

Transistors

10V Drive Nch MOS FET

RDX050N50

●Structure

Silicon N-channel MOS FET

●Features

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

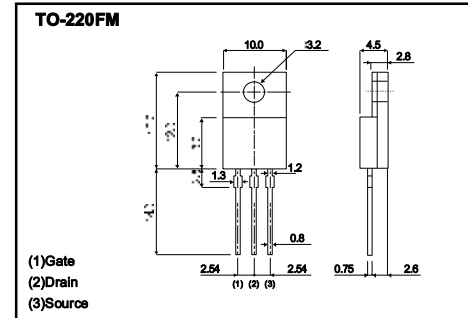
●Applications

Switching

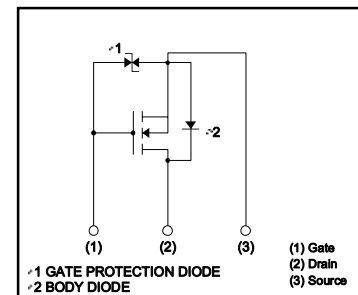
●Packaging specifications

Type	Package	Bulk
	Code	—
	Basic ordering unit (pieces)	500
RDX050N50		○

●External dimensions (Unit : mm)



●Inner circuit

●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V_{DS}	500	V	
Gate-source voltage	V_{GS}	± 30	V	
Drain current	Continuous	I_D *1	± 5	A
	Pulsed	I_{DP} *2	± 20	A
Source current (Body diode)	Continuous	I_S	5	A
	Pulsed	I_{SP} *2	20	A
Avalanche current	I_{AS} *3	5	A	
Avalanche energy	E_{AS} *4	46	mJ	
Total power dissipation ($T_c=25^\circ\text{C}$)	P_D	35	W	
Channel temperature	T_{ch}	150	$^\circ\text{C}$	
Range of storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

*1 Limited only by maximum temperature allowed *2 $P_w \leq 10\mu\text{s}$, Duty cycle $\leq 1\%$
 *3 $L = 3.2\text{mH}$ $V_{DS}=90\text{V}$ $R_g=25\Omega$ *4 $L = 3.2\text{mH}$ $V_{DS}=90\text{V}$ $R_g=25\Omega$; starting $T_{ch}=25^\circ\text{C}$

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to case	$R_{th(ch-c)}$	3.57	$^\circ\text{C/W}$

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)}	–	1.1	1.5	Ω	I _D = 2.5A, V _{GS} = 10V
Forward transfer admittance	Y _{fs}	2.0	3.0	–	S	V _{DS} = 10V, I _D = 2.5A
Input capacitance	C _{iss}	–	500	–	pF	V _{DS} = 25V
Output capacitance	C _{oss}	–	100	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	25	–	pF	f=1MHz
Turn-on delay time	t _{d(on)}	–	15	–	ns	V _{DD} = 150V I _D = 2.5A
Rise time	t _r	–	20	–	ns	V _{GS} = 10V
Turn-off delay time	t _{d(off)}	–	40	–	ns	R _L = 60Ω
Fall time	t _f	–	28	–	ns	R _G =10Ω
Total gate charge	Q _G	–	16	–	nC	V _{DD} = 250V, V _{GS} = 10V
Gate-source charge	Q _{GS}	–	4	–	nC	I _D = 5A
Gate-drain charge	Q _{GD}	–	8.5	–	nC	R _L = 50Ω, R _G = 10Ω

· 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 = 5A, V _{GS} =0V
Reverse recovery time	t _{rr}	–	340	–	ns	I _{DR} = 5A, V _{GS} =0V
Reverse recovery charge	Q _{rr}	–	2.2	–	μC	di/dt= 100A / μs

· Pulsed

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