FUJI ELECTRIC

2SK2516-01L,S

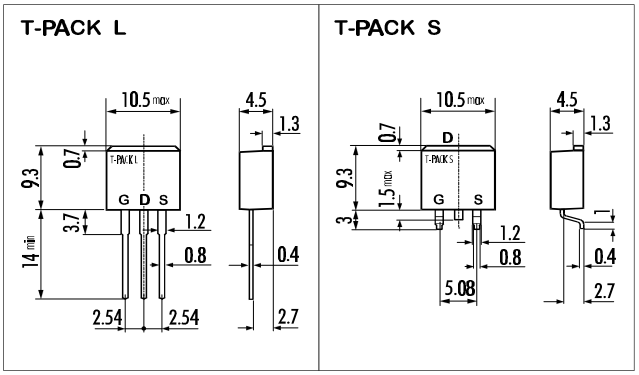
FAP-III Series

N-channel MOS-FET			
30V	13mΩ	50A	80W

> Features

- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Forward Transconductance

> Outline Drawing



> Applications

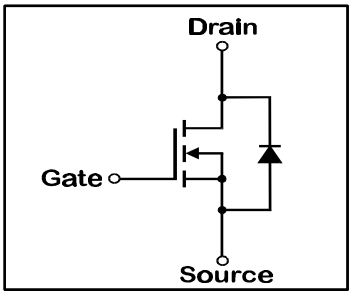
- Motor Control
- General Purpose Power Amplifier
- DC-DC converters

> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T_C=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	30	V
Drain-Gate-Voltage (R_{GS}=20KΩ)	V_{DGR}	30	V
Continous Drain Current	I_D	50	A
Pulsed Drain Current	$I_{D(puls)}$	200	A
Gate-Source-Voltage	V_{GS}	±16	V
Max. Power Dissipation	P_D	80	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

> Equivalent Circuit



- Electrical Characteristics (T_C=25°C), unless otherwise specified

Item	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	I_D=1mA	V_{GS}=0V	30			V
Gate Threshhold Voltage	$V_{GS(th)}$	I_D=1mA	V_{DS}=V_{GS}	1,0	1,5	2,0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V	T_{ch}=25°C		10	500	µA
		V_{GS}=0V	T_{ch}=125°C		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	V_{GS}=±16V	V_{DS}=0V		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=25A	V_{GS}=4V		16	22	mΩ
		I_D=25A	V_{GS}=10V		10	13	mΩ
Forward Transconductance	g_{fs}	I_D=25A	V_{DS}=12V	17	35		S
Input Capacitance	C_{iss}	V_{DS}=25V			3500	5250	pF
Output Capacitance	C_{oss}	V_{GS}=0V			1650	2480	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz			830	1250	pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=12V			15	25	ns
	t_r	I_D=50A			65	100	ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	V_{GS}=10V			190	290	ns
	t_f	R_{GS}=10Ω			140	210	ns
Avalanche capability	I_{AV}	L=100µH	T_{ch}=25°C	50			A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR}	V_{GS}=0V T_{ch}=25°C		1,25	1,80	V
Reverse Recovery Time	t_{rr}	I_F=I_{DR}	V_{GS}=0V		60		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/µs	T_{ch}=25°C		70		µC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			125	°C/W
	$R_{th(ch-c)}$	channel to case			1,56	°C/W

N-channel MOS-FET			
30V	13μΩ	50A	80W

2SK2516-01L,S
FAP-III Series

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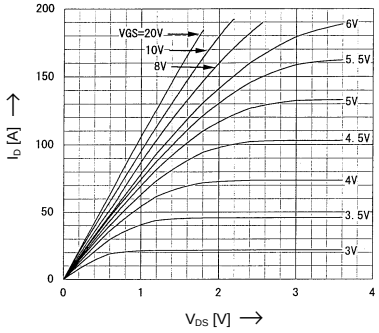
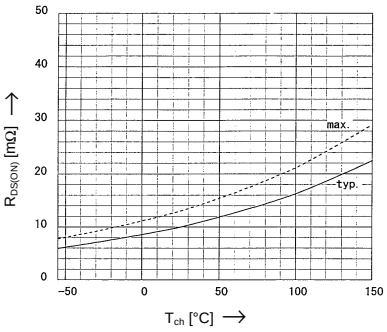
> Characteristics

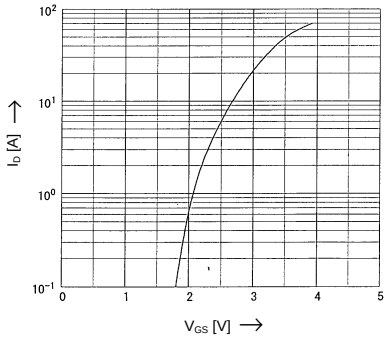
Typical Output Characteristics
I_D=f(V_{DS}); 80μs pulse test; T_C=25°C



