

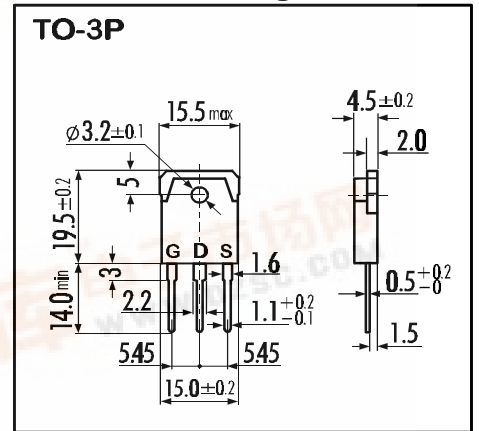
> **Features**

- Include Fast Recovery Diode
- High Voltage
- Low Driving Power

> **Applications**

- Motor Control
- Inverters
- Choppers

> **Outline Drawing**

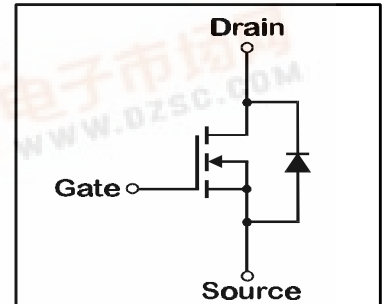


> **Maximum Ratings and Characteristics**

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V <sub>DS</sub>	500	V
Continous Drain Current	I <sub>D</sub>	10	A
Pulsed Drain Current	I <sub>D(puls)</sub>	40	A
Continous Reverse Drain Current	I <sub>DR</sub>	10	A
Gate-Source-Voltage	V <sub>GS</sub>	±20	V
Max. Power Dissipation	P <sub>D</sub>	100	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	500			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =10mA V <sub>DS</sub> =V <sub>GS</sub>	2,1	3,0	4,0	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =500V T <sub>ch</sub> =25°C V <sub>GS</sub> =0V		10	500	μA
Gate Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V V <sub>DS</sub> =0V		10	100	nA
Drain Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =5A V <sub>GS</sub> =10V		0,8	1,1	Ω
Forward Transconductance	g <sub>fs</sub>	I <sub>D</sub> =5A V <sub>DS</sub> =25V	4	8		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		1100	1600	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		140	210	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1MHz		75	110	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		25	40	ns
	t <sub>r</sub>	I <sub>D</sub> =10A		60	90	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		200	300	ns
	t <sub>f</sub>	R <sub>GS</sub> =25 Ω		90	140	ns
Diode Forward On-Voltage	V <sub>SD</sub>	I <sub>F</sub> =I <sub>DR</sub> V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		0,95	1,8	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>DR</sub> V <sub>GS</sub> =0V -dI <sub>F</sub> /dt=100A/μs T <sub>ch</sub> =25°C		150	200	ns

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	R <sub>th(ch-a)</sub>	channel to air			35	°C/W
	R <sub>th(ch-c)</sub>	channel to case			1,25	°C/W

