

# 2SK971

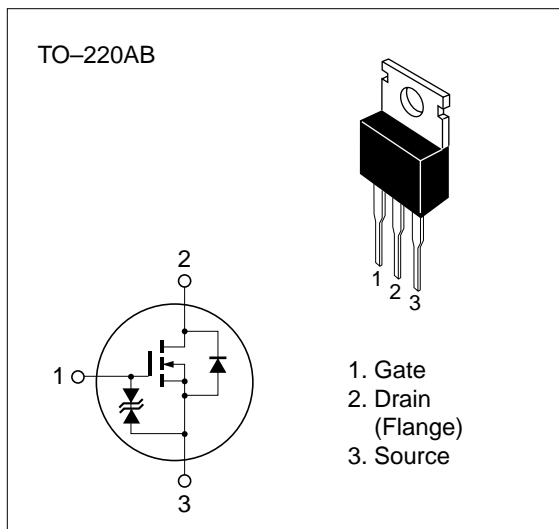
## Silicon N-Channel MOS FET

### Application

High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device  
– Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive



**Table 1 Absolute Maximum Ratings** (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	15	A
Drain peak current	I <sub>D(pulse)</sub> *	60	A
Body to drain diode reverse drain current	I <sub>DR</sub>	15	A
Channel dissipation	P <sub>ch</sub> **	40	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

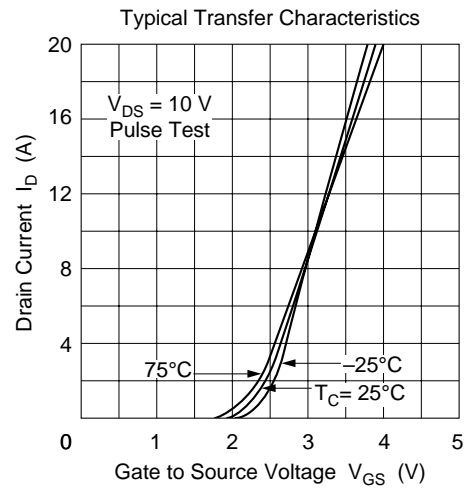
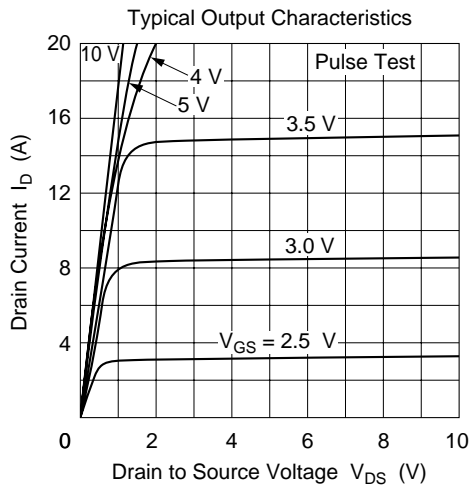
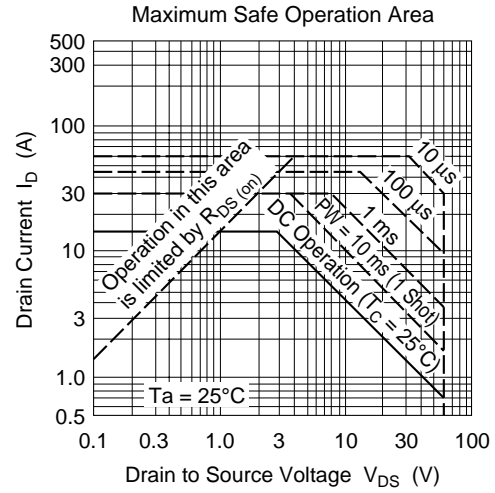
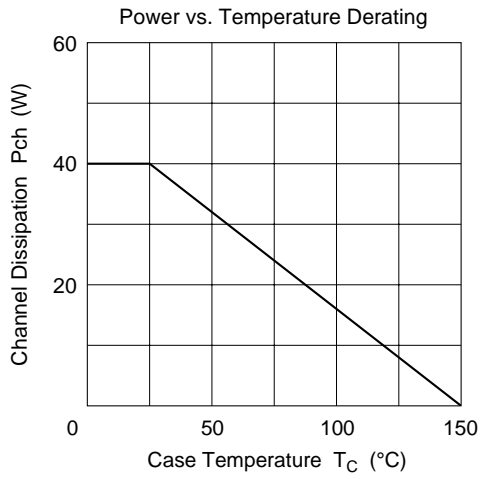
\* PW ≤ 10 μs, duty cycle ≤ 1 %

