

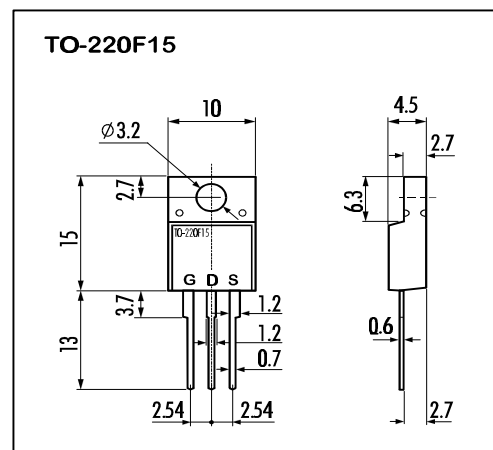
> Features

- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- Avalanche Rated

> Applications

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

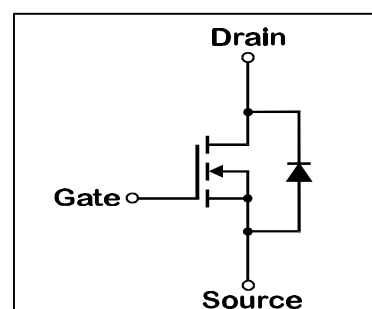
> Outline Drawing



> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	30	V
Continuous Drain Current	I_D	±50	A
Pulsed Drain Current	$I_{D(puls)}$	±200	A
Gate-Source-Voltage	V_{GS}	±16	V
Maximum Avalanche Energy	E_{AV}	1441.5	mJ*
Max. Power Dissipation	P_D	50	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{sta}	-55 ~ +150	°C

 $L=0.769\text{mH}, V_{CC}=12\text{V}$ 

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

Item	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	BV_{DSS}	$I_D=1mA$	$V_{GS}=0V$	30			V
Gate Threshold 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}	$V_{DS}=30V$	$T_{ch}=25^{\circ}C$		10	500	μA
		$V_{GS}=0V$	$T_{ch}=125^{\circ}C$		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V$	$V_{DS}=0V$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=50A$	$V_{GS}=4V$		8,0	10,5	m Ω
		$I_D=50A$	$V_{GS}=10V$		5,3	6,8	m Ω
Forward Transconductance	g_{fs}	$I_D=50A$	$V_{DS}=25V$	35	70		S
Input Capacitance	C_{iss}	$V_{DS}=25V$			3900	5850	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$			2000	3000	pF
Reverse Transfer Capacitance	C_{rss}	$f=1MHz$			850	1280	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=15V$			17	30	ns
	t_r	$V_{GS}=10V$			70	110	ns
Turn-Off-Time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$t_{d(off)}$	$I_D=100A$			250	380	ns
	t_f	$R_{GS}=10\Omega$			180	270	ns
Avalanche Capability	I_{AV}	$L=100\mu H$	$T_{ch}=25^{\circ}C$	50			A
Diode Forward On-Voltage	V_{SD}	$I_F=50A$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$			1,0	1,5	V
Reverse Recovery Time	t_{rr}	$I_F=50A$ $V_{GS}=0V$			65		ns
Reverse Recovery Charge	Q_{rr}	$-dI/dt=100A/\mu s$ $T_{ch}=25^{\circ}C$			0,12		μC

- Thermal Characteristics

Item	Symbol		Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-c)}$	channel to case			2,5	°C/W
	$R_{th(ch-a)}$	channel to ambient			62,5	°C/W

