

FMV24N25G

FUJI POWER MOSFET

Super FAP-G series

N-CHANNEL SILICON POWER MOSFET

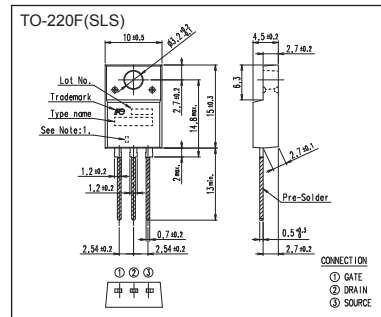
Features

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

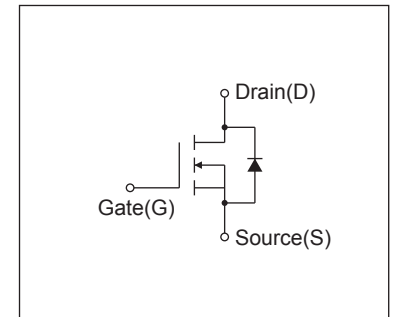
Applications

- 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 _{DSSX}	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 Avalanche Current	I _{AR}	24	A	Note*1
Non-Repetitive Maximum Avalanche Energy	E _{AS}	192	mJ	Note*2
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤ 200V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note*3
Maximum Power Dissipation	P _D	2.16	W	T _a = 25°C
		65		T _c = 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	-	-	25	μA
		V _{DS} = 200V, V _{GS} = 0V	-	-	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	C _{iss}	V _{DS} = 75V	-	1150	1725	pF
Output Capacitance	C _{oss}	V _{GS} = 0V	-	200	300	
Reverse Transfer Capacitance	C _{rss}	f = 1MHz	-	13	19.5	
Turn-On Time	t _{d(on)}	V _{CC} = 72V	-	27	40.5	ns
		V _{GS} = 10V	-	22	33	
Turn-Off Time	t _{d(off)}	I _D = 12A	-	35	52.5	
		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 = 560μH, 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	t _{rr}	I _F = 24A, V _{GS} = 0V	-	0.23	-	μS
Reverse Recovery Charge	Q _{rr}	-di/dt = 100A/μs, T _{ch} = 25°C	-	2.5	-	μC

Thermal Characteristics

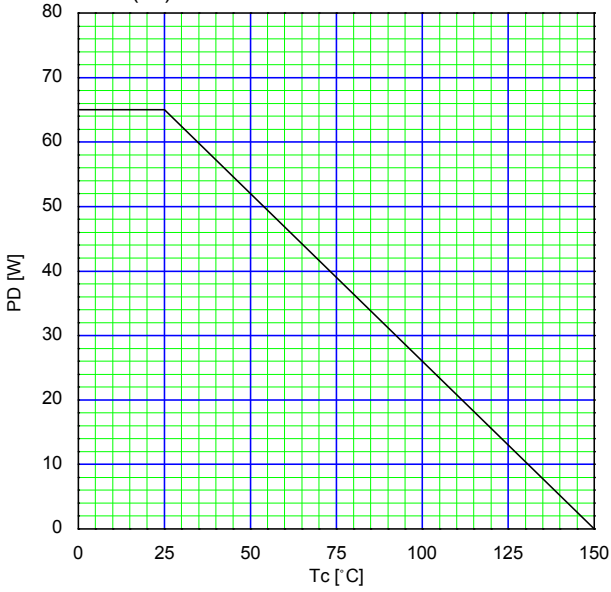
Description	Symbol	min.	typ.	max.	Unit
Channel to Case	R _{th(ch-c)}			1.923	°C/W
Channel to Ambient	R _{th(ch-a)}			58.0	°C/W

