10V Drive Nch MOS FET

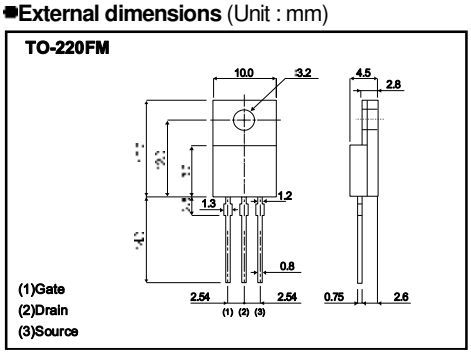
RDX050N50

●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

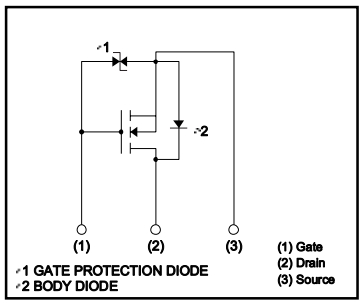
●External dimensions (Unit : mm)



●Packaging specifications

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

●Inner circuit



●Absolute maximum ratings (Ta=25℃)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	500	V
Gate-source voltage		V_{GSS}	±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 (Tc=25°C)		P_D	35	W
Channel temperature		Tch	150	°C
Range of storage temperature		Tstg	–55 to +150	°C

*1 Limited only by maximum temperature allowed *2 Pw ≤10μs, Duty cycle≤ 1%
*3 L ≒ 3.2mH V_{DD}=90V Rg=25Ω *4 L ≒ 3.2mH V_{DD}=90V Rg=25Ω starting Tch=25°C

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to case	Rth(ch-c)	3.57	°C/W

●**Electrical characteristics** (Ta=25℃)

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
Rise time	t_r *	–	20	–	ns	I_D= 2.5A
Turn-off delay time	$t_{d\,(off)}$ *	–	40	–	ns	V_{GS}= 10V 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=25ºC)

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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