N-channel MOS-FET			
30V	0,0105Ω	±50A	50W

2SK2890-01

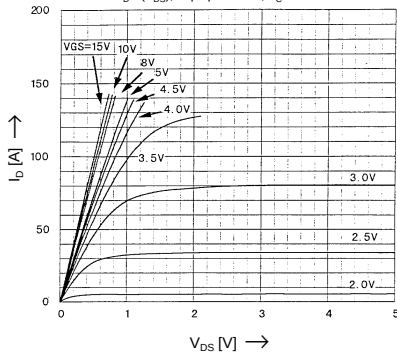
FAP-IIIB Series

FUJII
ELECTRIC

> Characteristics

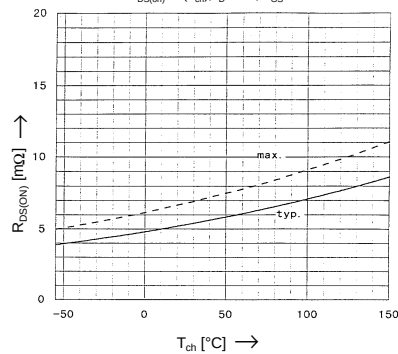
Typical Output Characteristics

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



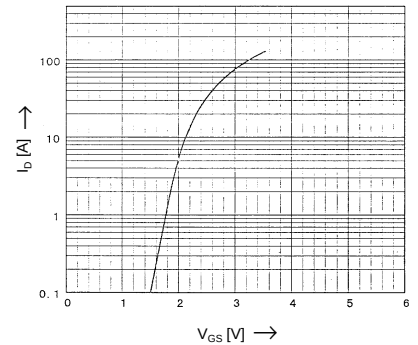
Drain-Source On-State Resistance vs. T_{ch}

$R_{DS(on)} = f(T_{ch})$; $I_D = 50A$; $V_{GS} = 10V$



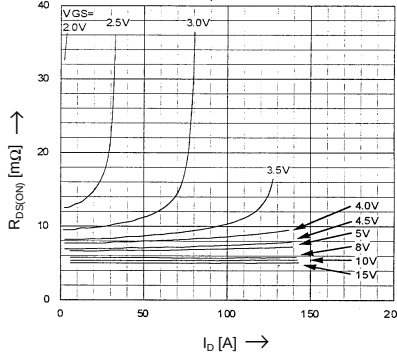
Typical Transfer Characteristics

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



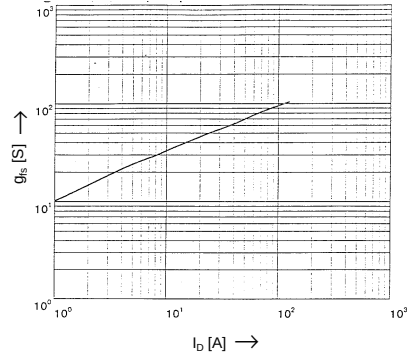
Typical Drain-Source On-State-Resistance vs. I_D

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



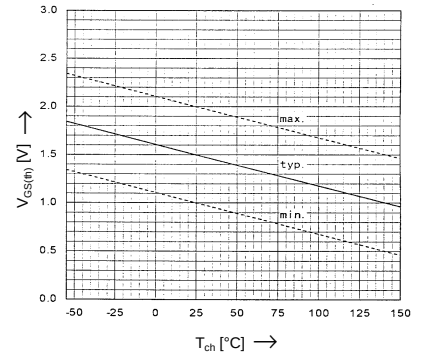
Typical Forward Transconductance vs. I_D

