

10V Drive Nch MOSFET

R5007ANX

Structure

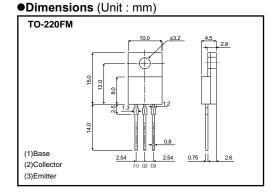
Silicon N-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Wide SOA (safe operating area).
- 4) Gate-source voltage (VGSS) guaranteed to be ±30V.
- 5) Drive circuits can be simple.
- 6) Parallel use is easy.

Applications

Switching



Packaging specifications

	Package	Bulk
	Code	_
Туре	Basic ordering unit (pieces)	500
R5007	0	

●Absolute maximum ratings (Ta=25°C)

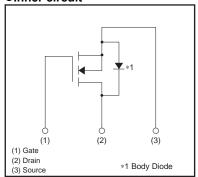
Parameter		Symbol		Limits	Unit
Drain-source voltage	Voss		500	V	
Gate-source voltage		Vgss		±30	V
Drain current	Continuous	lo *	*3	±7	Α
	Pulsed	I _{DP}	*1	±28	А
Source current (Body Diode)	Continuous	ls *	*3	7	Α
	Pulsed	Isp *	*1	28	Α
Avalanche Current	las *	*2	3.5	Α	
Avalanche Energy	Eas *	*2	3.2	mJ	
Total power dissipation (Tc=25°C)		Po		40	W
Channel temperature	Tch		150	°C	
Range of storage tem	Tstg		-55 to +150	°C	

- *1 Pw≤10μs, Duty cycle≤1% *2 L≒ 500μH, Vob=50V, Re=25Ω, Starting, Tch=25°C *3 Limited only by maximum tempterature allowed

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to case	Rth(ch-c)	3.13	°C/W

•Inner circuit



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Gate-source leakage	Igss	_	_	±100	nA	Vgs=±30V, Vps=0V	
Drain-source breakdown voltage	V(BR)DSS	500	_	_	V	ID=1mA, VGS=0V	
Zero gate voltage drain current	loss	_	_	100	μΑ	Vps=500V, Vgs=0V	
Gate threshold voltage	VGS(th)	2.5	_	4.5	V	Vps=10V, Ip=1mA	
Static drain-source on-state resistance	RDS(on)*	_	0.8	1.05	Ω	ID=3.5A, VGS=10V	
Forward transfer admittance	Yfs *	2.5	_	_	S	ID=3.5A, VDS=10V	
Input capacitance	Ciss	_	500	_	pF	Vps=25V	
Output capacitance	Coss	_	300	_	pF	Vgs=0V	
Reverse transfer capacitance	Crss	_	23	_	pF	f=1MHz	
Turn-on delay time	td(on) *	_	20	_	ns	ID=3.5A, VDD≒250V	
Rise time	tr *	_	22	_	ns	Vgs=10V	
Turn-off delay time	td(off) *	_	50	_	ns	RL=71.4Ω	
Fall time	t _f *	_	25	_	ns	R _G =10Ω	
Total gate charge	Qg *	_	13	_	nC	V _{DD} ≒250V	
Gate-source charge	Qgs *	_	3.5	_	nC	I _D =7A V _G s=10V R _L =35.7Ω / R _G =10Ω	
Gate-drain charge	Qgd *	_	5.5	_	nC		

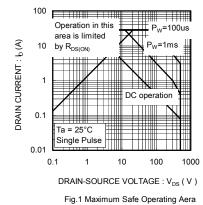
^{*} Pulsed

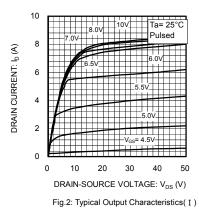
●Body diode characteristics (Source-drain) (Ta=25°C)

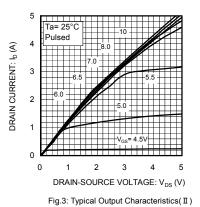
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward voltage	Vsp*	_	_	1.5	V	I _S = 7A, V _{GS} =0V

