

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.

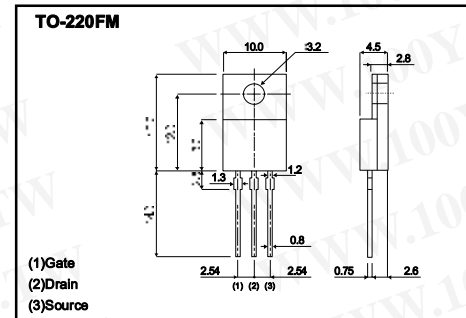
●Applications

Switching

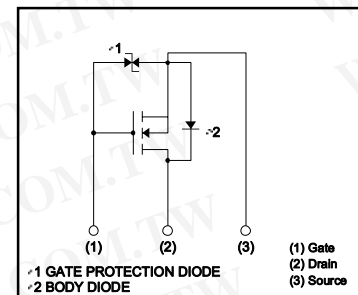
●Packaging specifications

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

●External dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V _{DS}	500	V
Gate-source voltage	V _{GS}	±30	V
Drain current	I _D ①	±5	A
	I _{DP} ②	±20	A
Source current (Body diode)	I _S	5	A
	I _{SP} ③	20	A
Avalanche current	I _{AS} ④	5	A
Avalanche energy	E _{AS}	46	mJ
Total power dissipation (Tc=25°C)	P _D	35	W
Channel temperature	T _{ch}	150	°C
Range of storage temperature	T _{stg}	−55 to +150	°C

① Limited only by maximum temperature allowed ② P_w ≤ 10μs, Duty cycle ≤ 1%
③ L ≤ 3.2mH V_{DS}=90V R_g=25Ω ④ L ≤ 3.2mH V_{DS}=90V R_g=25Ω starting T_{ch}=25°C

●Thermal resistance

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

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RDX050N50

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 25V, V_{DS} = 0V$
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	$R_L = 60\Omega$
Fall time	t_f	—	28	—	ns	$R_G = 10\Omega$
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	$R_L = 50\Omega, R_G = 10\Omega$

· 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	$di/dt = 100A/\mu s$

· Pulsed

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