2SK2754-01L,S FUJI POWER MOSFET

Fuji Electric

N-CHANNEL SILICON POWER MOSFET

FAP-IIS SERIES

Features

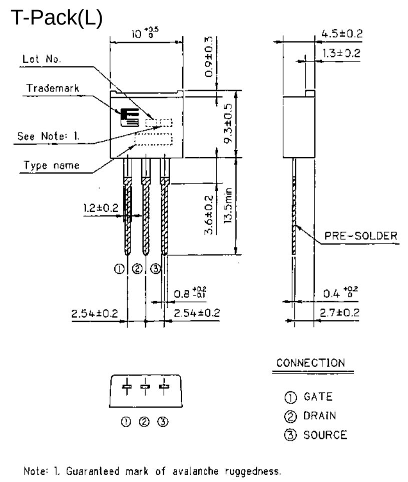
- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- Avalanche-proof

Applications

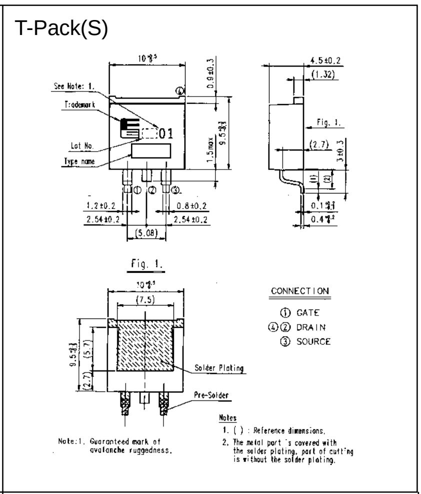
- Switching regulators
- DC-DC converters
- General purpose power amplifier

Outline Drawings

T-Pack(L)



T-Pack(S)



L-type	S-type
EIAJ	———

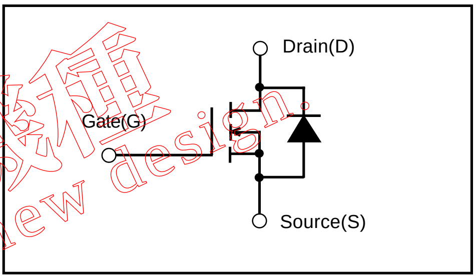
Maximum ratings and characteristics

- **Absolute maximum ratings (Tc=25°C unless otherwise specified)**

Item	Symbol	Rating	Unit	Remarks
Drain-source voltage	V_{DS}	450	V	
Continuous drain current	I_D	±10	A	
Pulsed drain current	$I_{D[puls]}$	±40	A	
Gate-source peak voltage	V_{GS}	±35	V	
Repetitive or non-repetitive	I_{AR}	10	A	Tch≦150°C
Maximum avalanche energy	E_{AV}	181	mJ	*1
Maximum power dissipation	P_D	80	W	
Operating and storage	T_{ch}	+150	°C	
temperature range	T_{stg}	-55 to +150	°C	

*1 L=3.31mH, Vcc=45V

Equivalent circuit schematic



- **Electrical characteristics (T_c =25°C unless otherwise specified)**

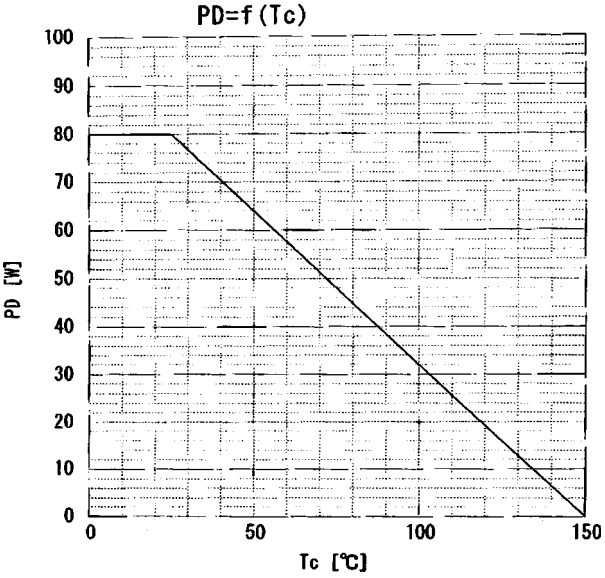
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		450			V
Gate threshold voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		3.5	4.0	4.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=450V V_{GS}=0V	T_{ch}=25°C		10	500	µA
			T_{ch}=125°C		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	V_{GS}=±35V V_{DS}=0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=5A V_{GS}=10V V_{GS}=4V			0.58	0.65	Ω
Forward transconductance	g_{fs}	I_D=5A V_{DS}=25V		3.0	6.0		S
Input capacitance	C_{iss}	V_{DS}=25V			950	1450	pF
Output capacitance	C_{oss}	V_{GS}=0V			180	270	
Reverse transfer capacitance	C_{rss}	f=1MHz			80	120	
Turn-on time	$t_{d(on)}$	V_{CC}=300V R_G=10 Ω			25	40	ns
	t_r	I_D=10A			70	110	
Turn-off time	$t_{d(off)}$	V_{GS}=10V			70	110	
	t_f				50	80	
Avalanche capability	I_{AV}	L=1.31mH T_{ch}=25°C		10			A
Diode forward on-voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C			1.10	1.65	V
Reverse recovery time	t_{rr}	I_F=I_{DR} V_{GS}=0V			400		ns
Reverse recovery charge	Q_{rr}	-di/dt=100A/µs T_{ch}=25°C			5.0		µC

