

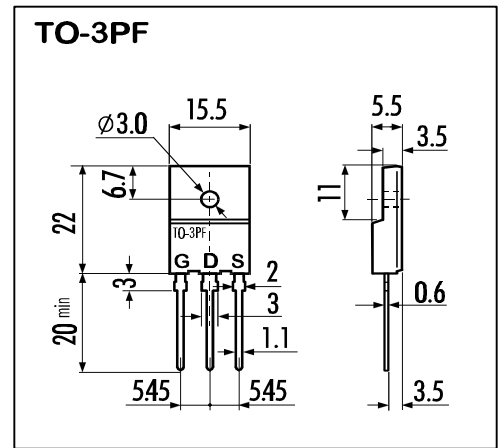
> **Features**

- 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**

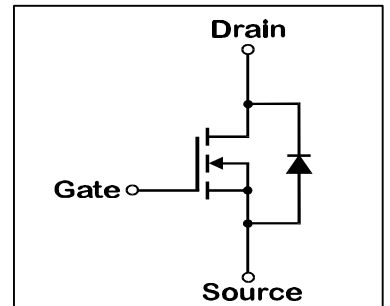


> **Maximum Ratings and Characteristics**

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

| Item | Symbol | Rating | Unit |
|---|----------------------|------------|------|
| Drain-Source-Voltage | V _{DS} | 30 | V |
| Continous Drain Current | I _D | ±90 | A |
| Pulsed Drain Current | I _{D(puls)} | ±350 | A |
| Gate-Source-Voltage | V _{GS} | ±16 | V |
| Maximum Avalanche Energy | E _{AV} | 1728.5 | mJ* |
| Max. Power Dissipation | P _D | 100 | W |
| Operating and Storage Temperature Range | T _{ch} | 150 | °C |
| | T _{stg} | -55 ~ +150 | °C |

L=0.285mH, V_{CC}=12V



- Electrical Characteristics (T_C=25°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°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 =50A V _{GS} =4V | | 7,0 | 9,5 | mΩ |
| | | I _D =50A V _{GS} =10V | | 4,4 | 5,5 | mΩ |
| 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 |
| | | V _{GS} =10V | | 70 | 110 | ns |
| | t _r | I _D =100A | | 250 | 380 | ns |
| Turn-Off-Time t _{off} (t _{off} =t _{d(off)} +t _f) | t _{d(off)} | R _{GS} =10 Ω | | 180 | 270 | ns |
| | t _f | | | | | |
| Avalanche Capability | I _{AV} | L = 100μH T _{ch} =25°C | 90 | | | A |
| Diode Forward On-Voltage | V _{SD} | I _F =50A V _{GS} =0V T _{ch} =25°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/μs T _{ch} =25°C | | 0,12 | | μC |

- Thermal Characteristics

| Item | Symbol | Min. | Typ. | Max. | Unit |
|--------------------|-----------------------|------|------|------|------|
| Thermal Resistance | R _{th(ch-c)} | | | 1,25 | °C/W |
| | R _{th(ch-a)} | | | 30,0 | °C/W |

| | | | |
|-------------------|-------|------|------|
| N-channel MOS-FET | | | |
| 30V | 5.5mΩ | ±90A | 100W |

2SK2892-01R

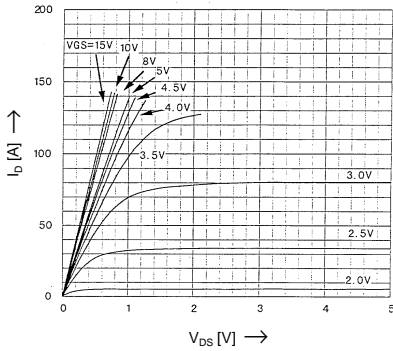
FAP-IIIB Series



> Characteristics

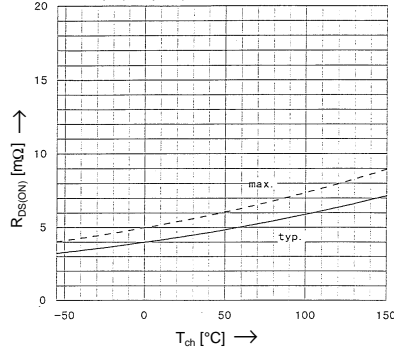
Typical Output Characteristics

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



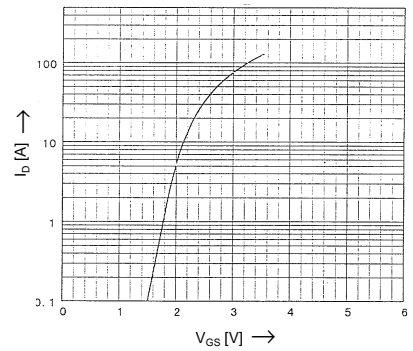
Drain-Source On-State Resistance vs. T_{ch}