Note *1 : T_{ch} ≤ 150°C

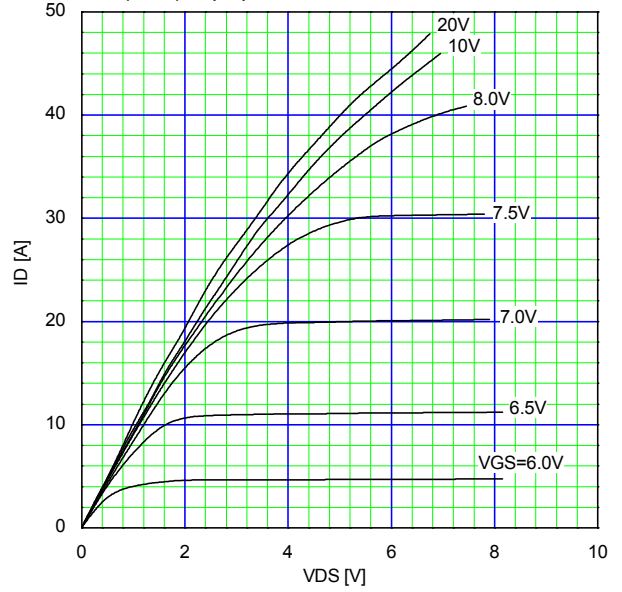
Note *2 : Stating T_{ch} = 25°C, I_{AS} = A, L = 560μH, V_{CC} = 48V, R_G = 50Ω, E_{AS} limited by maximum channel temperature and avalanche current.

Note *3 : I_F = I_D, -di/dt = 50A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C.

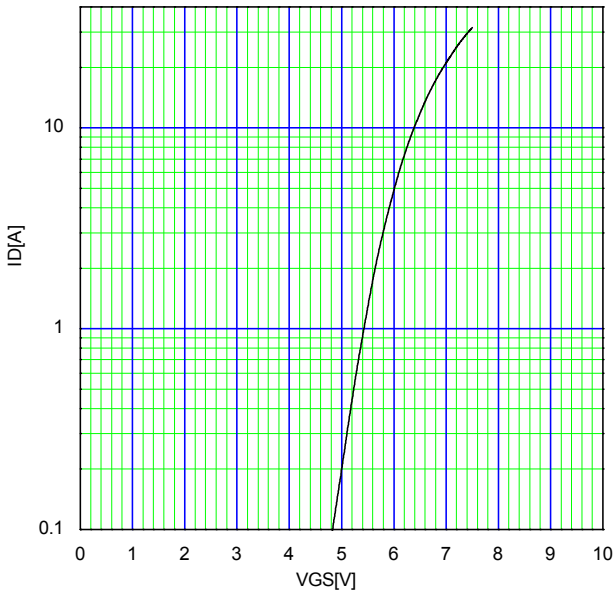
Allowable Power Dissipation
 $PD=f(T_c)$



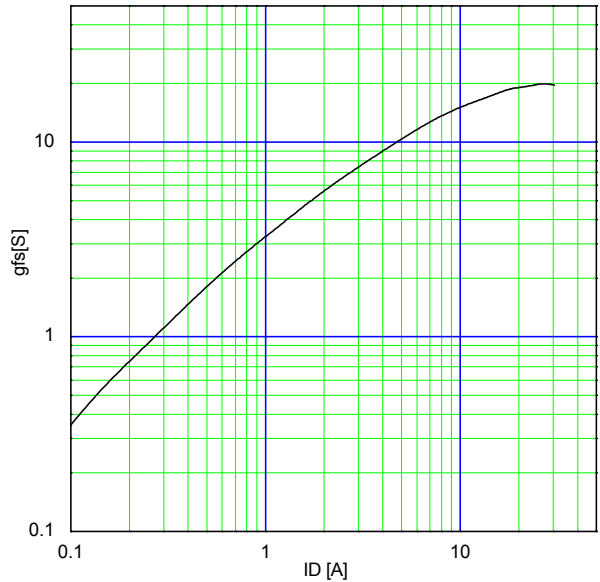
Typical Output Characteristics
 $ID=f(V_{DS}): 80\mu s$ pulse test, $T_{ch}=25^\circ C$



