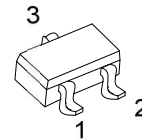


AP003N60E

N-Channel Enhancement Mosfet

Description

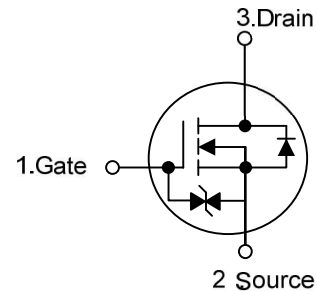
The AP003N60E is an enhancement N-channel mode Power FET, it uses advanced technology to provide customers ultra high switching speed and ultra low gate charge.



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	AP003N60E	SOT23	Ø180mm	8 mm	3000 units

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

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

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

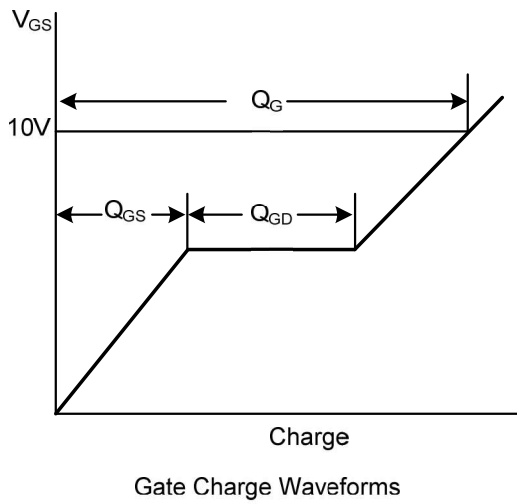
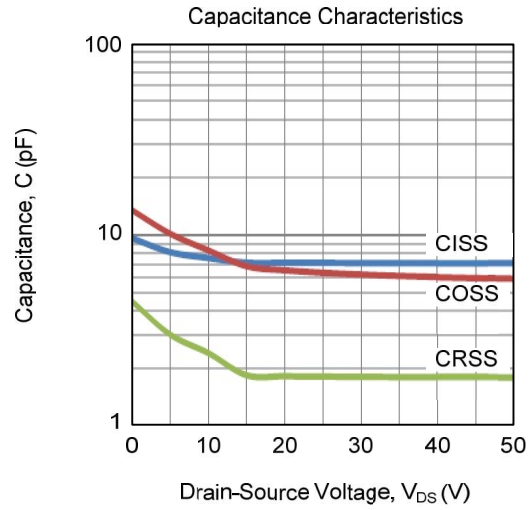
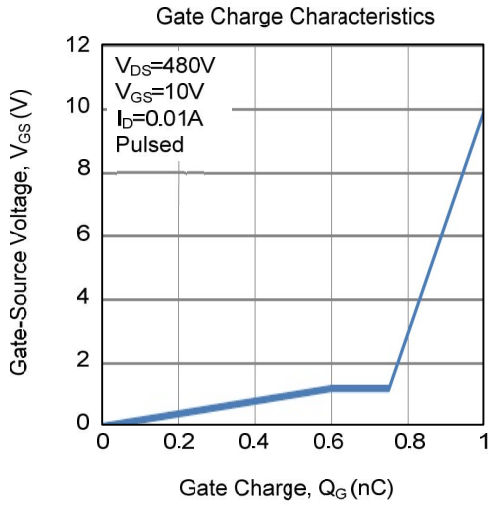
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$R\theta_{JA}$	325	$^{\circ}\text{C/W}$

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

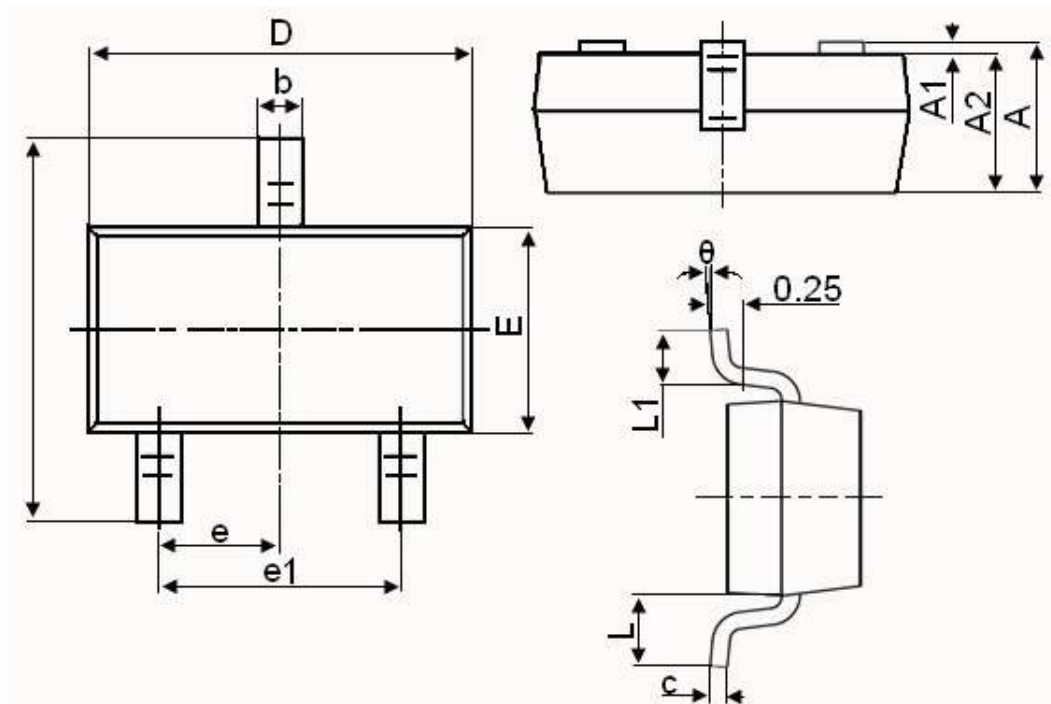
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	600			V
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$		+10	μA
			$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$		-10	μA
Drain-Source Leakage Current		$I_{D(OFF)}$	$V_{GS}=0\text{V}, V_{DS}=600\text{V}, T_J=25^{\circ}\text{C}$		1	μA
			$V_{GS}=0\text{V}, V_{DS}=600\text{V}, T_J=150^{\circ}\text{C}$		10	μA
ON CHARACTERISTICS						
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	Ω
		$V_{GS}=10\text{V}, I_D=0.016\text{A}$		260	500	Ω
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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}	$V_R=30\text{V}, I_F=0.016\text{A}$		220		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$di_F/dt=100\text{A}/\mu\text{s}$		0.14		μC

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 (AP003N600E)



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.