N-channel MOS-FET			
500V	1,1Ω	10A	100W

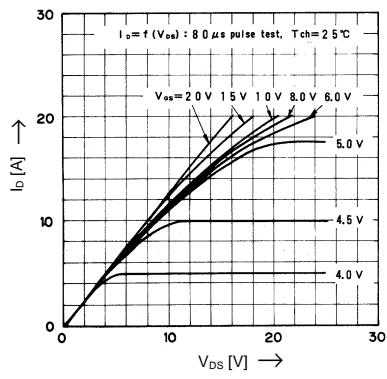
# 2SK1278

## F-V Series

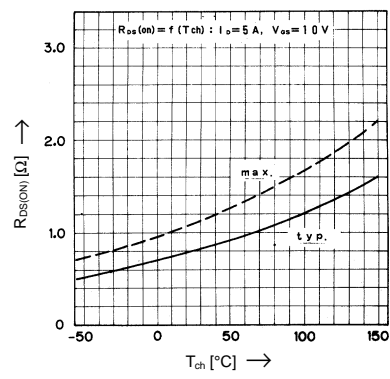


### > Characteristics

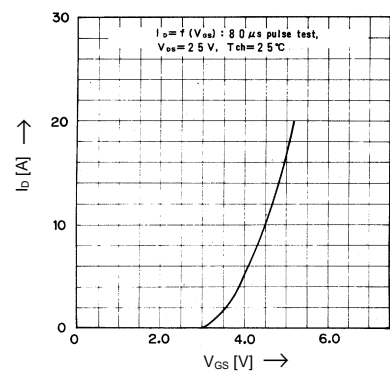
Typical Output Characteristics



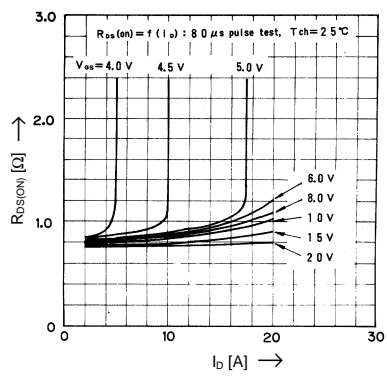
Drain-Source-On-State Resistance vs.  $T_{ch}$



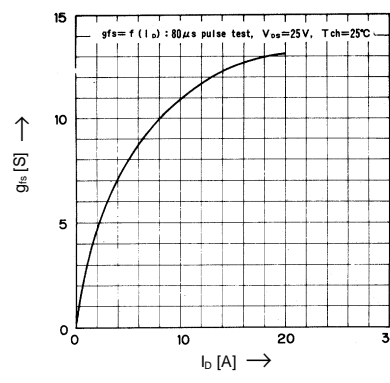
Typical Transfer Characteristics



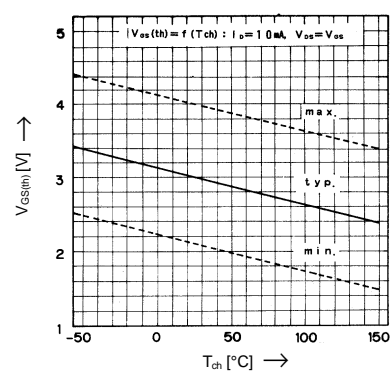
Typical Drain-Source-On-State-Resistance vs.  $I_D$



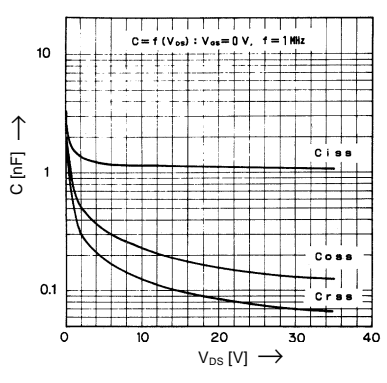
Typical Forward Transconductance vs.  $I_D$



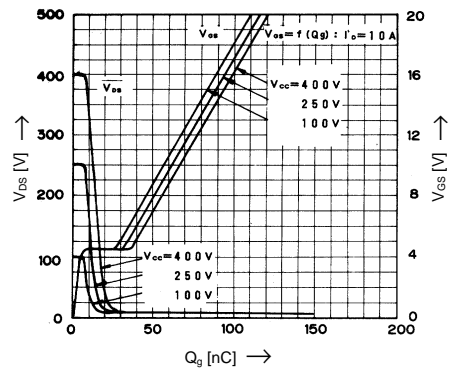
Gate Threshold Voltage vs.  $T_{ch}$



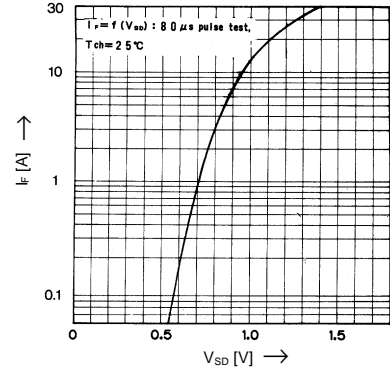
Typical Capacitance vs.  $V_{DS}$



Typical Input Charge



Forward Characteristics of Reverse Diode



Safe operation area

