

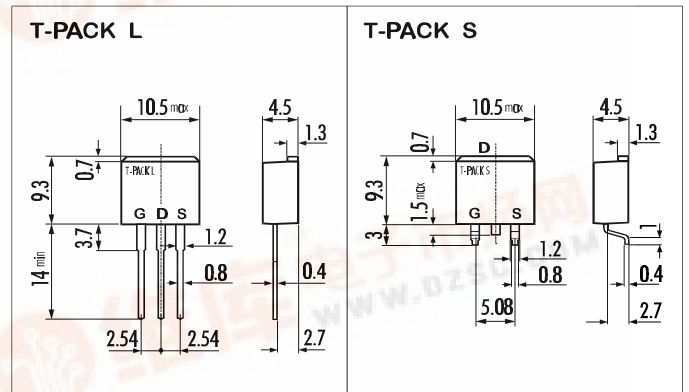
> Features

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

> Applications

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

> Outline Drawing

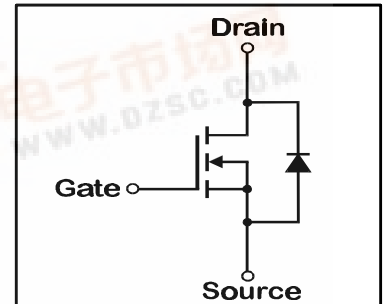


> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T<sub>C</sub>=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V <sub>DS</sub>	30	V
Drain-Gate-Voltage (R <sub>GS</sub> =20KΩ)	V <sub>DGR</sub>	30	V
Continous Drain Current	I <sub>D</sub>	50	A
Pulsed Drain Current	I <sub>D(puls)</sub>	200	A
Gate-Source-Voltage	V <sub>GS</sub>	±16	V
Max. Power Dissipation	P <sub>D</sub>	80	W
Operating and Storage Temperature Range	T <sub>ch</sub>	150	°C
	T <sub>stg</sub>	-55 ~ +150	°C

> Equivalent Circuit



- Electrical Characteristics (T<sub>C</sub>=25°C), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA V <sub>GS</sub> =0V	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =1mA V <sub>DS</sub> =V <sub>GS</sub>	1,0	1,5	2,0	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V T <sub>ch</sub> =25°C		10	500	μA
		V <sub>GS</sub> =0V T <sub>ch</sub> =125°C		0,2	1,0	mA
Gate Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V V <sub>DS</sub> =0V		10	100	nA
Drain Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =25A V <sub>GS</sub> =4V		16	22	mΩ
		I <sub>D</sub> =25A V <sub>GS</sub> =10V		10	13	mΩ
Forward Transconductance	g <sub>fs</sub>	I <sub>D</sub> =25A V <sub>DS</sub> =12V	17	35		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		3500	5250	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		1650	2480	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1MHz		830	1250	pF
Turn-On-Time t <sub>on</sub> (t <sub>on</sub> =t <sub>d(on)</sub> +t <sub>r</sub> )	t <sub>d(on)</sub>	V <sub>CC</sub> =12V I <sub>D</sub> =50A		15	25	ns
				65	100	ns
Turn-Off-Time t <sub>off</sub> (t <sub>off</sub> =t <sub>d(off)</sub> +t <sub>f</sub> )	t <sub>d(off)</sub>	V <sub>GS</sub> =10V R <sub>GS</sub> =10Ω		190	290	ns
				140	210	ns
Avalanche capability	I <sub>AV</sub>	L=100μH T <sub>ch</sub> =25°C	50			A
Diode Forward On-Voltage	V <sub>SD</sub>	I <sub>F</sub> =2I <sub>DR</sub> V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		1,25	1,80	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>DR</sub> V <sub>GS</sub> =0V		60		ns
Reverse Recovery Charge	Q <sub>rr</sub>	-dI <sub>F</sub> /dt=100A/μs T <sub>ch</sub> =25°C		70		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	R <sub>th(ch-a)</sub>	channel to air			125	°C/W
	R <sub>th(ch-c)</sub>	channel to case			1,56	°C/W

N-channel MOS-FET			
30V	13μΩ	50A	80W

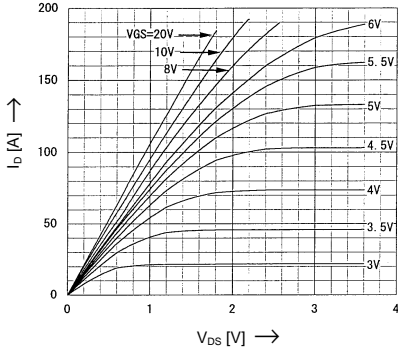
# 2SK2516-01L,S

## FAP-III Series

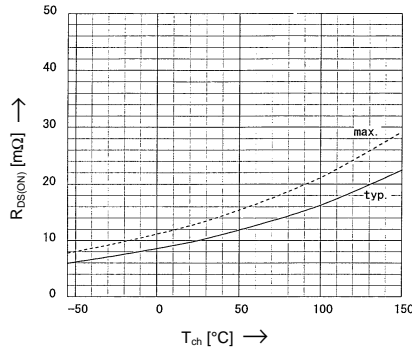


### > Characteristics

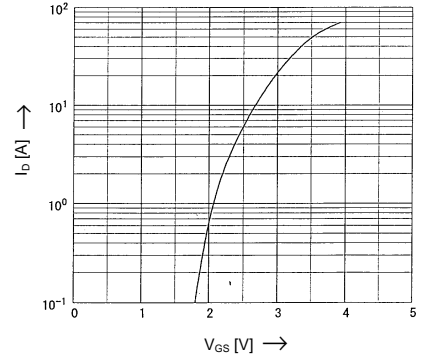
Typical Output Characteristics  
 $I_D = f(V_{DS}); 80\mu s$  pulse test;  $T_C = 25^\circ C$



