

> Features

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- VGS = ± 30V Guarantee
- Repetitive Avalanche Rated

> Applications

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

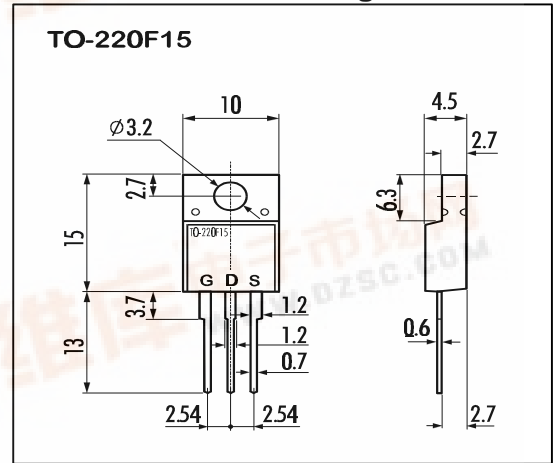
> Maximum Ratings and Characteristics

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

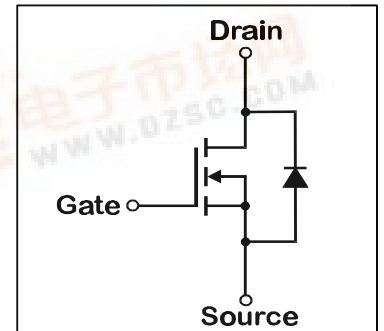
Item	Symbol	Rating	Unit
Drain-Source-Voltage	V <sub>DS</sub>	450	V
Continous Drain Current	I <sub>D</sub>	±8	A
Pulsed Drain Current	I <sub>D(puls)</sub>	±32	A
Gate-Source-Voltage	V <sub>GS</sub>	±35	V
Repetitive or Non-Repetitive (T <sub>ch</sub> ≤ 150°C)	I <sub>AR</sub>	8	A
Avalanche Energy	E <sub>AS</sub>	164.1	mJ
Max. Power Dissipation	P <sub>D</sub>	30	W
Operating and Storage Temperature Range	T <sub>ch</sub>	150	°C
	T <sub>stg</sub>	-55 ~ +150	°C

L=4.70mH, Vcc=45V

> Outline Drawing



> Equivalent Circuit



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

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =1mA V <sub>GS</sub> =0V	450			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =1mA V <sub>DS</sub> =V <sub>GS</sub>	3,5	4,0	4,5	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =450V 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> =±35V V <sub>DS</sub> =0V		10	100	nA
Drain Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =4A V <sub>GS</sub> =10V		1,0	1,2	Ω
Forward Transconductance	g <sub>fs</sub>	I <sub>D</sub> =4A V <sub>DS</sub> =25V	2	4		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		540	810	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		100	150	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1MHz		45	70	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> =300V		13	20	ns
	t <sub>r</sub>	I <sub>D</sub> =8A		40	60	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		45	70	ns
	t <sub>f</sub>	R <sub>GS</sub> =10 Ω		25	40	ns
Avalanche Capability	I <sub>AV</sub>	L = 4,70mH T <sub>ch</sub> =25°C	8			A
Diode Forward On-Voltage	V <sub>SD</sub>	I <sub>F</sub> =2xI <sub>DR</sub> V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		1,1	1,65	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>DR</sub> V <sub>GS</sub> =0V		450		ns
Reverse Recovery Charge	Q <sub>rr</sub>	-di <sub>F</sub> /dt=100A/μs T <sub>ch</sub> =25°C		3,7		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	R <sub>th(ch-c)</sub>	channel to case			4,17	°C/W
	R <sub>th(ch-a)</sub>	channel to air			62,5	°C/W

