

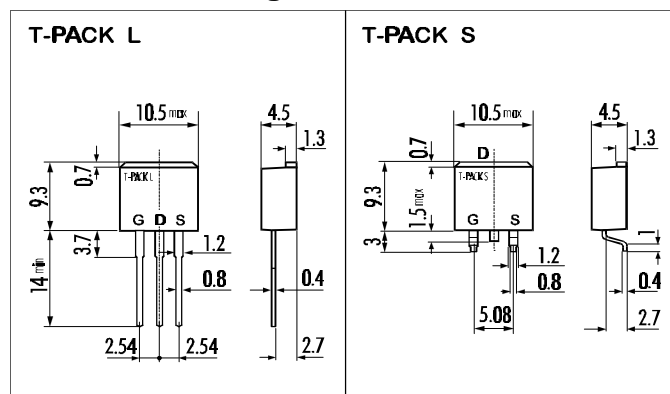
### > Features

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage

### > Applications

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

### > Outline Drawing

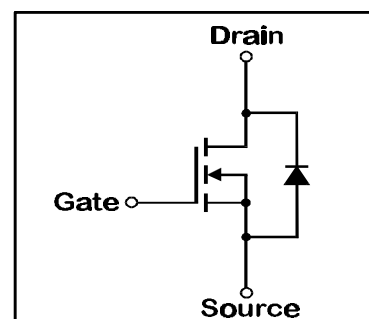


### > Maximum Ratings and Characteristics

- Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ ), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	$V_{DS}$	800	V
Continuous Drain Current	$I_D$	3	A
Pulsed Drain Current	$I_{D(puls)}$	12	A
Continuous Reverse Drain Current	$I_{DR}$	3	A
Gate-Source-Voltage	$V_{GS}$	$\pm 20$	V
Max. Power Dissipation	$P_D$	80	W
Operating and Storage Temperature Range	$T_{ch}$	150	$^\circ\text{C}$
	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

### > 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	$V_{(BR)DSS}$	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	800			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=10\text{mA}$ $V_{DS}=V_{GS}$	2,1	3,0	4,0	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=800\text{V}$ $T_{ch}=25^\circ\text{C}$		0,01	0,5	mA
		$V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$		0,2	1,0	mA
Gate Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=1,5\text{A}$ $V_{GS}=10\text{V}$		3	4	$\Omega$
Forward Transconductance	$g_{fs}$	$I_D=1,5\text{A}$ $V_{DS}=25\text{V}$	2	4		S
Input Capacitance	$C_{iss}$	$V_{DS}=25\text{V}$		900	1400	pF
Output Capacitance	$C_{oss}$	$V_{GS}=0\text{V}$		90	140	pF
Reverse Transfer Capacitance	$C_{rss}$	$f=1\text{MHz}$		35	60	pF
Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )	$t_{d(on)}$	$V_{CC}=30\text{V}$		20	30	ns
	$t_r$	$I_D=2,1\text{A}$		40	60	ns
Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ )	$t_{d(off)}$	$V_{GS}=10\text{V}$		150	250	ns
	$t_f$	$R_{GS}=50\Omega$		60	90	ns
Diode Forward On-Voltage	$V_{SD}$	$I_F=2I_{DR}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		1	1,35	V
Reverse Recovery Time	$t_{rr}$	$I_F=I_{DR}$ $V_{GS}=0\text{V}$		400		ns
		$-dI_F/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$				

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			125	$^\circ\text{C}/\text{W}$
	$R_{th(ch-c)}$	channel to case			1,56	$^\circ\text{C}/\text{W}$

