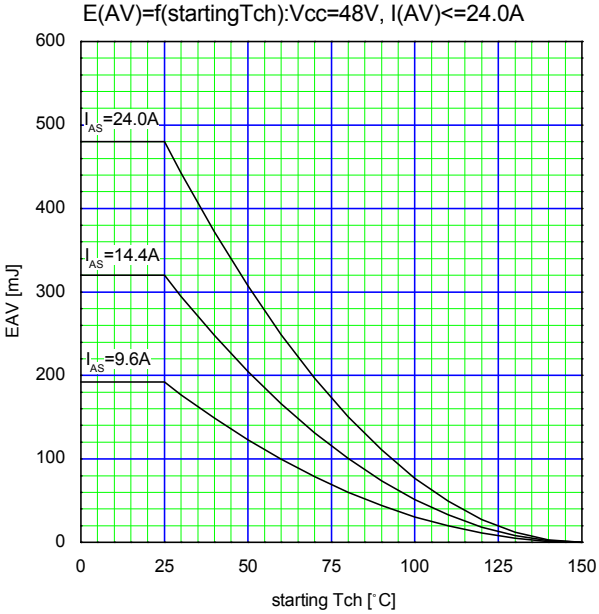
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μspulsetest, Tch=25°C



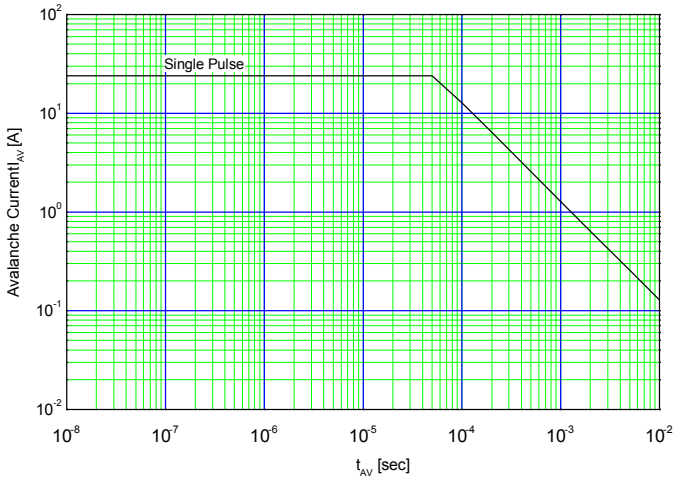
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=72V, VGS=10V, RG=10Ω



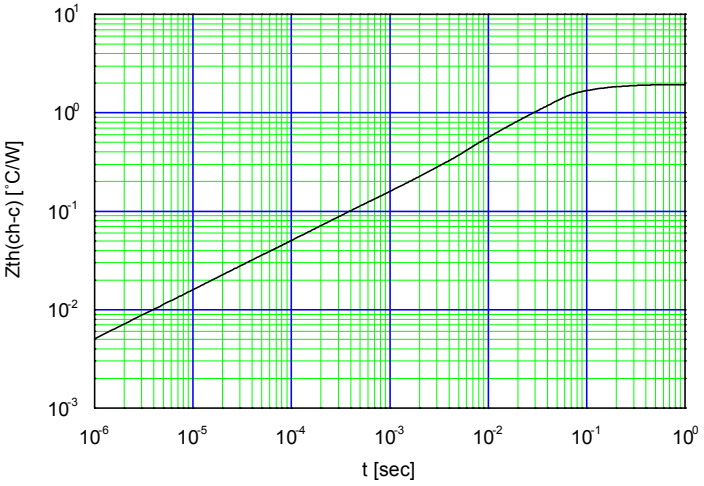
Maximum Avalanche Energy vs. starting Tch
E(AV)=f(startingTch):Vcc=48V, I(AV)<=24.0A



Maximum Avalanche Current Pulse width
$I_{AV}=f(t_{AV})$:startingTch=25˚C,Vcc=48V



Transient Thermal Impedance
Zth(ch-c)=f(t):D=0



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