

# 10V Drive Nch MOSFET

## R8008ANX

### ● Structure

Silicon N-channel MOSFET

### ● Features

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

### ● Application

Switching

### ● Packaging specifications

Type	Package	Bulk
	Code	-
	Basic ordering unit (pieces)	500
R8008ANX		○

### ● 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	$I_D^{*3}$	±8	A
	Pulsed	$I_{DP}^{*1}$	±32	A
Source current (Body Diode)	Continuous	$I_S^{*3}$	8	A
	Pulsed	$I_{SP}^{*1}$	32	A
Avalanche current	$I_{AS}^{*2}$	4	A	
Avalanche energy	$E_{AS}^{*2}$	4.2	mJ	
Power dissipation	$P_D^{*4}$	50	W	
Channel temperature	$T_{ch}$	150	°C	
Range of storage temperature	$T_{stg}$	-55 to +150	°C	

\*1  $P_w \leq 10 \mu s$ , Duty cycle  $\leq 1\%$

\*2  $L = 500 \mu H$ ,  $V_{DD} = 50V$ ,  $R_G = 25 \Omega$ ,  $T_{ch} = 25^\circ C$

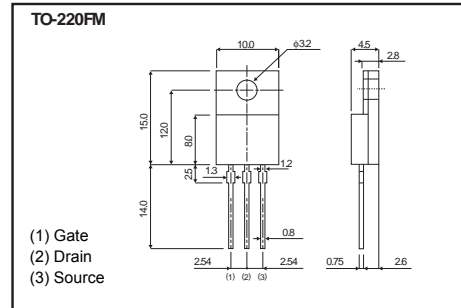
\*3 Limited only by maximum channel temperature allowed.

\*4  $T_C = 25^\circ C$

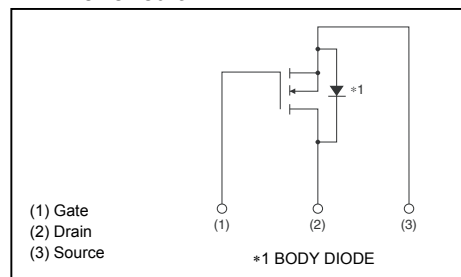
### ● Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	$R_{th(ch-c)}$	2.5	°C / W

### ● Dimensions (Unit : mm)



### ● Inner circuit



## ● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	-	-	±100	nA	$V_{GS}=\pm 30V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	800	-	-	V	$I_D=1mA, V_{GS}=0V$
Zero gate voltage drain current	$I_{DSS}$	-	-	100	μA	$V_{DS}=800V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	3.0	-	5.0	V	$V_{DS}=10V, I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}$ *	-	0.79	1.03	Ω	$I_D=4.0A, V_{GS}=10V$
Forward transfer admittance	$ Y_{fs} $ *	2.0	-	-	S	$V_{DS}=10V, I_D=4.0A$
Input capacitance	$C_{iss}$	-	1080	-	pF	$V_{DS}=25V$
Output capacitance	$C_{oss}$	-	480	-	pF	$V_{GS}=0V$
Reverse transfer capacitance	$C_{rss}$	-	32	-	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}$ *	-	32	-	ns	$V_{DD}\approx 400V, I_D=4.0A$
Rise time	$t_r$ *	-	50	-	ns	$V_{GS}=10V$
Turn-off delay time	$t_{d(off)}$ *	-	85	-	ns	$R_L=100\Omega$
Fall time	$t_f$ *	-	30	-	ns	$R_G=10\Omega$
Total gate charge	$Q_g$ *	-	39	-	nC	$V_{DD}\approx 400V$
Gate-source charge	$Q_{gs}$ *	-	8.7	-	nC	$I_D=8.0A$
Gate-drain charge	$Q_{gd}$ *	-	23	-	nC	$V_{GS}=10V$

\*Pulsed

## ● Body diode characteristics (Source-Drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	$V_{SD}$ *	-	-	1.5	V	$I_S=8.0A, V_{GS}=0V$

\*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Typical Output Characteristics ( I )

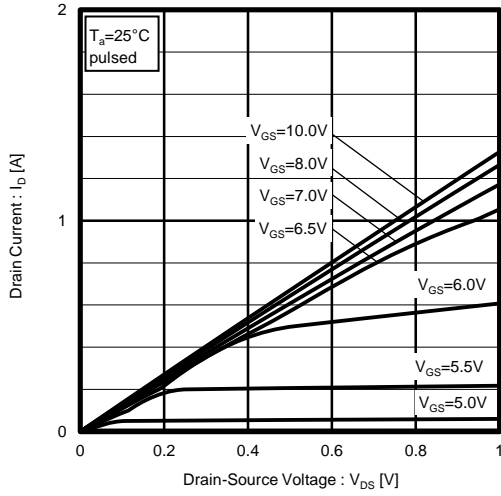


Fig.2 Typical Output Characteristics ( II )

