

Small switching (30V, 0.1A)

● Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Low voltage drive (2.5V) makes this device ideal for portable equipment.
- 4) Easily designed drive circuits.
- 5) Easy to parallel.

● Applications

Interfacing, switching (30V, 100mA)

● Structure

Silicon N-channel
MOSFET

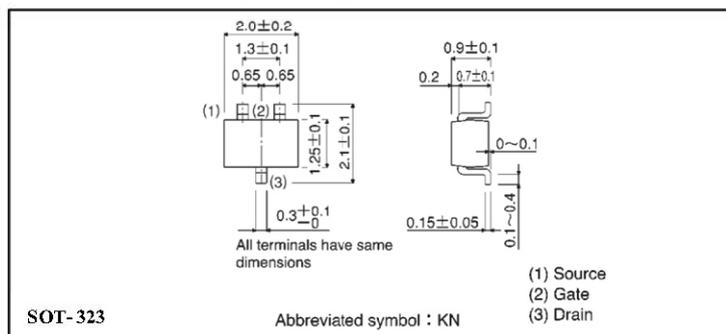
● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	30	V	
Gate-source voltage	V _{GSS}	±20	V	
Drain current	Continuous	I _D	100	mA
	Pulsed	I _{DP} *1	200	mA
Reverse drain current	Continuous	I _{DR}	100	mA
	Pulsed	I _{DRP} *1	200	mA
Total power dissipation (Tc=25°C)	P _D *2	200	mW	
Channel temperature	T _{ch}	150	°C	
Storage temperature	T _{stg}	-55~+150	°C	

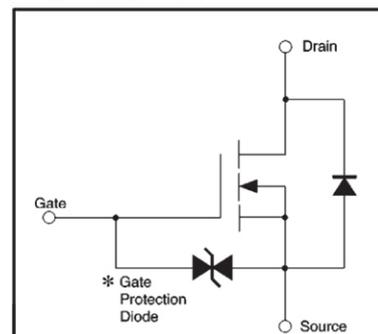
*1 Pw ≤ 10 μs, Duty cycle ≤ 50%

*2 With each pin mounted on the recommended lands.

● External dimensions (Units: mm)



● Equivalent circuit



*A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use. Use a protection circuit when the fixed voltages are exceeded.



● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I _{GSS}	—	—	±1	μA	V _{GS} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	30	—	—	V	I _D =10 μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} =30V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	0.8	—	1.5	V	V _{DS} =3V, I _D =100 μA
Static drain-source on-state resistance	R _{DS(on)}	—	5	8	Ω	I _D =10mA, V _{GS} =4V
	R _{DS(on)}	—	7	13	Ω	I _D =1mA, V _{GS} =2.5V
Forward transfer admittance	Y _{fs}	20	—	—	mS	V _{DS} =3V, I _D =10mA
Input capacitance	C _{iss}	—	13	—	pF	V _{DS} =5V
Output capacitance	C _{oss}	—	9	—	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	—	4	—	pF	f=1MHz
Turn-on delay time	t _{d(on)}	—	15	—	ns	I _D =10mA, V _{DD} ≐5V
Rise time	t _r	—	35	—	ns	V _{GS} =5V
Turn-off delay time	t _{d(off)}	—	80	—	ns	R _L =500Ω
Fall time	t _f	—	80	—	ns	R _{GS} =10Ω

● Electrical characteristic curves

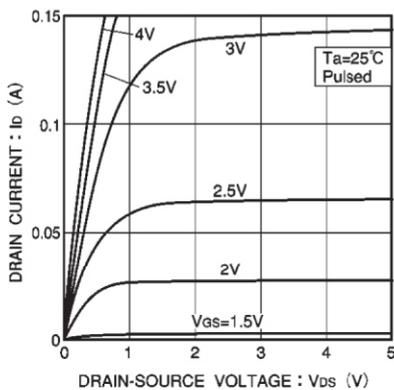


Fig.1 Typical output characteristics

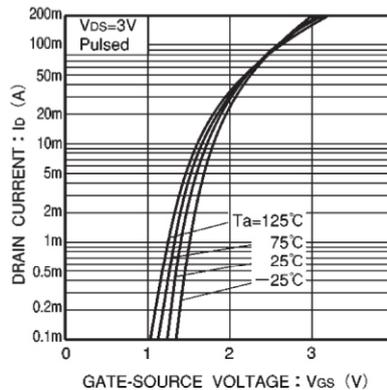


Fig.2 Typical transfer characteristics

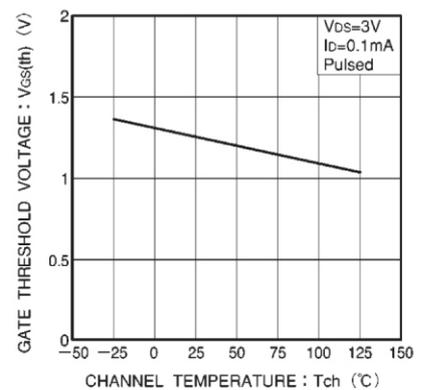


Fig.3 Gate threshold voltage vs. channel temperature



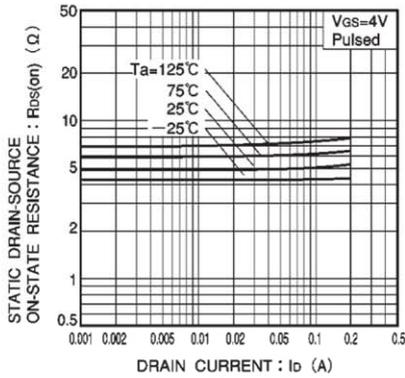


Fig.4 Static drain-source on-state resistance vs. drain current (I)

