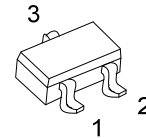


## N-Channel Enhancement Mode Power MOSFET

### Description

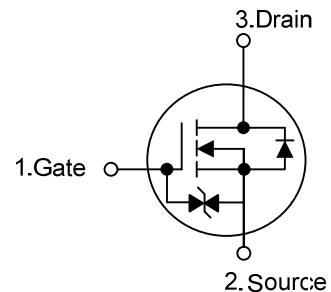
The RM003N600ES2 is an enhancement N-channel mode Power FET, it uses advanced technology to provide customers ultra high switching speed and ultra low gate charge.



SOT-23 top view

### General Features

- \*  $R_{DS(ON)} \leq 600\Omega$  @  $V_{GS}=4.5V$ ,  $I_D=0.016A$
- \*  $R_{DS(ON)} \leq 500\Omega$  @  $V_{GS}=10V$ ,  $I_D=0.016A$
- \* Ultra Low Gate Charge (Typical 140nC)
- \* Ultra High Switching Speed
- \* Halogen-free



Schematic diagram

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
127ZG	RM003N600ES2	SOT23	Ø180mm	8 mm	3000 units

### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	$V_{DSS}$	600	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V	
Drain Current	Continuous	$T_A=25^\circ\text{C}$	0.03	A
		$T_A=70^\circ\text{C}$	0.02	A
	Pulsed ( $T_A=25^\circ\text{C}$ )	$I_{DM}$	0.09	A
Peak Diode Recovery dv/dt	dv/dt	6	kV/ $\mu\text{s}$	
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	0.3	W	
Junction Temperature	$T_J$	-55 ~ +150	$^\circ\text{C}$	
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

## Thermal Characteristic

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$R\theta_{JA}$	325	°C/W

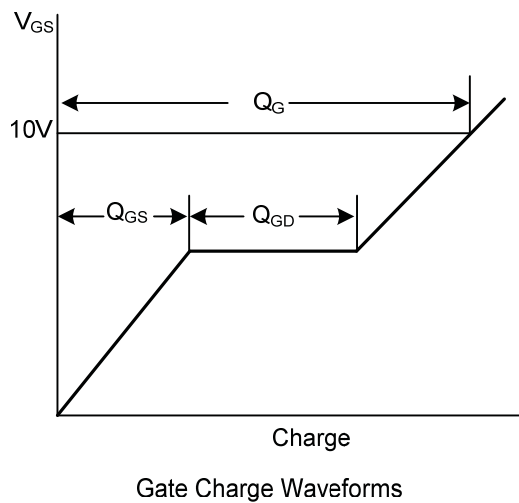
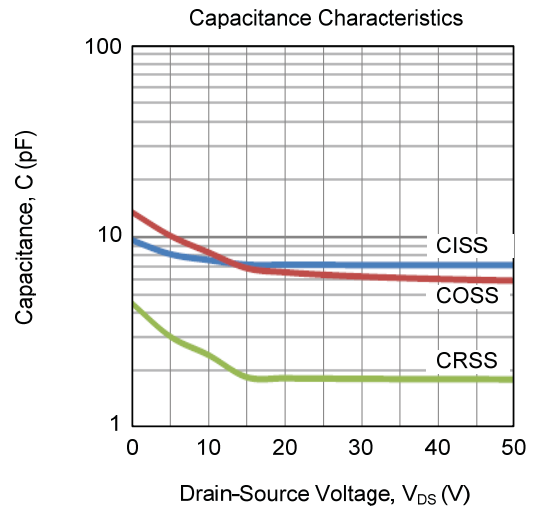
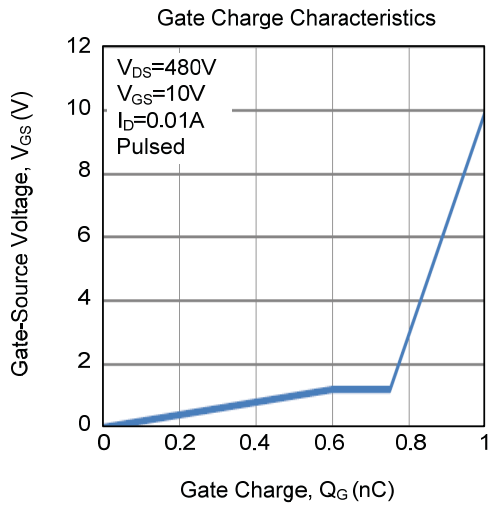
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	600			V
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$		+10	$\mu\text{A}$
			$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$		-10	$\mu\text{A}$
Drain-Source Leakage Current	$I_{D(OFF)}$		$V_{GS}=0\text{V}, V_{DS}=600\text{V}, T_J=25^\circ\text{C}$		0.1	$\mu\text{A}$
			$V_{GS}=0\text{V}, V_{DS}=600\text{V}, T_J=150^\circ\text{C}$		10	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=8\mu\text{A}$	1.4		2.6	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$		$V_{GS}=4.5\text{V}, I_D=0.016\text{A}$	280	600	$\Omega$
			$V_{GS}=10\text{V}, I_D=0.016\text{A}$	260	500	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		7		pF
Output Capacitance	$C_{OSS}$			6.2		pF
Reverse Transfer Capacitance	$C_{RSS}$			1.8		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=0\sim 10\text{V}, V_{DS}=480\text{V}, I_D=0.01\text{A}$		1		nC
Gate to Source Charge	$Q_{GS}$			0.6		nC
Gate to Drain Charge	$Q_{GD}$			0.15		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=300\text{V}, V_{GS}=10\text{V}, I_D=0.01\text{A}, R_G=6\Omega$		6.1		ns
Rise Time	$t_R$			9.7		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			14		ns
Fall-Time	$t_F$			115		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	$T_A=25^\circ\text{C}$			0.016	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	$T_A=25^\circ\text{C}$			0.09	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_F=0.016\text{A}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$			1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$V_R=30\text{V}, I_F=0.016\text{A}, dI_F/dt=100\text{A}/\mu\text{s}$		220		ns
Body Diode Reverse Recovery Charge	$Q_{rr}$			0.14		$\mu\text{C}$

