

> Features

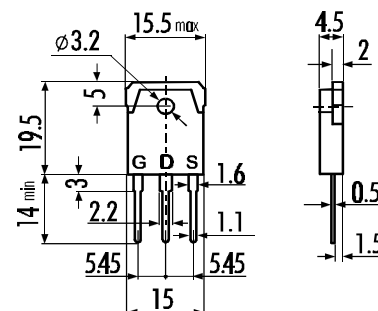
- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- VGS = $\pm 30\text{V}$ Guarantee
- Repetitive Avalanche Rated

> Applications

- Switching Regulators
- UPS
- DC-DC converters
- General Purpose Power Amplifier

> Outline Drawing

TO-3P

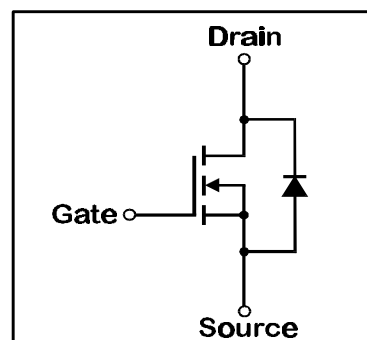


> Maximum Ratings and Characteristics

- Absolute Maximum RatingsT(c=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	800	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current	$I_{D(puls)}$	36	A
Gate-Source-Voltage	V_{GS}	± 30	V
Repetitive or Non-Repetitive ($T_{ch} \leq 150^{\circ}C$)	I_{AR}	9	A
Avalanche Energy	E_{AS}	241	mJ
Max. Power Dissipation	P_D	150	W
Operating and Storage Temperature Range	T_{ch}	150	$^{\circ}C$
	T_{sta}	-55 ~ +150	$^{\circ}C$

> Equivalent Circuit



- Electrical Characteristics ($T_C=25^{\circ}\text{C}$), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	$I_D=1mA$ $V_{GS}=0V$	800			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}	$V_{DS}=800V$ $T_{ch}=25^{\circ}C$		10	500	μA
		$V_{GS}=0V$ $T_{ch}=125^{\circ}C$		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=4,5A$ $V_{GS}=10V$		1,28	1,50	Ω
Forward Transconductance	g_{fs}	$I_D=4,5A$ $V_{DS}=25V$		6		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		1200		pF
Output Capacitance	C_{oss}			180		pF
Reverse Transfer Capacitance	C_{rss}			90		pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=600V$ $I_D=9A$		30		ns
	t_r			120		ns
Turn-Off-Time t_{off} ($t_{on}=t_{d(off)}+t_f$)	$t_{d(off)}$	$V_{GS}=10V$		95		ns
	t_f	$R_{GS}=10 \Omega$		60		ns
Avalanche Capability	I_{AV}	$L = 100\mu H$ $T_{ch}=25^{\circ}C$	9			A
Diode Forward On-Voltage	V_{SD}	$I_F=2xI_{DR}$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$		1,0		V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$ $V_{GS}=0V$		900		ns
Reverse Recovery Charge	Q_{rr}	$-di_F/dt=100A/\mu s$ $T_{ch}=25^{\circ}C$		12		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			35	°C/W
	$R_{th(ch-c)}$	channel to case			0.83	°C/W

N-channel MOS-FET			
800V	1,5Ω	9A	150W

2SK2648-01

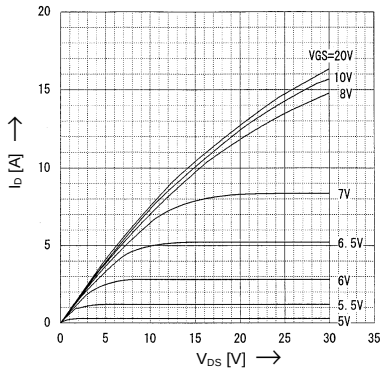
FAP-IIS Series

FUJI
ELECTRIC

> Characteristics

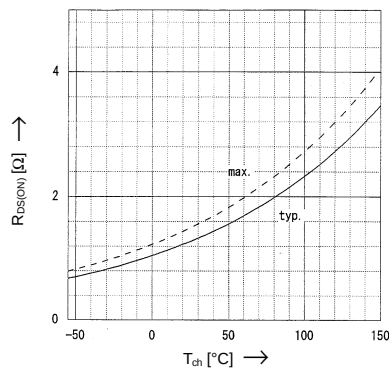
Typical Output Characteristics

$I_D=f(V_{DS})$; 80μs pulse test; $T_C=25^\circ\text{C}$



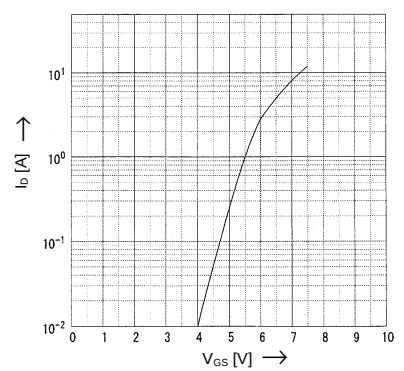
Drain-Source-On-State Resistance vs. T_{ch}