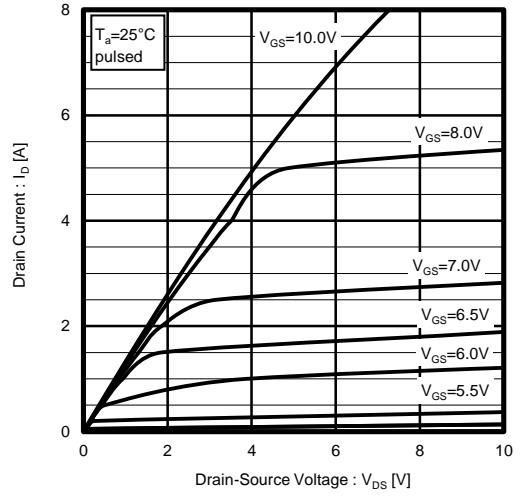


Fig.3 Typical Transfer Characteristics

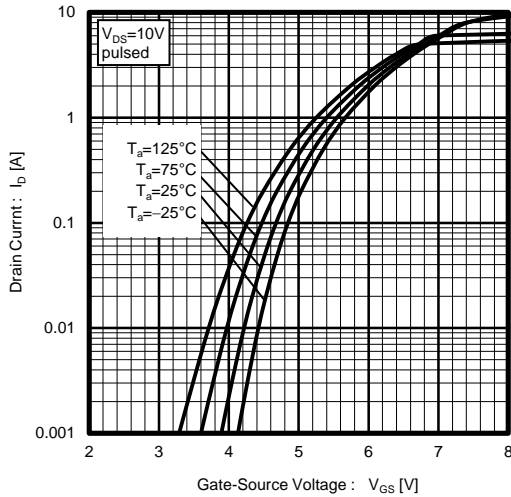


Fig.4 Gate Threshold Voltage vs. Channel Temperature

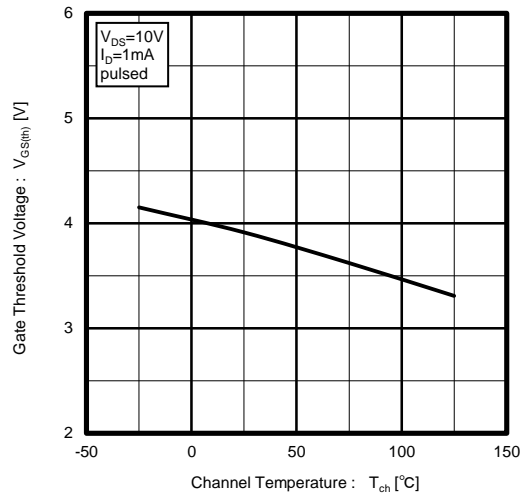


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

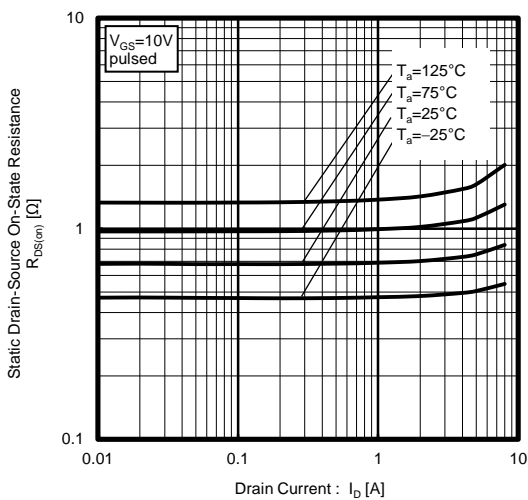


Fig.6 Static Drain-Source On-State Resistance vs. Channel Temperature

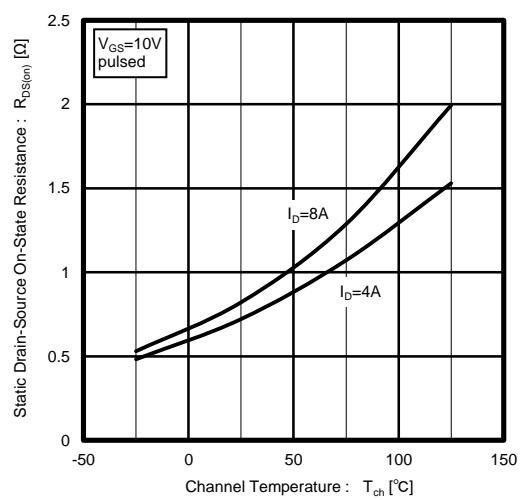


Fig.7 Forward Transfer Admittance vs. Drain Current

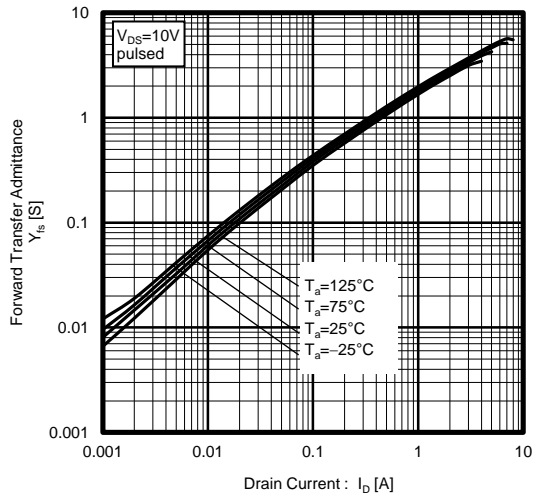


Fig.8 Source Current vs. Source-Drain Voltage

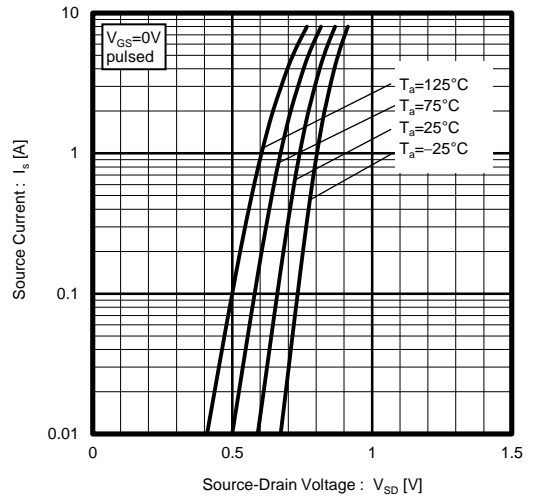