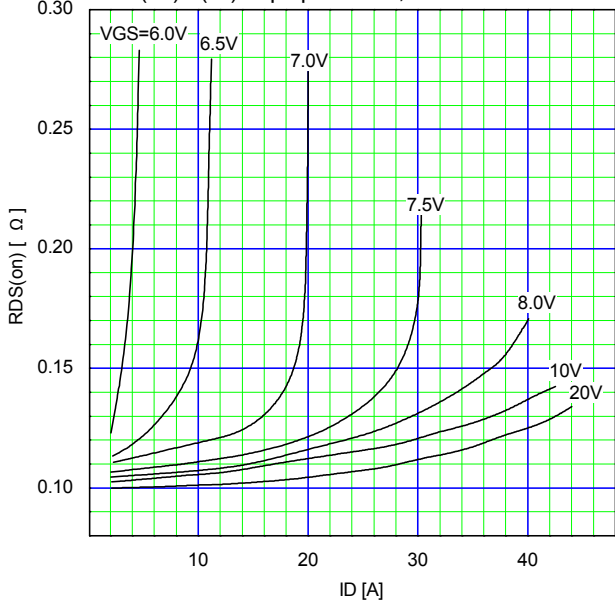
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80\mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



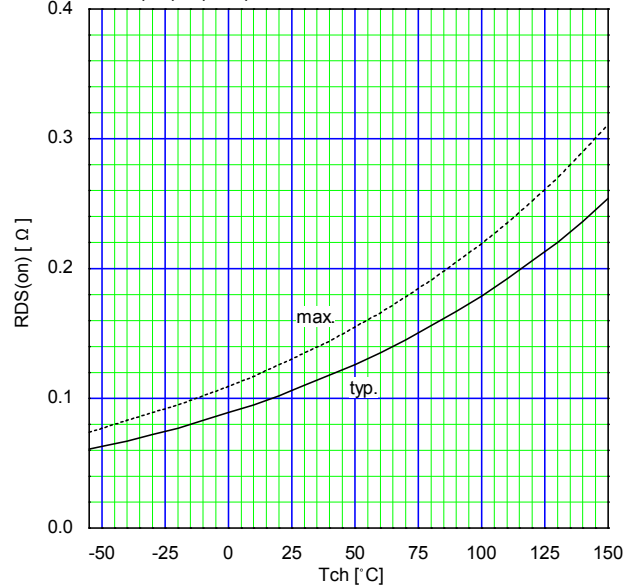
Typical Transconductance
 $g_{fs}=f(ID): 80\mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$