N-channel MOS-FET			
800V	4Ω	3A	80W

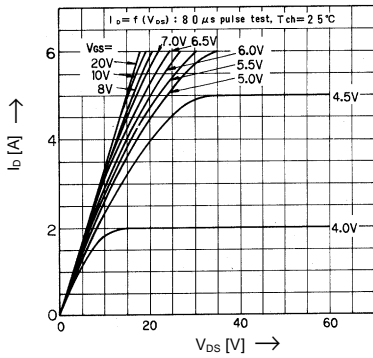
# 2SK1663-L,S

## F-I Series

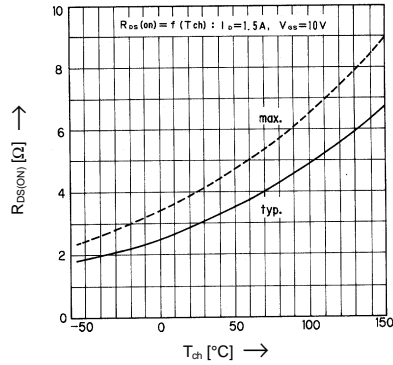
**FUJI**  
ELECTRIC

### > Characteristics

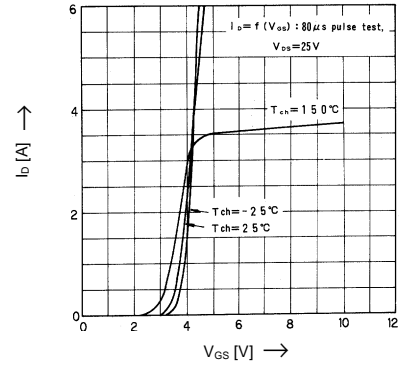
Typical Output Characteristics



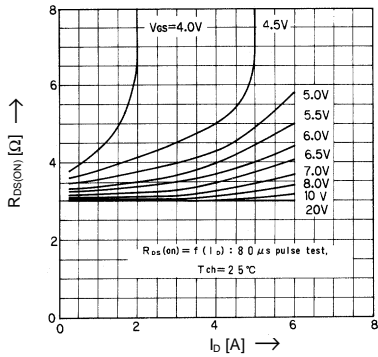
Drain-Source-On-State Resistance vs.  $T_{ch}$



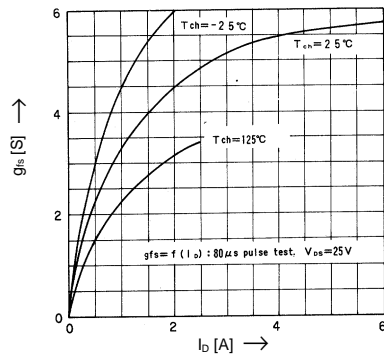
Typical Transfer Characteristics



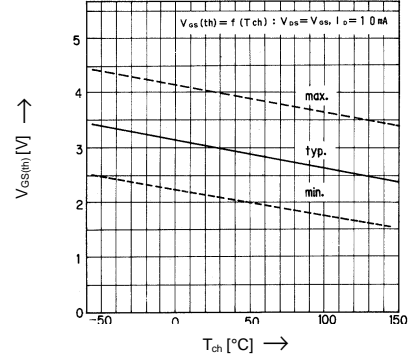
Typical Drain-Source-On-State-Resistance vs.  $I_D$



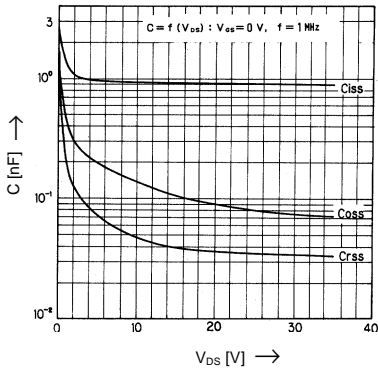
Typical Forward Transconductance vs.  $I_D$



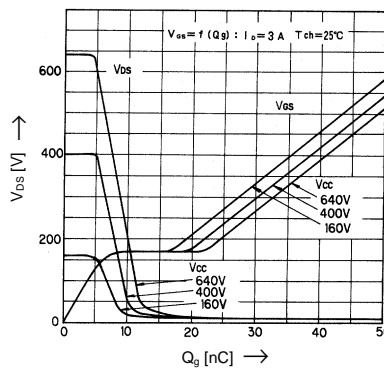
Gate Threshold Voltage vs.  $T_{ch}$



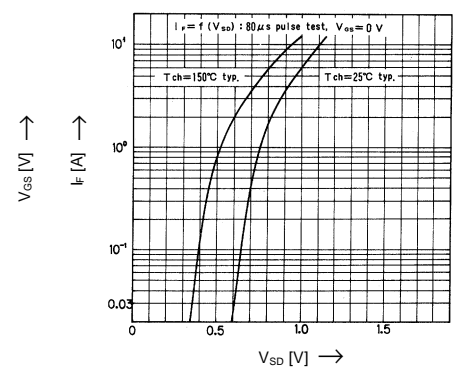
Typical Capacitance vs.  $V_{DS}$



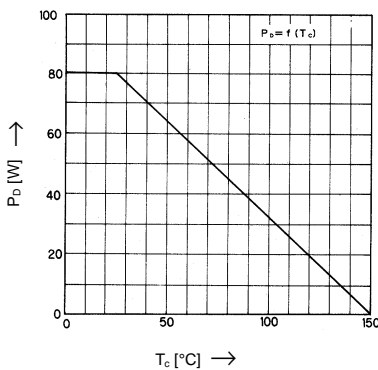
Typical Input Charge



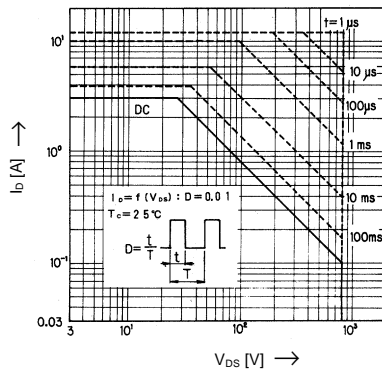
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs.  $T_C$



Safe operation area



Transient Thermal impedance