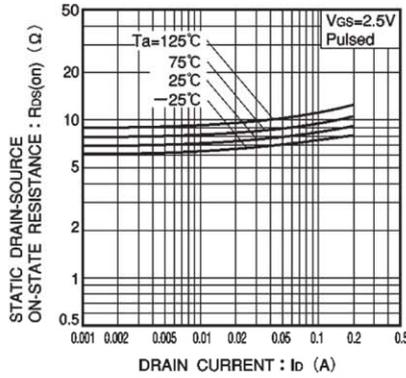


Fig.5 Static drain-source on-state resistance vs. drain current (II)

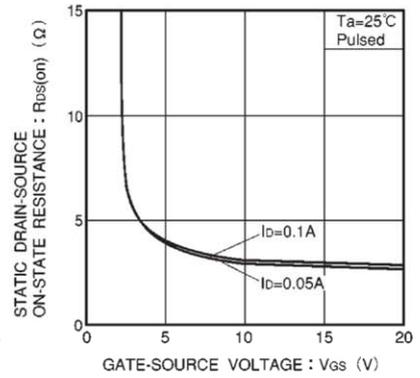


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

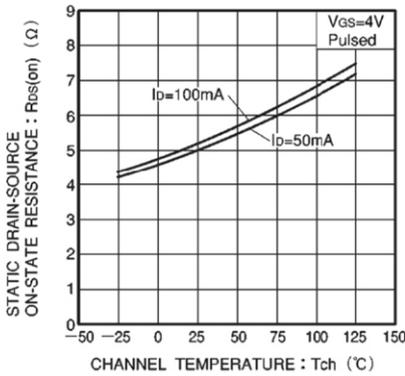


Fig.7 Static drain-source on-state resistance vs. channel temperature

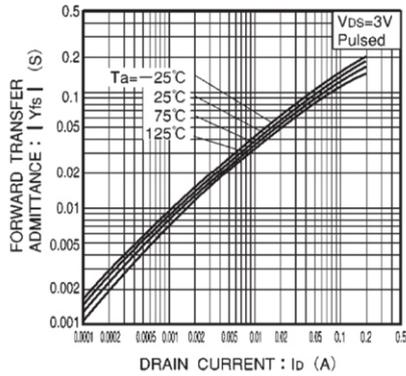


Fig.8 Forward transfer admittance vs. drain current

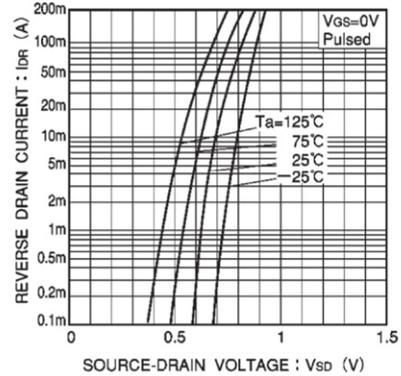


Fig.9 Reverse drain current vs. source-drain voltage (I)

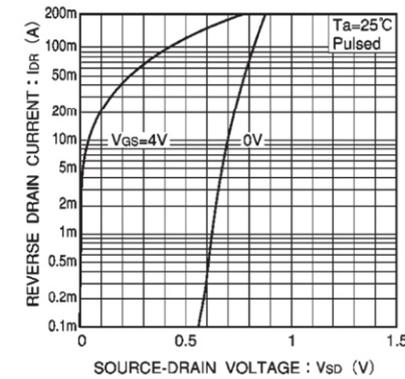


Fig.10 Reverse drain current vs. source-drain voltage (II)

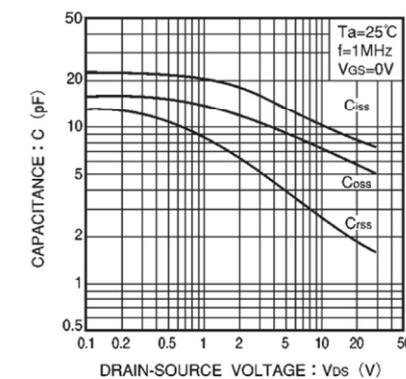


Fig.11 Typical capacitance vs. drain-source voltage

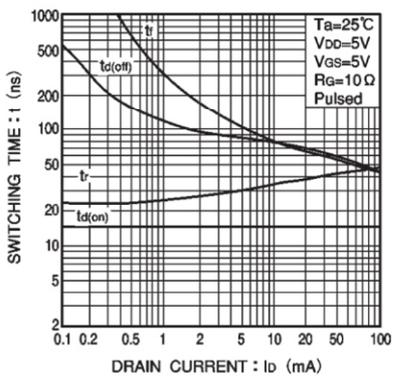


Fig.12 Switching characteristics