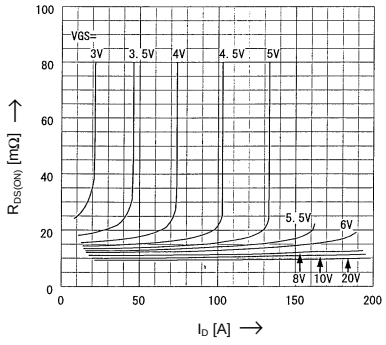
Drain-Source On-State Resistance
$R_{DS(on)}$ = f(T_{ch}); I_D=25A; V_{GS}=10V



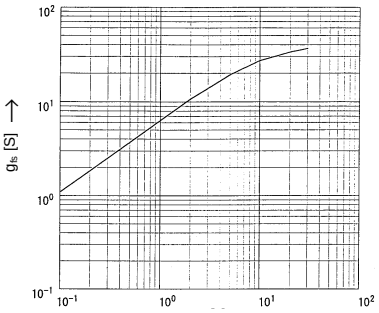
Typical Transfer Characteristics
I_D=f(V_{GS}); 80μs pulse test; V_{DS}=25V; T_{ch}=25°C



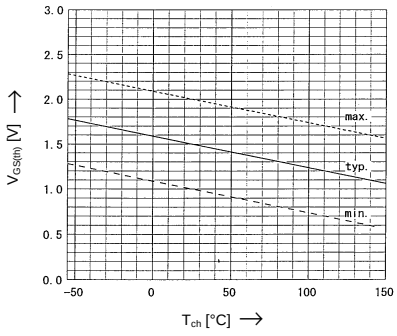
Typical Drain-Source On-State-Resistance
$R_{DS(on)}$=f(I_D); 80μs pulse test; T_C=25°C



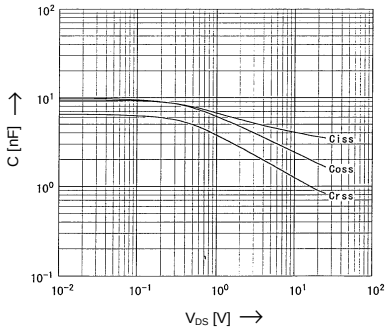
Typical Foward Transconductance
g_{fs}=f(I_D); 80μs pulse test; V_{DS}=25V; T_{ch}=25°C



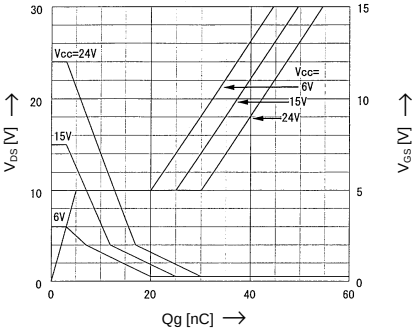
Gate Threshold Voltage vs. T_{ch}
$V_{GS(th)}$=f(T_{ch}); I_D=1mA; V_{DS}=V_{GS}



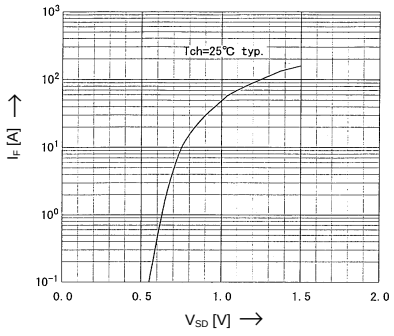
Typical Capacitances
C=f(V_{DS}); V_{GS}=0V; f=1MHz



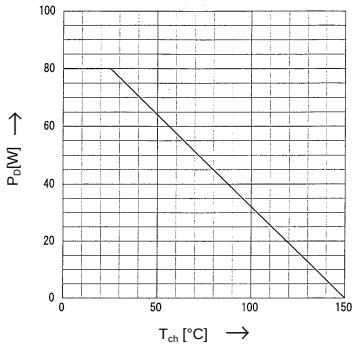
Typical Gate Charge Characteristics
V_{GS}=f(Qg); I_D=50A, Tc=25°C



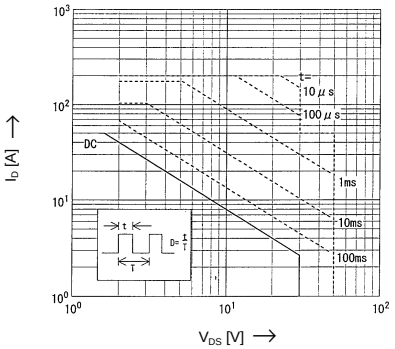
Forward Characteristics of Reverse Diode
I_F=f(V_{SD}); 80μs pulse test; V_{GS}=0V



Power Dissipation
P_D=f(Tc)



Safe Operation Area
I_D=f(V_{DS}): D=0,01, Tc=25°C



Transient Thermal impedance
$Z_{th(ch-c)}$=f(t) parameter:D=t/T