$R_{DS(on)}=f(T_{ch})$; $I_D=4.5\text{A}$; $V_{GS}=10\text{V}$



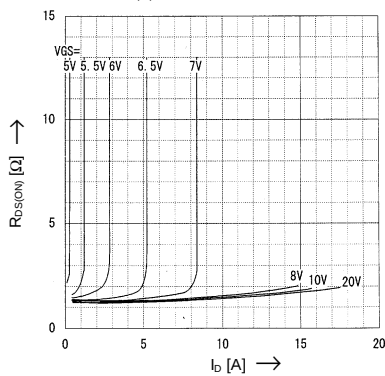
Typical Transfer Characteristics

$I_D=f(V_{GS})$; 80μs pulse test; $V_{DS}=25\text{V}$; $T_{ch}=25^\circ\text{C}$



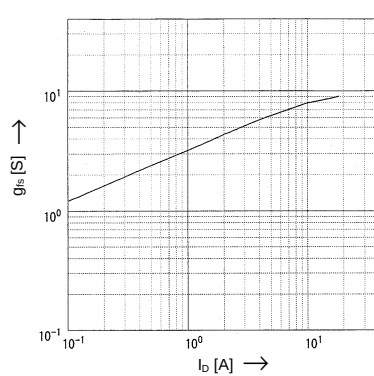
Typical Drain-Source-On-State-Resistance vs. I_D

$R_{DS(on)}=f(I_D)$; 80μs pulse test; $T_C=25^\circ\text{C}$



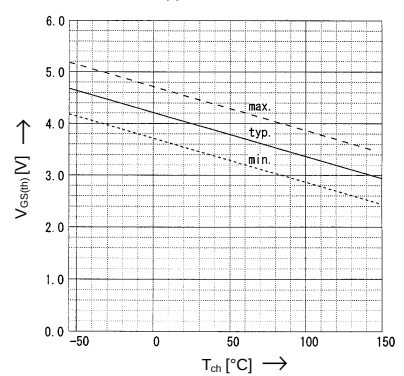
Typical Forward Transconductance vs. I_D

$g_{fs}=f(I_D)$; 80μs pulse test; $V_{DS}=25\text{V}$; $T_{ch}=25^\circ\text{C}$



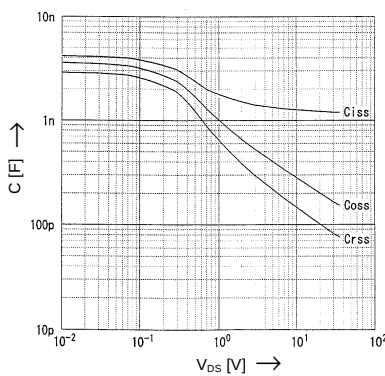
Gate Threshold Voltage vs. T_{ch}

$V_{GS(th)}=f(T_{ch})$; $I_D=1\text{mA}$; $V_{DS}=V_{GS}$



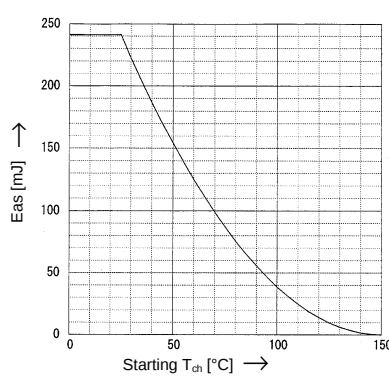
Typical Capacitances vs. V_{DS}

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



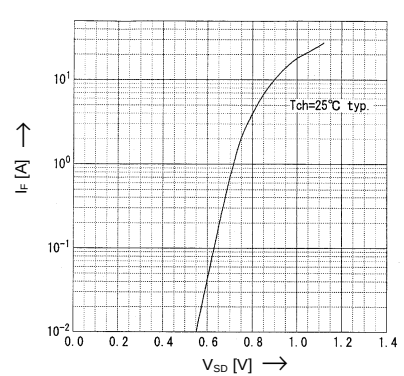
Avalanche Energy Derating

$E_{as}=f(\text{starting } T_{ch})$; $V_{CC}=80\text{V}$; $I_{AV}=9\text{A}$



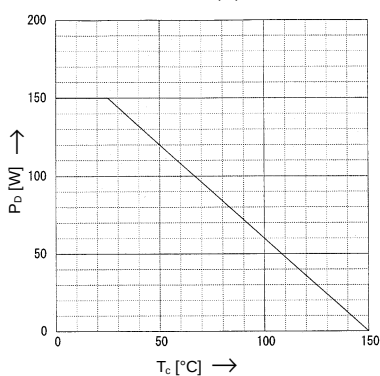
Forward Characteristics of Reverse Diode

$I_F=f(V_{SD})$; 80μs pulse test; $V_{GS}=0\text{V}$



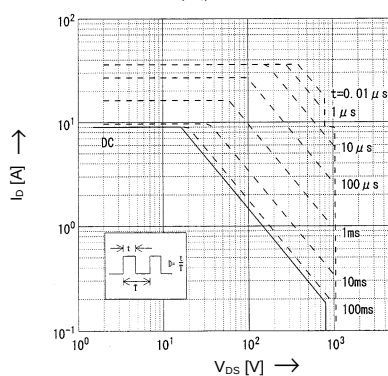
Allowable Power Dissipation vs. T_C

$P_D=f(T_C)$



Safe operation area

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



Transient Thermal impedance

$Z_{\theta JA}(t)=f(t)$ parameter: $D=t/T$