- **Thermal characteristics**

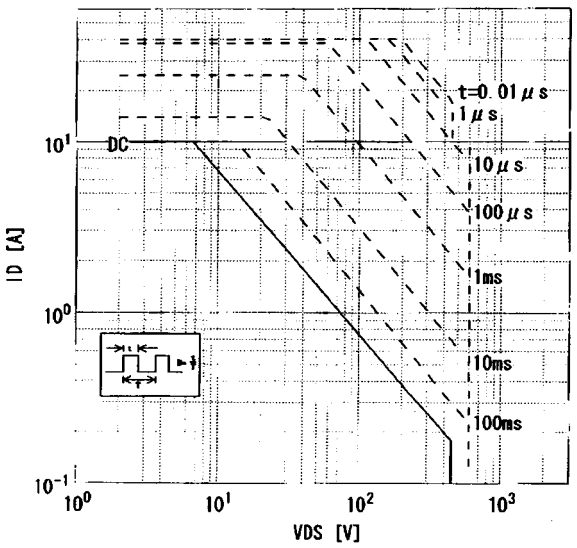
Item	Symbol	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$			1.56	°C/W
	$R_{th(ch-a)}$			125.0	°C/W

Characteristics

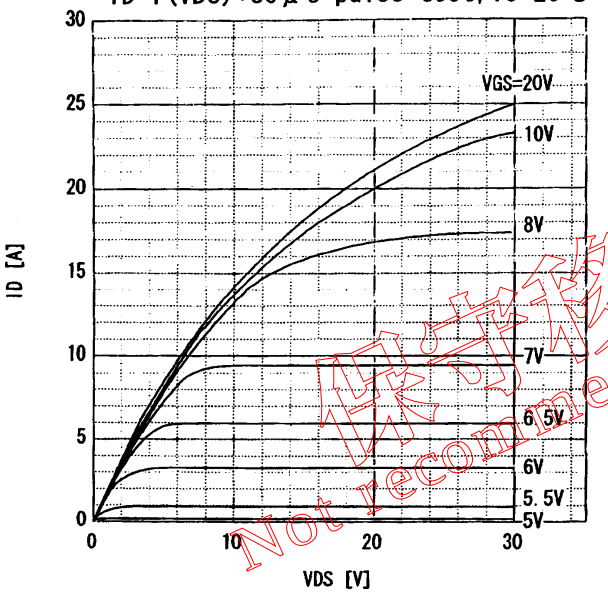
Power Dissipation
PD=f(Tc)



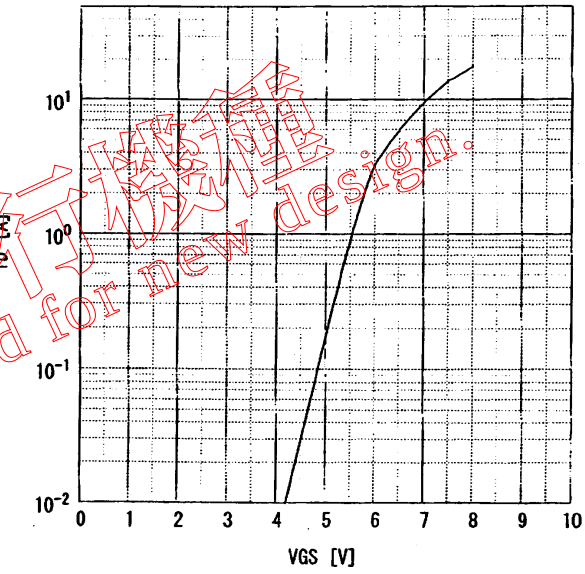
Safe operating area
ID=f(VDS) : D=0.01, Tc=25℃