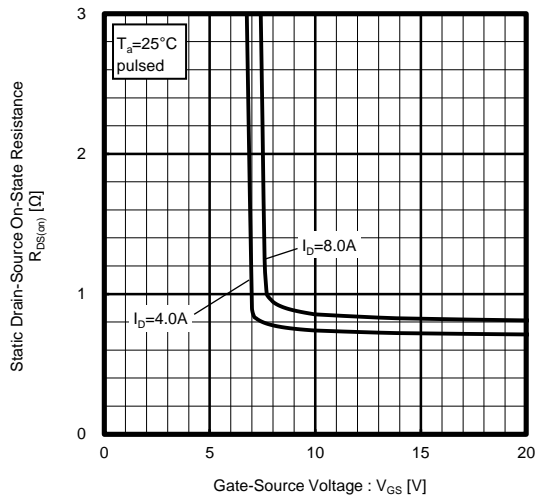


Fig.9 Static Drain-Source On-State Resistance vs. Gate-Source Voltage



● Measurement circuits

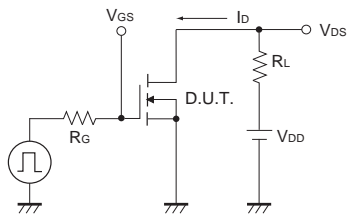


Fig.1-1 Switching Time Measurement Circuit

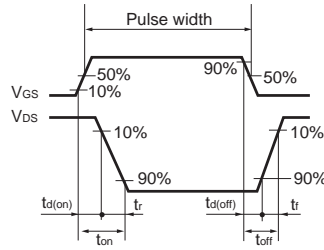


Fig.1-2 Switching Waveforms

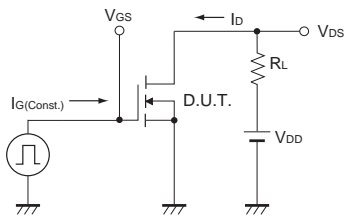


Fig.2-1 Gate Charge Measurement Circuit

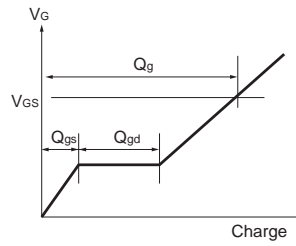


Fig.2-2 Gate Charge Waveform

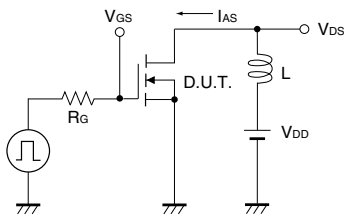


Fig.3-1 Avalanche Measurement Circuit

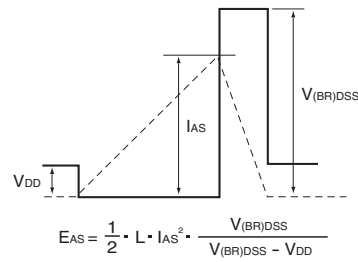


Fig.3-2 Avalanche Waveform

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