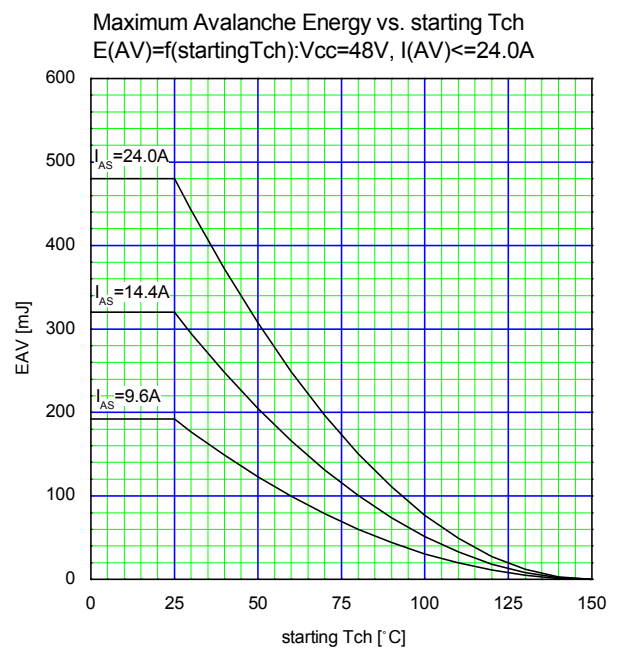
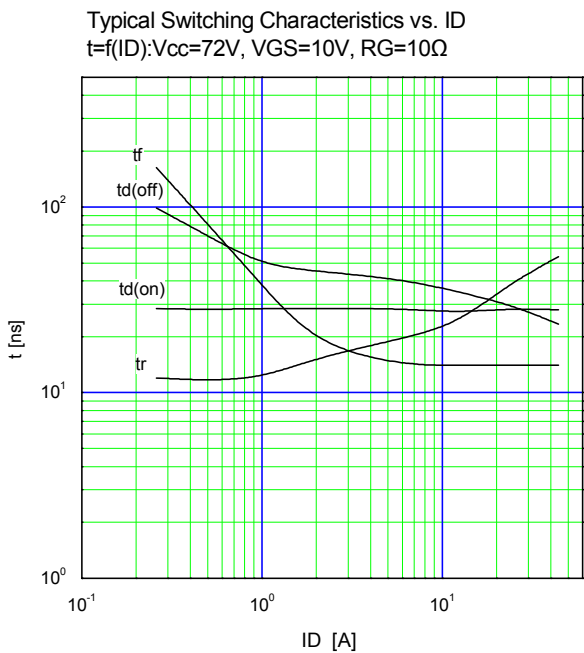
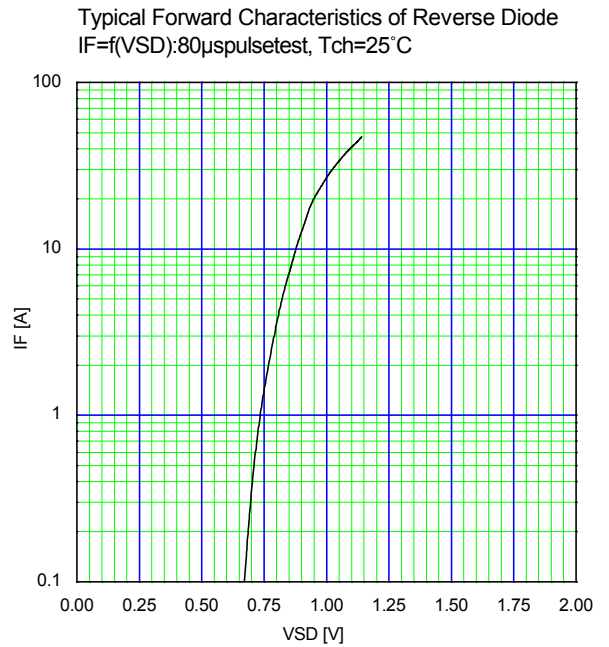
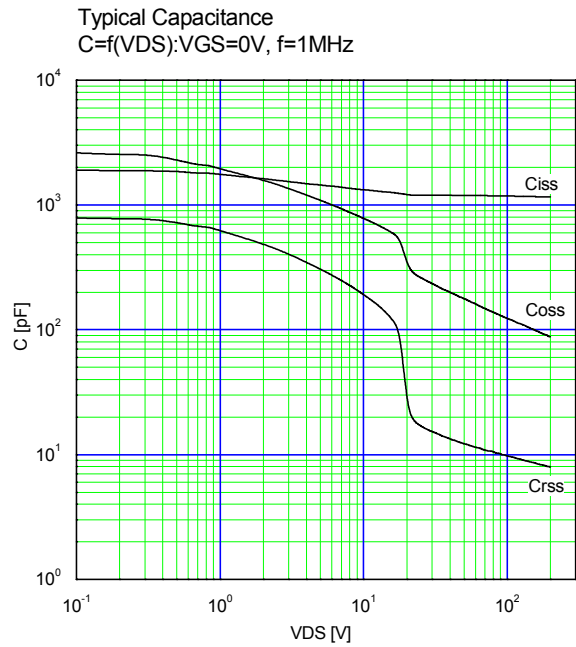
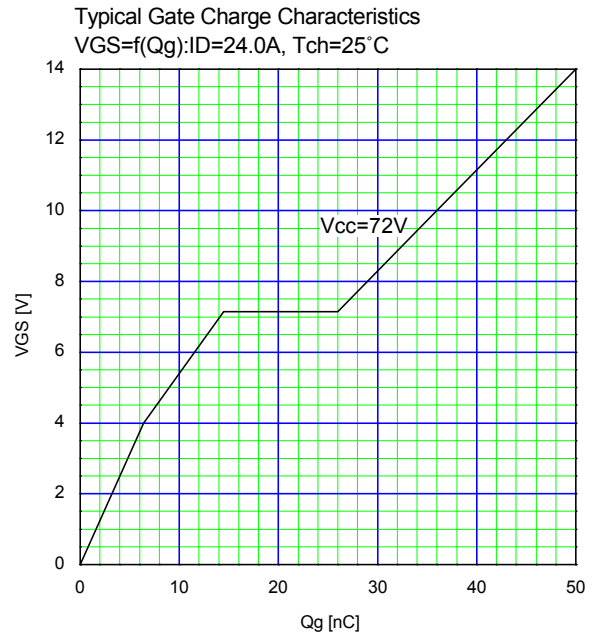
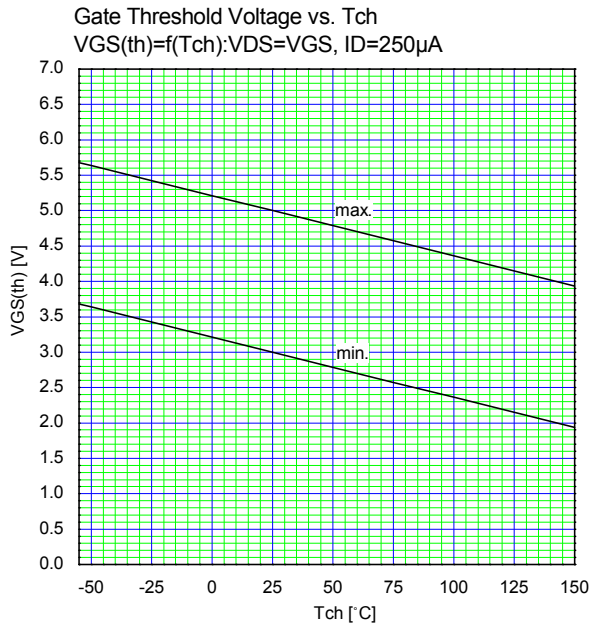