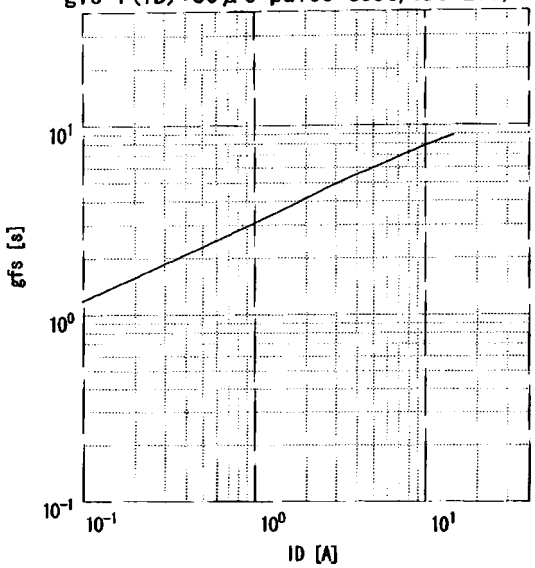
Typical output characteristics
ID=f(VDS) : 80μs pulse test, Tc=25℃



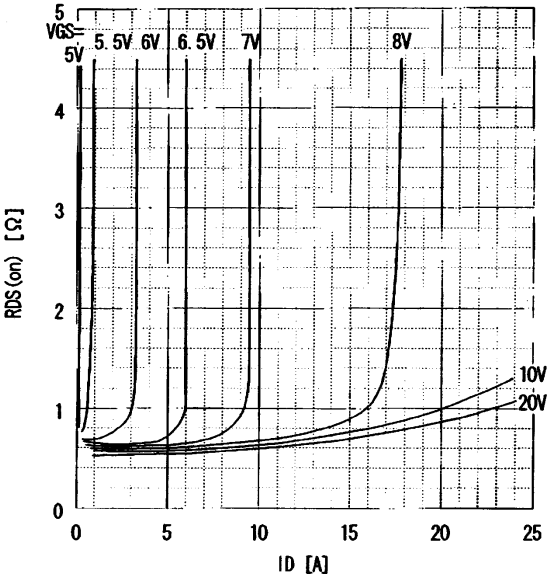
Typical transfer characteristic
ID=f(VGS) : 80μs pulse test, VDS=25V, Tch=25℃



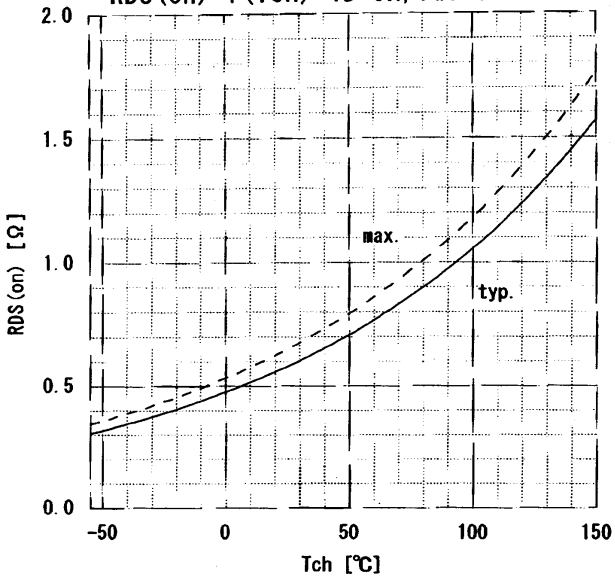
Typical forward transconductance
gfs=f(ID) : 80μs pulse test, VDS=25V, Tch=25℃



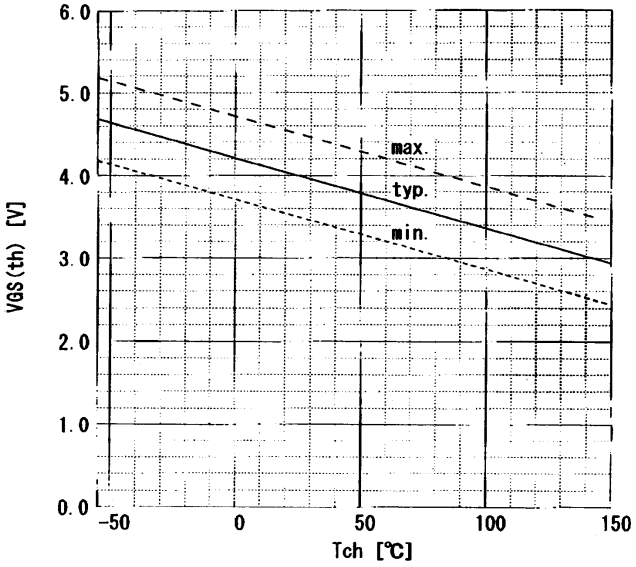
Typical drain-source on-state resistance
RDS(on)=f(ID) : 80μs pulse test, Tc=25℃