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



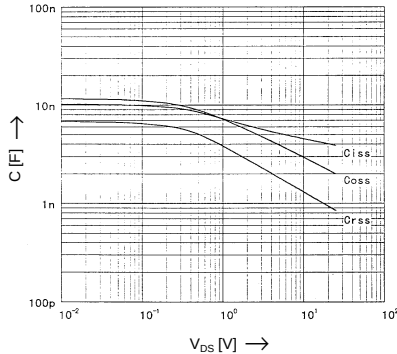
Gate Threshold Voltage vs. T_{ch}

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



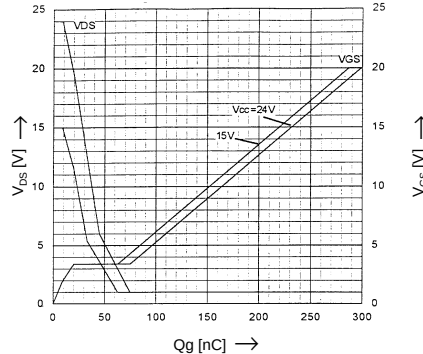
Typical Capacitances vs. V_{DS}

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



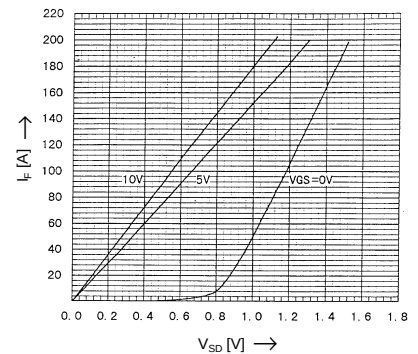
Typical Gate Charge Characteristic

$V_{GS} = f(Q_g)$; $I_D = 100A$; $T_C = 25^\circ\text{C}$



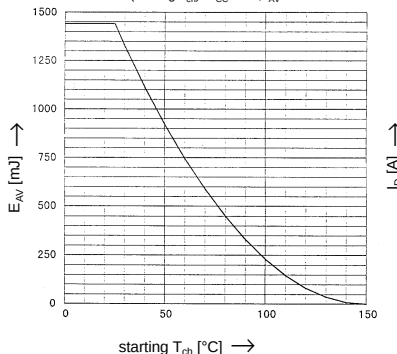
Forward Characteristics of Reverse Diode

$I_F = f(V_{SD})$; 80μs pulse test; $T_{ch} = 25^\circ\text{C}$



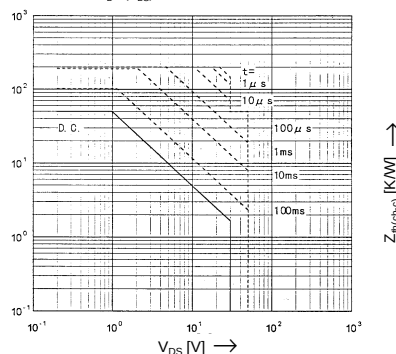
Maximum Avalanche Energy vs. starting T_{ch}

$E_{AS} = f(\text{starting } T_{ch})$; $V_{CC} = 12V$; $I_{AV} \leq 50A$



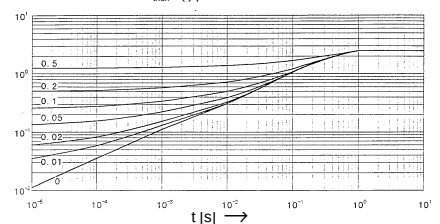
Safe Operation Area

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



Transient Thermal impedance

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



N-channel MOS-FET			
30V	0,0105Ω	±50A	50W

2SK2890-01

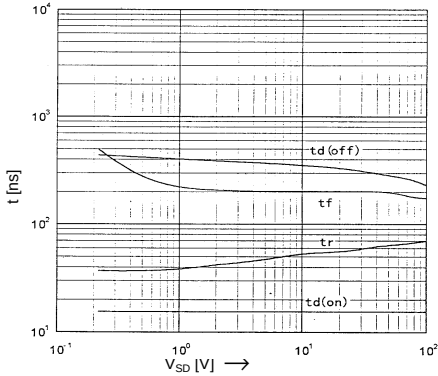
FAP-IIIB Series



> Characteristics

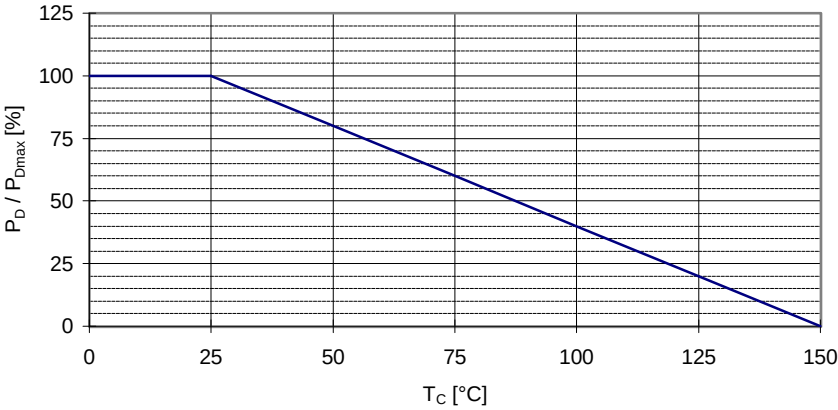
Typical Switching Characteristics

t=(t_b): V_{CC} = 15V, V_{GS} = 10V, R_G = 10Ω



Power Dissipation

P_D=f(T_C)



Maximum Avalanche Current vs. starting T_{ch}

I_{AV}=f(starting T_{ch})