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



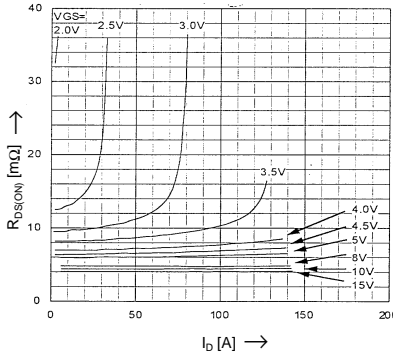
Typical Transfer Characteristics

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



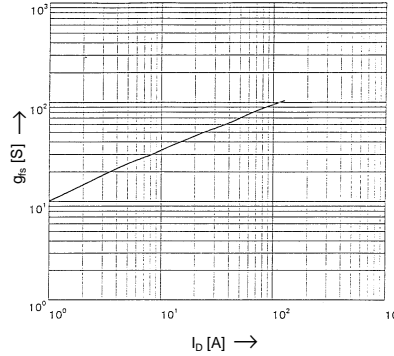
Typical Drain-Source On-State-Resistance vs. I_D

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



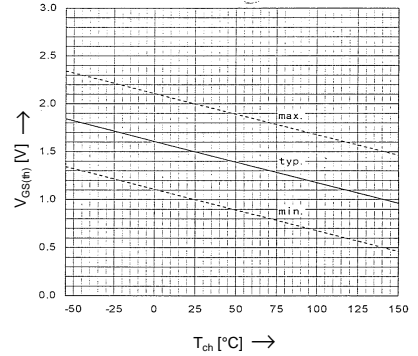
Typical Forward Transconductance vs. I_D

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



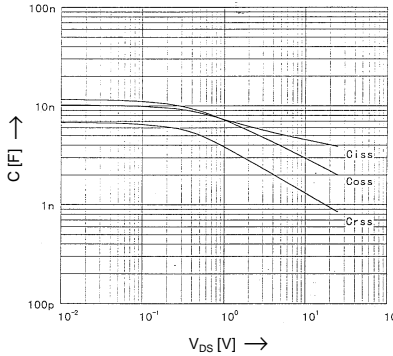
Gate Threshold Voltage vs. T_{ch}

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



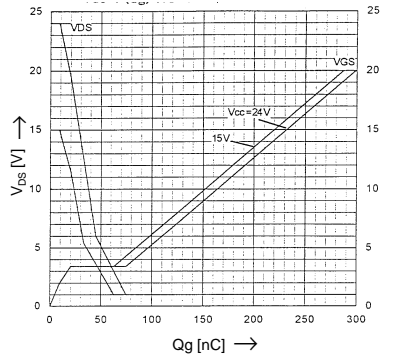
Typical Capacitances vs. V_{DS}

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



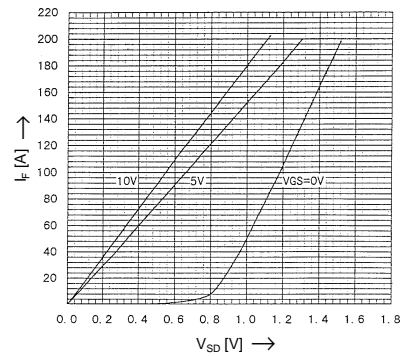
Typical Gate Charge Characteristic

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



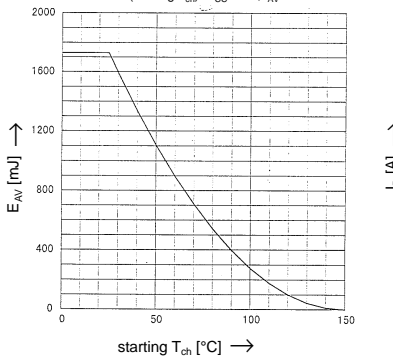
Forward Characteristics of Reverse Diode

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



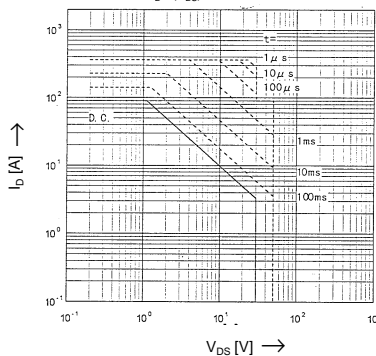
Maximum Avalanche Energy vs. starting T_{ch}

$E_{as} = f(\text{starting } T_{ch})$; $V_{CC} = 24\text{V}$; $I_{AV} \leq 45\text{A}$



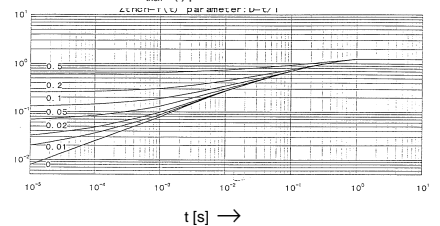
Safe Operation Area

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



Transient Thermal Impedance

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



| | | | |
|-------------------|-------|------|------|
| N-channel MOS-FET | | | |
| 30V | 5,5mΩ | ±90A | 100W |

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> Characteristics