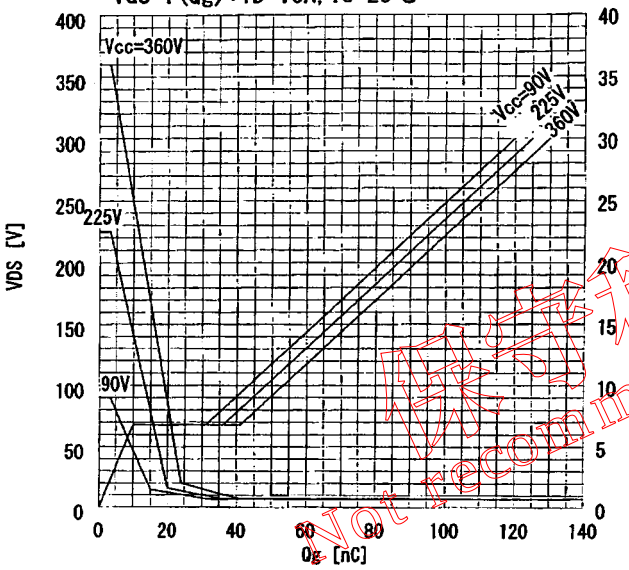
Drain-source on-state resistance
RDS(on)=f(Tch) : ID=5A, VGS=10V



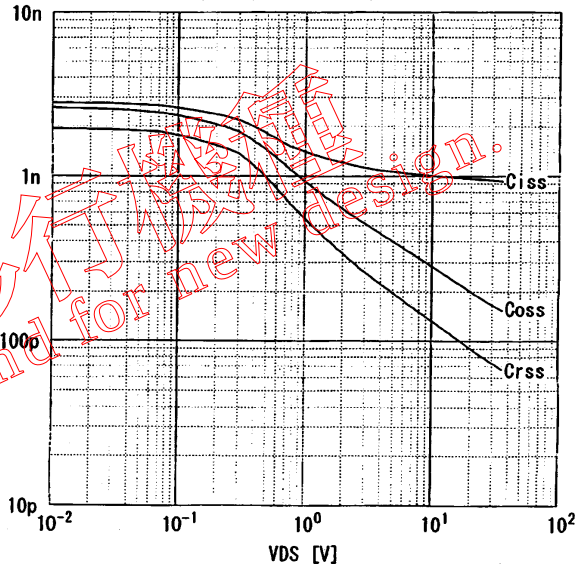
Gate threshold voltage
VGS(th)=f(Tch) : ID=1mA, VDS=VGS



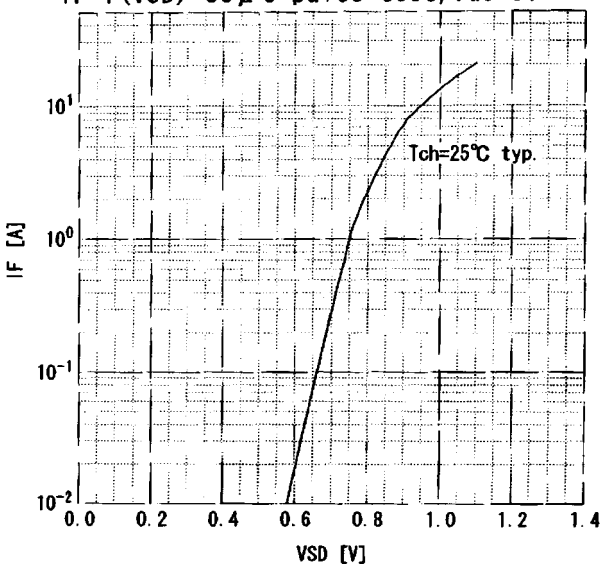
Typical gate charge characteristic
VGS=f(Qg) : ID=10A, Tc=25℃



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



Forward characteristic of reverse of diode
IF=f(VSD) : 80μs pules test, VGS=0V



Avalanche energy derating
Eas=f(starting Tch) : Vcc=45V, I_{AV}=10A