N-channel MOS-FET			
450V	1,2Ω	±8A	30W

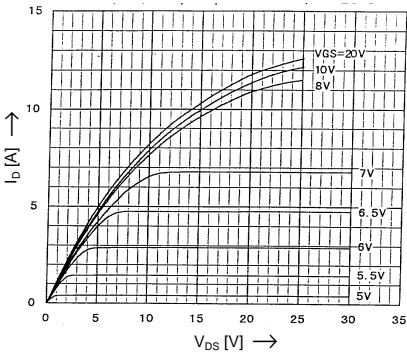
# 2SK2872-01MR

## FAP-IIS Series

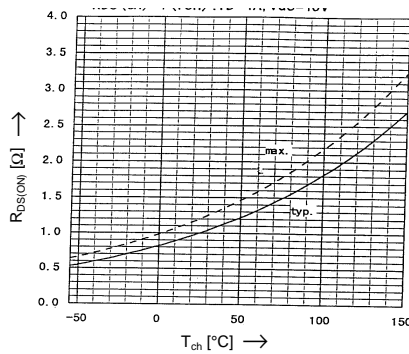


### > Characteristics

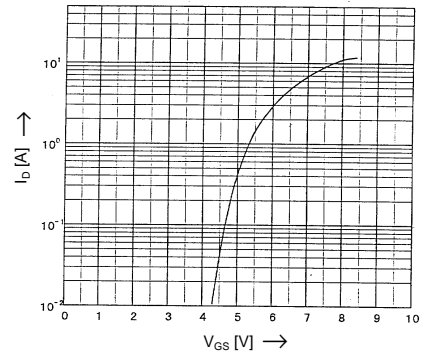
Typical Output Characteristics  
 $I_D = f(V_{DS})$ ; 80μs pulse test;  $T_{ch}=25^{\circ}C$



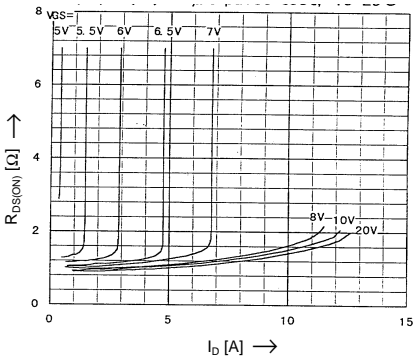
Drain-Source-On-State Resistance vs.  $T_{ch}$   
 $R_{DS(on)} = f(T_{ch})$ ;  $I_D=4A$ ;  $V_{GS}=10V$



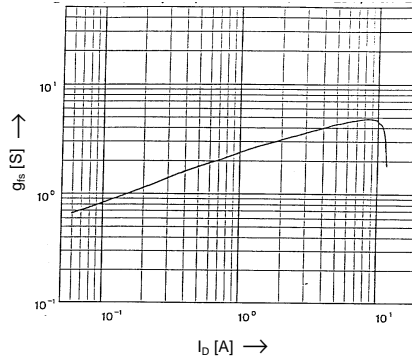
Typical Transfer Characteristics  
 $I_D = f(V_{GS})$ ; 80μs pulse test;  $V_{DS}=25V$ ;  $T_{ch}=25^{\circ}C$



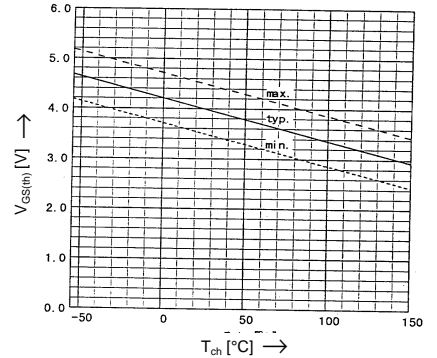
Typical Drain-Source-On-State-Resistance vs.  $I_D$   
 $R_{DS(on)} = f(I_D)$ ; 80μs pulse test;  $T_{ch}=25^{\circ}C$



