

10V Drive Nch MOSFET

R8002ANX

Structure

Silicon N-channel MOSFET

Features

- 1) Low on-resistance.
- 2) Low input capacitance.
- 3) High ESD.

Application

Switching

Packaging specifications

	Package	Bulk	
Type	Code	-	
	Basic ordering unit (pieces)	500	
R8002ANX	0		

● Absolute maximum ratings (Ta = 25°C)

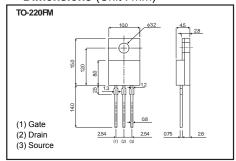
Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	800	V
Gate-source voltage		V_{GSS}	±30	V
Drain current	Continuous	I _D *3	±2	Α
Dialii Current	Pulsed	I _{DP} *1	±8	Α
Source current	Continuous	I _S *3	2	Α
(Body Diode)	Pulsed	I _{SP} *1	8	Α
Avalanche current		I _{AS} *2	1	Α
Avalanche energy		E _{AS} *2	0.265	mJ
Power dissipation		P _D *4	35	W
Channel temperature		T _{ch}	150	°C
Range of storage temperature		T _{stg}	-55 to +150	°C

^{*1} Pw≤10μs, Duty cycle≤1%

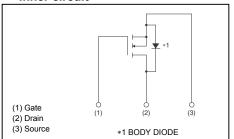
• Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	R _{th (ch-c)}	3.57	°C / W

Dimensions (Unit : mm)



• Inner circuit



^{*2} L = 500 μ H, V_{DD}=50V, R_G=25 Ω , T_{ch}=25°C

^{*3} Limited only by maximum channel temperature allowed.

^{*4} T_C=25°C

● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}		-	±100	nA	$V_{GS}=\pm30V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	800	1	1	>	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	1	1	100	μA	V _{DS} =800V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	3.0	1	5.0	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS (on)}	-	3.3	4.3	Ω	I _D =1.0A, V _{GS} =10V
Forward transfer admittance	I Y _{fs} I*	0.5	1	1	S	V _{DS} =10V, I _D =1.0A
Input capacitance	C _{iss}	1	210	1	pF	V _{DS} =25V
Output capacitance	C _{oss}	-	130	-	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	1	14	1	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	i	17	-	ns	V _{DD} ≒400V, I _D =1.0A
Rise time	t _r *	-	20	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	1	33	1	ns	R_L =400 Ω
Fall time	t _f *	-	70	-	ns	R_G =10 Ω
Total gate charge	Q _g *	-	12.7	-	nC	V _{DD} ≒400V
Gate-source charge	Q _{gs} *	ı	2.7	-	nC	I _D =2.0A
Gate-drain charge	Q _{gd} *	-	4.3	-	nC	V _{GS} =10V

^{*}Pulsed

●Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward Voltage	V _{SD} *	-	-	1.5	V	I _S =2.0A, V _{GS} =0V

^{*}Pulsed

●Electrical characteristic curves (Ta=25°C)

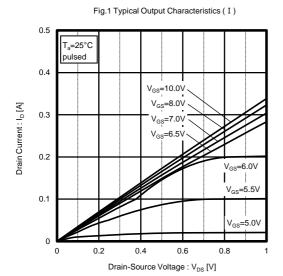


Fig.3 Typical Transfer Characteristics

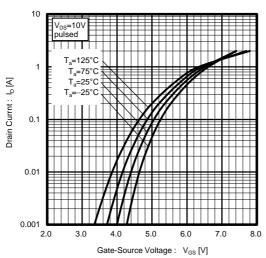


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

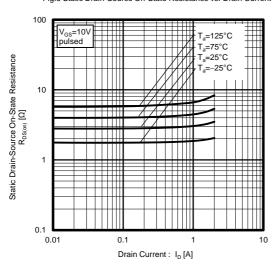


Fig.2 Typical Output Characteristics (II)