\*\* Value at T<sub>C</sub> = 25 °C

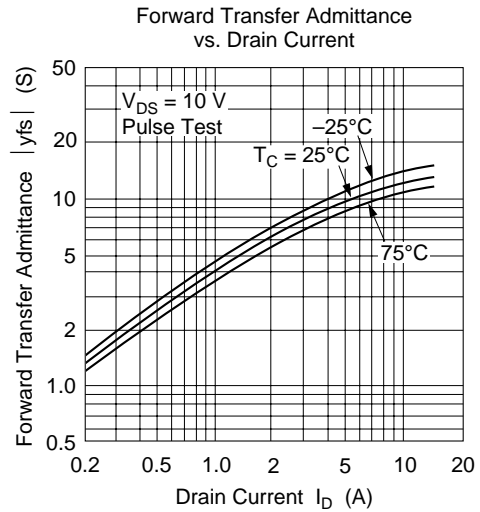
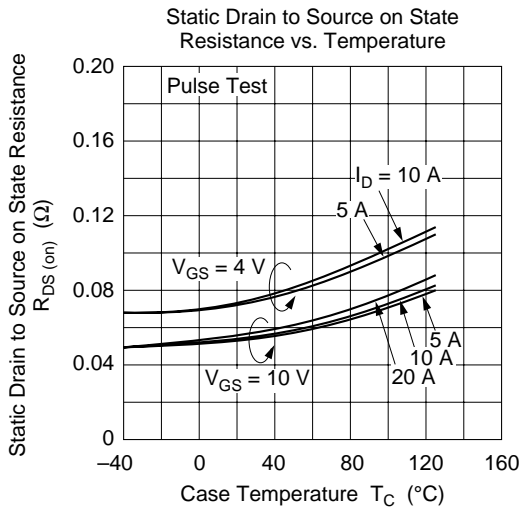
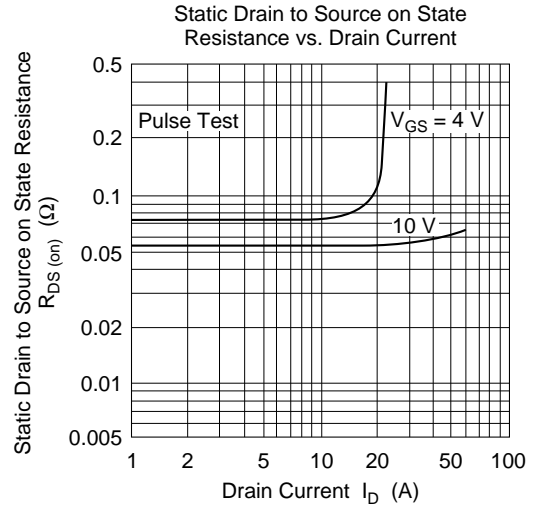
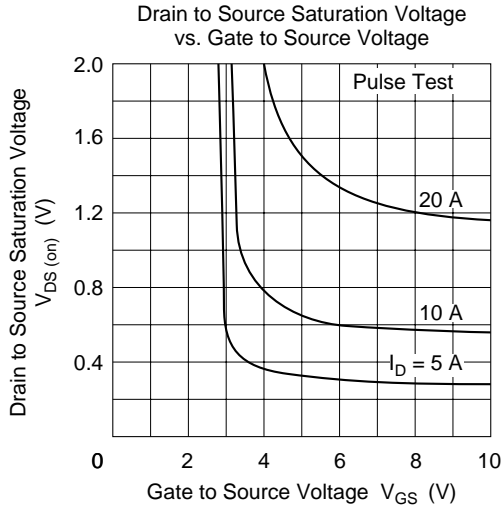
**Table 2 Electrical Characteristics** (Ta = 25°C)