Typical Drain-Source on-state Resistance
 $R_{DS(on)}=f(ID): 80\mu s$ pulse test, $T_{ch}=25^\circ C$



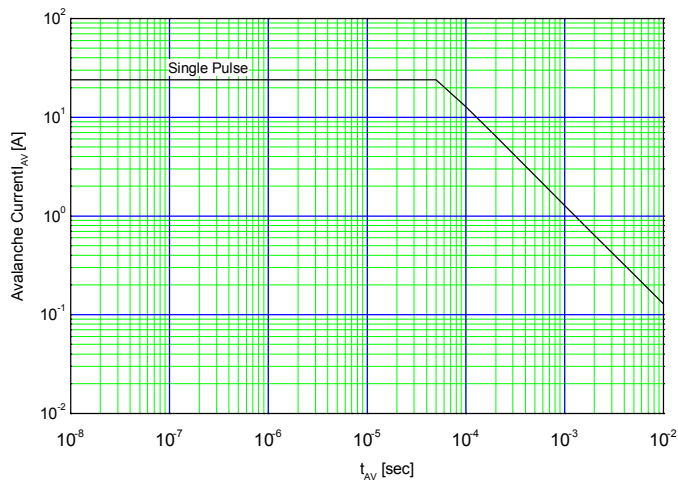
Drain-Source On-state Resistance
 $R_{DS(on)}=f(T_{ch}): ID=12.0A$, $V_{GS}=10V$





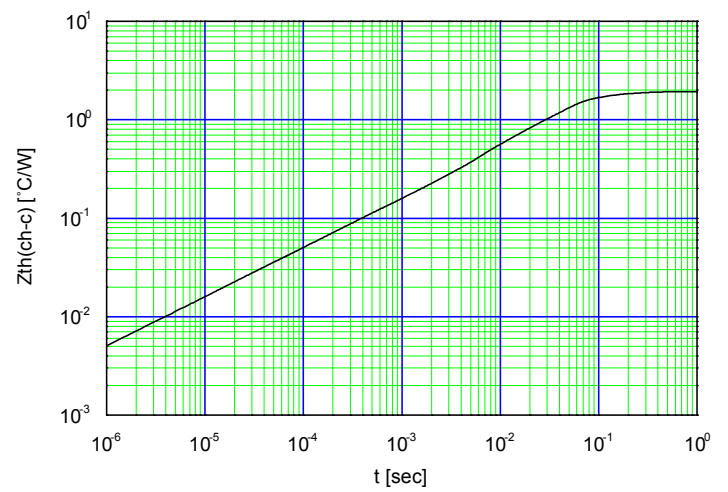
Maximum Avalanche Current Pulse width

$I_{AV} = f(t_{AV})$: starting Tch=25°C, Vcc=48V



Transient Thermal Impedance

$Z_{th}(ch-c) = f(t)$: D=0



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