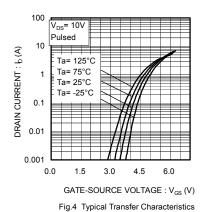
^{*} Pulsed

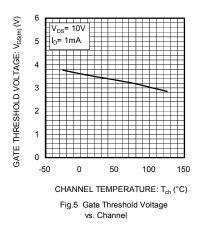
•Electrical characteristic curves

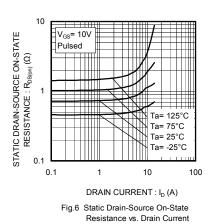


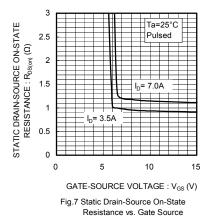


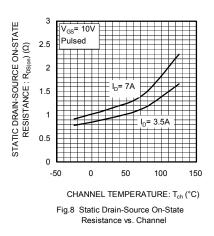


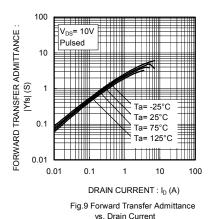


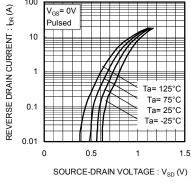


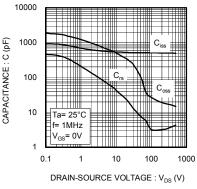












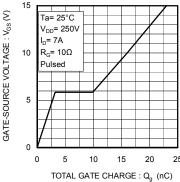
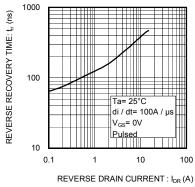


Fig.10 Reverse Drain Current vs Sourse-Drain Voltage

Fig.11 Typical Capacitance vs.
Drain-Source Voltage

Fig.12 Dynamic Input Characteristics



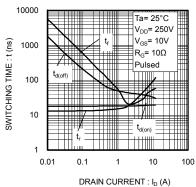


Fig.13 Reverse Recovery Time vs.Reverse Drain Current

Fig.14 Switching Characteristics

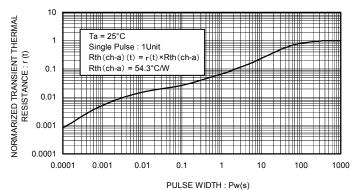


Fig.15 Normalized Transient Thermal Resistance vs. Pulse Width

•Switching characteristics measurement circuit

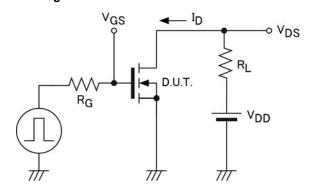
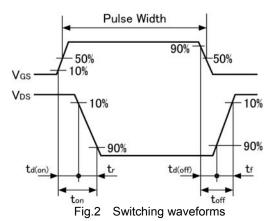


Fig.1 Switching time measurement circuit



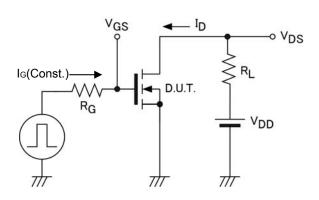


Fig.3 Gate charge measurement circuit

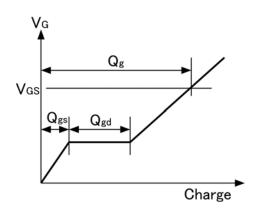


Fig.4 Gate charge waveform

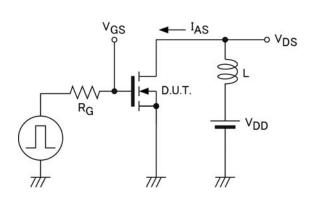


Fig.5 Avalanche measurement circuit

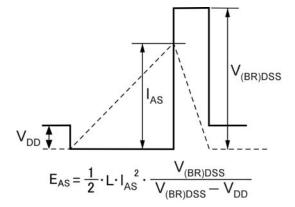


Fig.6 Avalanche waveform

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