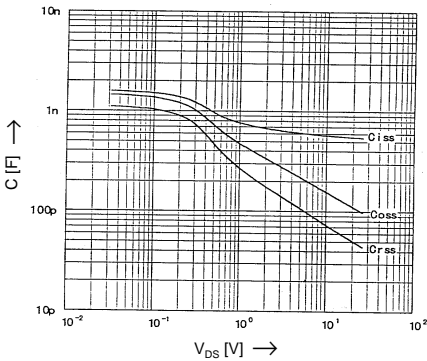
Typical Forward Transconductance vs.  $I_D$   
 $g_{fs} = f(I_D)$ ; 80μs pulse test;  $V_{DS}=25V$ ;  $T_{ch}=25^{\circ}C$



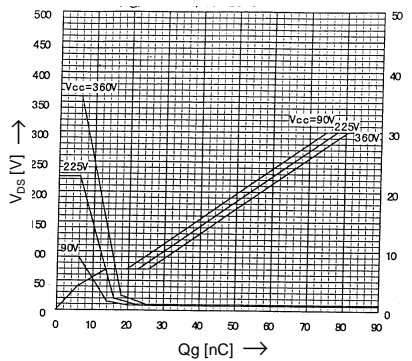
Gate Threshold Voltage vs.  $T_{ch}$   
 $V_{GS(th)} = f(T_{ch})$ ;  $I_D=1mA$ ;  $V_{DS}=V_{GS}$



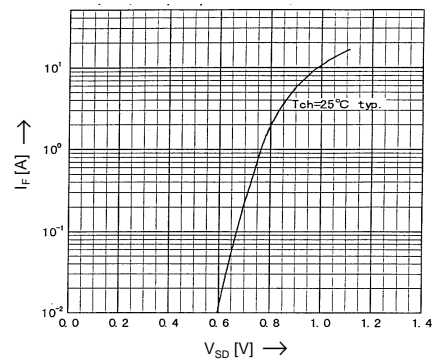
Typical Capacitances vs.  $V_{DS}$   
 $C = f(V_{DS})$ ;  $V_{GS}=0V$ ;  $f=1MHz$



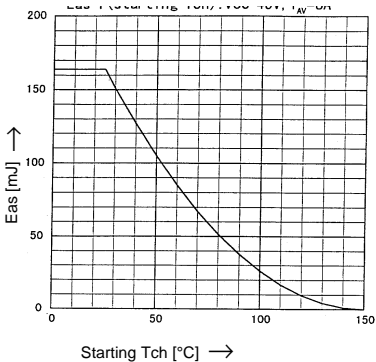
Typical Gate Charge Characteristic  
 $V_{GS} = f(Q_g)$ ;  $I_D=8A$ ;  $T_{ch}=25^{\circ}C$



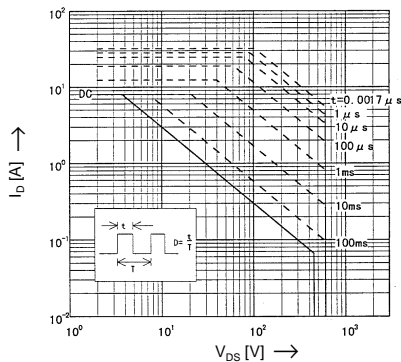
Forward Characteristics of Reverse Diode  
 $I_F = f(V_{SD})$ ; 80μs pulse test;  $V_{GS}=0V$



Avalanche Energy Derating  
 $E_{as} = f(\text{starting } T_{ch})$ ;  $V_{CC}=45V$ ;  $I_{AV}=8A$

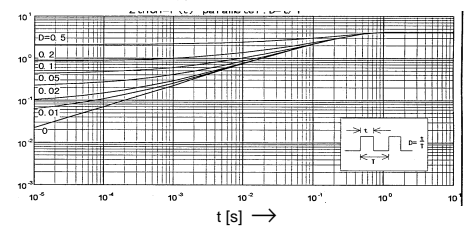


Safe operation area  
 $I_D = f(V_{DS})$ ;  $D=0.01$ ;  $T_{ch}=25^{\circ}C$



$Z_{th(jc-h)} [K/W]$

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



N-channel MOS-FET			
450V	1,2Ω	±8A	30W

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FAP-IIS Series



## > Characteristics