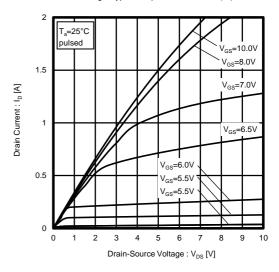


Fig.4 Gate Threshold Voltage vs. Channel Temperature

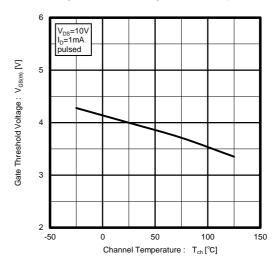


Fig.6 Static Drain-Source On-State Resistance vs. Channel Temperature

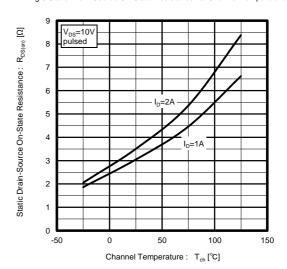


Fig.7 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

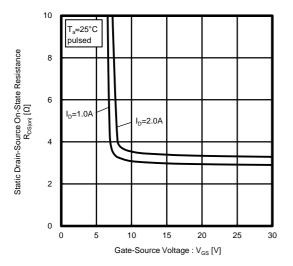


Fig.8 Forward Transfer Admittance vs. Drain Current

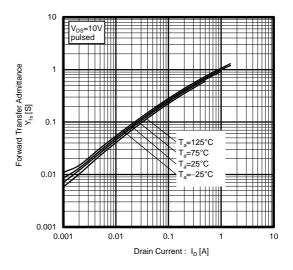


Fig.9 Source Current vs. Source-Drain Voltage

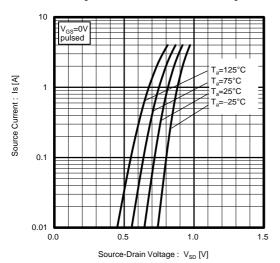


Fig.10 Typical Capacitance vs. Drain-Source Voltage

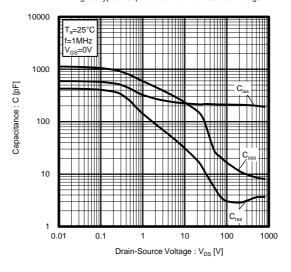


Fig.11 Switching Characteristics

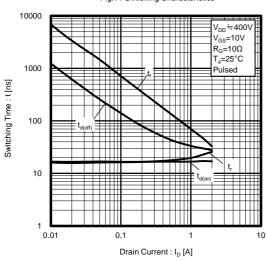


Fig.12 Dynamic Input Characteristics

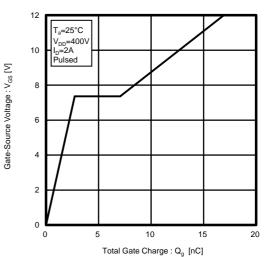
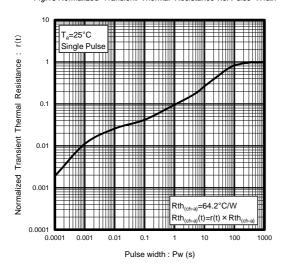


Fig.13 Normalized Transient Thermal Resistance v.s. Pulse Width



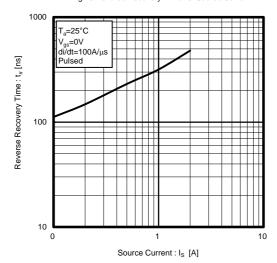
Operation in this area is limited by $R_{DS(cn)}$ ($V_{OS}=10V$) $V_{OS}=10V$) $V_{OS}=10V$ $V_{OS}=10V$

Fig.14 Maximum Safe Operating Area

100

Γ_a=25°C

Fig.15 Reverse Recovery Time vs. Source Current



Measurement circuits

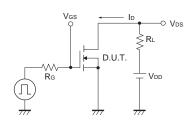


Fig.1-1 Switching Time Measurement Circuit

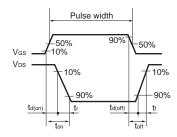


Fig.1-2 Switching Waveforms

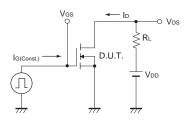


Fig.2-1 Gate Charge Measurement Circuit

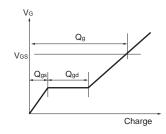


Fig.2-2 Gate Charge Waveform

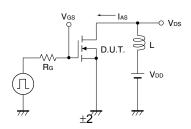


Fig.3-1 Avalanche Measurement Circuit

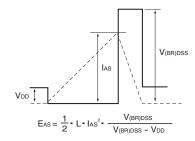


Fig.3-2 Avalanche Waveform

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