

RDX045N60

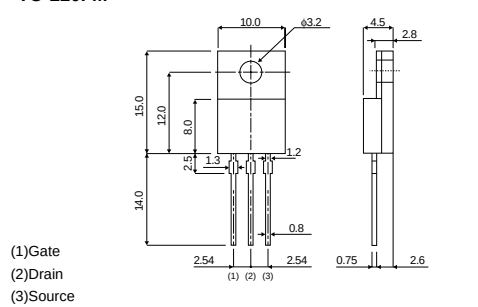
Silicon N-channel MOS FET

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

Switching

Type	Package	Bulk
	Code	—
	Basic ordering unit (pieces)	500
RDX045N60		○

TO-220FM



The diagram shows a MOSFET with three terminals: (1) Gate, (2) Drain, and (3) Source. A diode labeled *1 is connected between the Gate and Drain terminals, with its cathode towards the Gate. Another diode labeled *2 is connected between the Drain and Source terminals, with its cathode towards the Drain. This configuration represents the internal protection diodes of a MOSFET.

(1) Gate
(2) Drain
(3) Source

*1 GATE PROTECTION DIODE
*2 BODY DIODE

Parameter		Symbol	Limits	Unit
Drain-source voltage		V _{DSS}	600	V
Gate-source voltage		V _{GSS}	±30	V
Drain current	Continuous	I _D *1	±4.5	A
	Pulsed	I _{DP} *2	±18	A
Source current (Body diode)	Continuous	I _S	4.5	A
	Pulsed	I _{SP} *2	18	A
Avalanche current		I _{AS} *3	4.5	A
Avalanche energy		E _{AS} *4	40	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 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$
 *3 $L \approx 3.4mH$ $V_{DD}=90V$ $R_g=25\Omega$ *4 $L \approx 3.4mH$ $V_{DD}=90V$ $R_g=25\Omega$ starting $T_{ch}=25^\circ C$

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

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	$V_{(BR) DSS}$	600	—	—	V	$I_D = 1mA, V_{GS} = 0V$
Zero gate voltage drain current	I_{DSS}	—	—	25	μA	$V_{DS} = 600V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	2.0	—	4.0	V	$V_{DS} = 10V, I_D = 1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	—	1.6	2.1	Ω	$I_D = 2.25A, V_{GS} = 10V$
Forward transfer admittance	$ Y_{fs} ^*$	1.5	2.8	—	S	$V_{DS} = 10V, I_D = 2.25A$
Input capacitance	C_{iss}	—	500	—	pF	$V_{DS} = 25V$
Output capacitance	C_{oss}	—	60	—	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	—	10	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	18	—	ns	$V_{DD} \doteq 150V$
Rise time	t_r^*	—	16	—	ns	$I_D = 2.25A$
Turn-off delay time	$t_{d(off)}^*$	—	36	—	ns	$V_{GS} = 10V$
Fall time	t_f^*	—	28	—	ns	$R_L = 66.7\Omega$
Total gate charge	Q_g^*	—	16	—	nC	$V_{DD} \doteq 300V, V_{GS} = 10V$
Gate-source charge	Q_{gs}^*	—	4	—	nC	$I_D = 4.5A$
Gate-drain charge	Q_{gd}^*	—	6	—	nC	$R_L = 66.7\Omega, R_{GS} = 10\Omega$

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	—	—	1.5	V	$I_S = 4.5A, V_{GS} = 0V$
Reverse recovery time	t_{rr}	—	400	—	ns	$I_{DR} = 4.5A, V_{GS} = 0V$
Reverse recovery charge	Q_{rr}	—	4.4	—	μC	$di/dt = 100A / \mu s$

*Pulsed

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