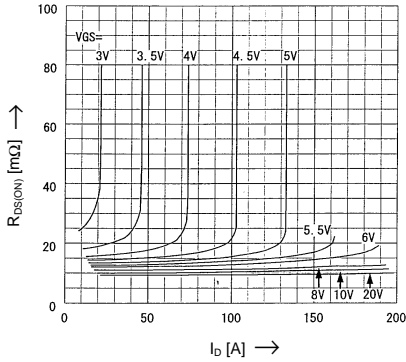
Drain-Source On-State Resistance  
 $R_{DS(on)} = f(T_{ch}); I_D = 25A; V_{GS} = 10V$



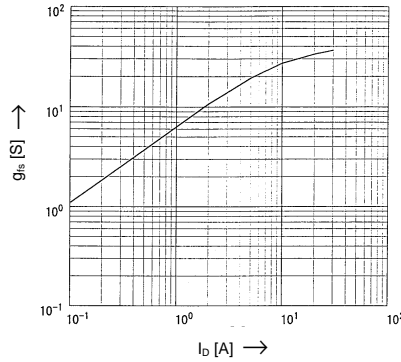
Typical Transfer Characteristics  
 $I_D = f(V_{GS}); 80\mu s$  pulse test;  $V_{DS} = 25V; T_{ch} = 25^\circ C$



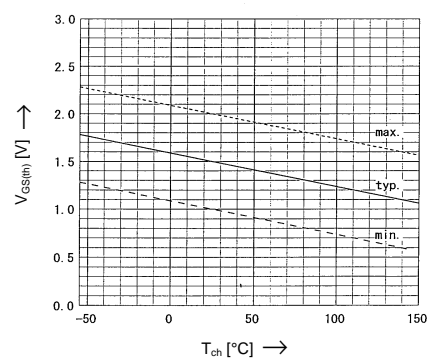
Typical Drain-Source On-State-Resistance  
 $R_{DS(on)} = f(I_D); 80\mu s$  pulse test;  $T_C = 25^\circ C$



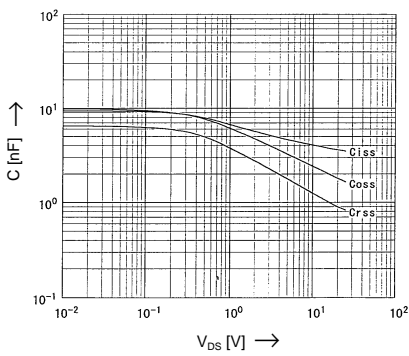
Typical Forward Transconductance  
 $g_{fs} = f(I_D); 80\mu s$  pulse test;  $V_{DS} = 25V; T_{ch} = 25^\circ C$



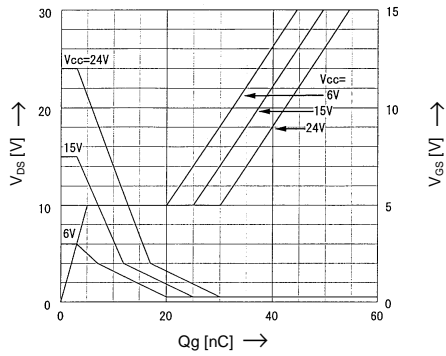
Gate Threshold Voltage vs.  $T_{ch}$   
 $V_{GS(th)} = f(T_{ch}); I_D = 1mA; V_{DS} = V_{GS}$



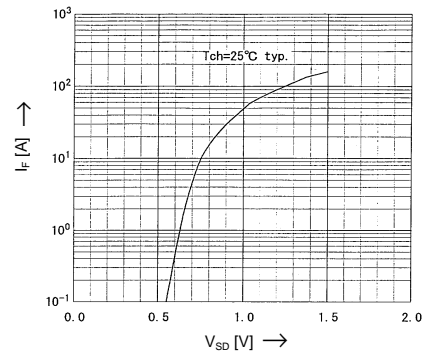
Typical Capacitances  
 $C = f(V_{DS}); V_{GS} = 0V; f = 1MHz$



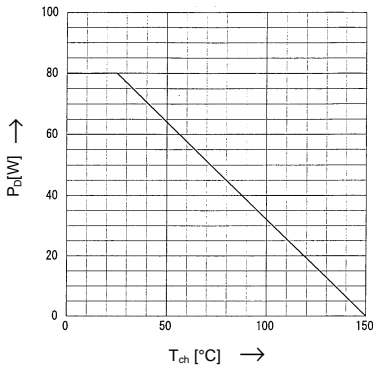
Typical Gate Charge Characteristics  
 $V_{GS} = f(Q_g); I_D = 50A; T_C = 25^\circ C$



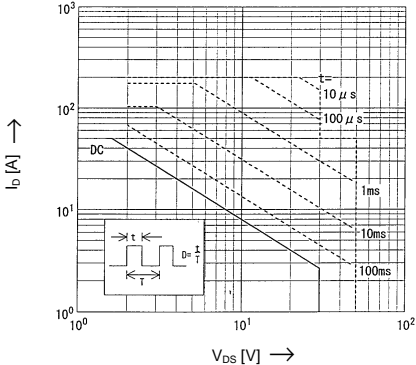
Forward Characteristics of Reverse Diode  
 $I_F = f(V_{SD}); 80\mu s$  pulse test;  $V_{GS} = 0V$



Power Dissipation  
 $P_D = f(T_C)$



Safe Operation Area  
 $I_D = f(V_{DS}); D = 0.01; T_C = 25^\circ C$



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