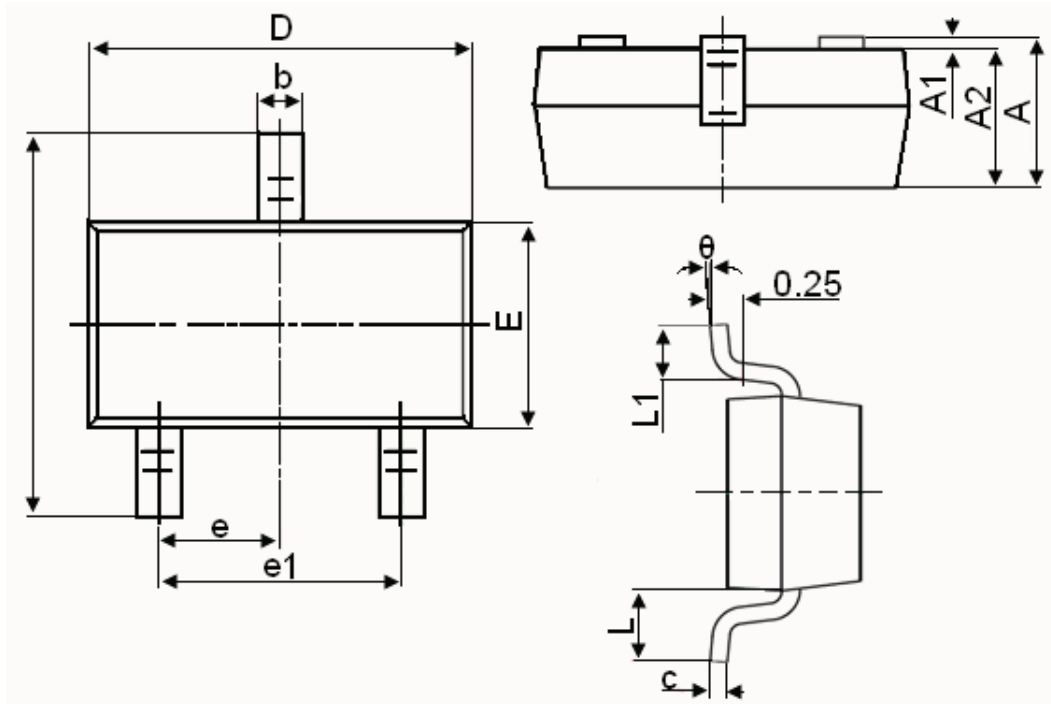
Notes: 1. The Power Dissipation of the package may result in a lower continuous drain current.

2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## RATING AND CHARACTERISTICS CURVES (RM003N600ES2)



## SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

### Notes

1. All dimensions are in millimeters.
2. Tolerance  $\pm 0.10\text{mm}$  (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.