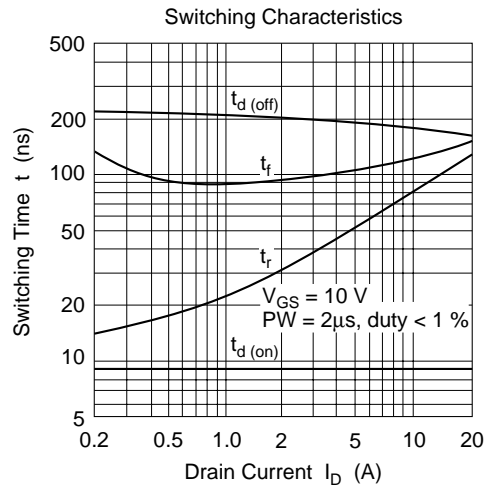
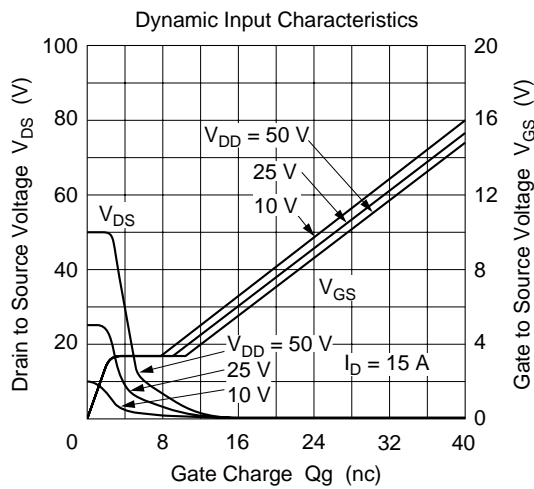
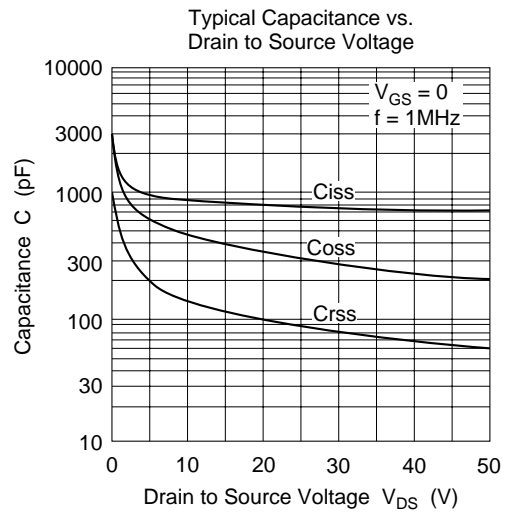
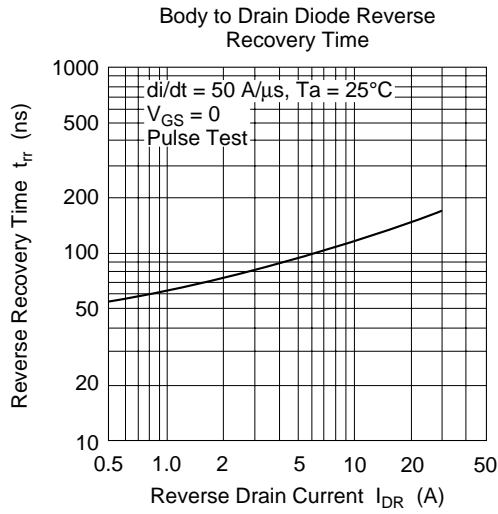
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	μA	$V_{DS} = 50 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.055	0.065	Ω	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V}^*$
			0.075	0.095		$I_D = 8 \text{ A}, V_{GS} = 4 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	7	12	—	S	$I_D = 8 \text{ A}, V_{DS} = 10 \text{ V}^*$
Input capacitance	$C_{iss}$	—	860	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	$C_{oss}$	—	450	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	140	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	$t_r$	—	70	—	ns	$R_L = 3.75 \Omega$
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	
Fall time	$t_f$	—	120	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.3	—	V	$I_F = 15 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	135	—	ns	$I_F = 15 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

\* Pulse Test



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