

10V Drive Nch MOS FET

RDX120N50

●Structure

Silicon N-channel MOS FET

●Features

- 1) Low on-resistance.
- 2) Low input capacitance.
- 3) Excellent resistance to damage from static electricity.

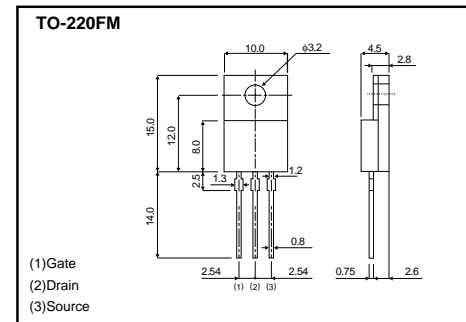
●Applications

Switching

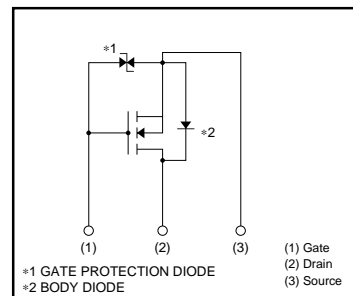
●Packaging specifications

Type	Package	Bulk
	Code	—
	Basic ordering unit (pieces)	500
RDX120N50		○

●External dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DS}	500	V	
Gate-source voltage	V_{GS}	± 30	V	
Drain current	Continuous	I_D *1	± 12	A
	Pulsed	I_{DP} *2	± 48	A
Source current (Body diode)	Continuous	I_S	12	A
	Pulsed	I_{SP} *2	48	A
Avalanche current	I_{AS} *3	12	A	
Avalanche energy	E_{AS} *4	260	mJ	
Total power dissipation (Tc=25°C)	P_D	45	W	
Channel temperature	Tch	150	°C	
Range of storage temperature	Tstg	-55 to +150	°C	

*1 Limited only by maximum temperature allowed *2 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

*3 $L \leq 3.1mH$ $V_{DD}=90V$ $R_g=25\Omega$ *4 $L \leq 3.1mH$ $V_{DD}=90V$ $R_g=25\Omega$ starting Tch=25°C

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to case	Rth(ch-c)	2.78	°C/W

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	±10	μA	V _{GS} = ±25V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR) DSS}	500	–	–	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	25	μA	V _{DS} = 500V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	2.0	–	4.0	V	V _{DS} = 10V, I _D = 1mA
Static drain-source on-state resistance	R _{DS (on)} *	–	0.38	0.5	Ω	I _D = 6A, V _{GS} = 10V
Forward transfer admittance	Y _{fs} *	5.0	8.0	–	S	V _{DS} = 10V, I _D = 6A
Input capacitance	C _{iss}	–	1600	–	pF	V _{DS} = 25V
Output capacitance	C _{oss}	–	200	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	35	–	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	–	25	–	ns	V _{DD} ≐ 150V I _D = 6A
Rise time	t _r *	–	17	–	ns	V _{GS} = 10V
Turn-off delay time	t _{d (off)} *	–	80	–	ns	R _L = 25Ω
Fall time	t _f *	–	44	–	ns	R _G =10Ω
Total gate charge	Q _g *	–	45	–	nC	V _{DD} ≐ 250V
Gate-source charge	Q _{gs} *	–	8	–	nC	V _{GS} = 10V
Gate-drain charge	Q _{gd} *	–	15	–	nC	I _D = 12A

* Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	–	–	1.5	V	I _S = 12A, V _{GS} =0V
Reverse recovery time	t _{rr}	–	550	–	ns	I _{DR} = 12A, V _{GS} =0V
Reverse recovery charge	Q _{rr}	–	4.7	–	μC	di/dt= 100A / μs

* Pulsed

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