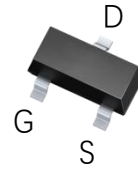


400V 1A 8.2Ω N-ch Power MOSFET

Description

WMOST[™] D1 is Wayon's 1st generation VDMOS family that is dramatic reduction in on-resistance and ultra-low gate charge for applications requiring high power density and high efficiency. And it is very robust and RoHS compliant.

SOT-23

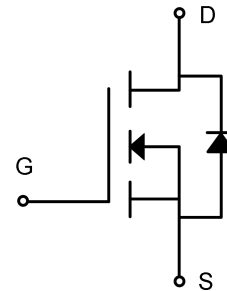


Features

- Typ. $R_{DS(on)}=8.2\Omega@V_{GS}=10V$
- 100% avalanche tested
- Pb-free, Halogen free

Applications

- SMPS
- Charger
- DC-DC

Absolute Maximum Ratings (T_c=25°C)

Parameter	Symbol	WMC1N40D1	Unit
Drain-source voltage	V _{DSS}	400	V
Gate-source voltage	V _{GS}	±20	V
Continuous drain current	I _D	1	A
Pulsed drain current	I _{DM}	4	A
Avalanche energy, single pulse	E _{AS}	14	mJ
Power dissipation	P _D	0.5	W
Operating junction temperature	T _j	-55~150	°C
Storage temperature	T _{stg}	-55~150	°C
Continuous diode forward current	I _S	1	A
Diode pulse current	I _{Spulse}	4	A

Thermal Characteristic

Thermal resistance, junction-to-ambient	R _{θJA}	250	°C/W
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Electrical Characteristics of MOSFET

				Min.	Typ.	Max.	
Drain-source break down voltage	BV_{DSS}	$I_D=250\mu A$, $V_{GS}=0V$	$T_C=25^\circ C$	400	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu A$, $V_{DS}=V_{GS}$	$T_J=25^\circ C$	1.1	-	2.1	V
Drain-source leakage current	I_{DSS}	$V_{DS}=400V$, $V_{GS}=0V$	$T_J=25^\circ C$	-	-	1	μA
		$V_{DS}=320V$, $V_{GS}=0V$	$T_J=125^\circ C$	-	-	400	μA
Gate-source leakage current,forward	I_{GSSF}	$V_{DS}=0V$, $V_{GS}=20V$	$T_J=25^\circ C$	-	-	100	nA
Gate-source leakage current,reverse	I_{GSSR}	$V_{DS}=0V$, $V_{GS}=-20V$	$T_J=25^\circ C$	-	-	-100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=0.5A$	$T_J=25^\circ C$	-	8.2	11	Ω

Dynamic Characteristics of MOSFET ($T_C=25^\circ C$)

				Min.	Typ.	Max.	
Input capacitance	C_{iss}	$f=1MHz$, $V_{DS}=25V$, $V_{GS}=0V$		-	86.3	-	pF
Output capacitance	C_{oss}			-	9.5	-	pF
Reverse transfer capacitance	C_{rss}			-	1.4	-	pF
Gate to source charge	Q_{gs}	$V_{DD}=200V$	$I_D=1A$ $V_{GS}=0$ to $10V$	-	0.4	-	nC
Gate to drain charge	Q_{gd}	$I_D=1A$		-	1.6	-	nC
Total gate charge	Q_g	$V_{GS}=0$ to $10V$		-	4.1	-	nC

Switching Characteristics of MOSFET ($T_C=25^\circ C$)

				Min.	Typ.	Max.	
Turn-on delay time	$t_{d on}$	$V_{DS}=200V$, $I_D=1A$, $R_G=25\Omega$, $V_{GS}=0$ to $10V$		-	3.6	-	ns
Rise time	t_r			-	4.5	-	ns
Turn-off delay time	$t_{d off}$			-	17.8	-	ns
Fall time	t_f			-	24.2	-	ns

Characteristics of Body Diode ($T_C=25^\circ C$)

				Min.	Typ.	Max.	
Forward voltage	V_{SD}	$I_{SD}=1A$, $V_{GS}=0V$		-	-	1.4	V
Reverse recovery time	t_{rr}	$V_{DS}=200V$, $I_S=1A$, $V_{GS}=10V$ $di/dt=100A/\mu s$		-	114	-	ns
Reverse recovery current	I_{rr}			-	4.5	-	A
Recovery charge	Q_{rr}			-	0.26	-	μC

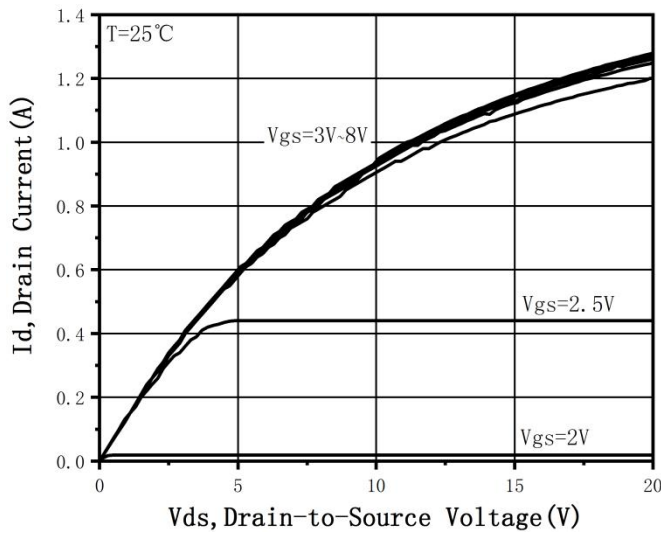


Figure 1. On-Region Characteristics

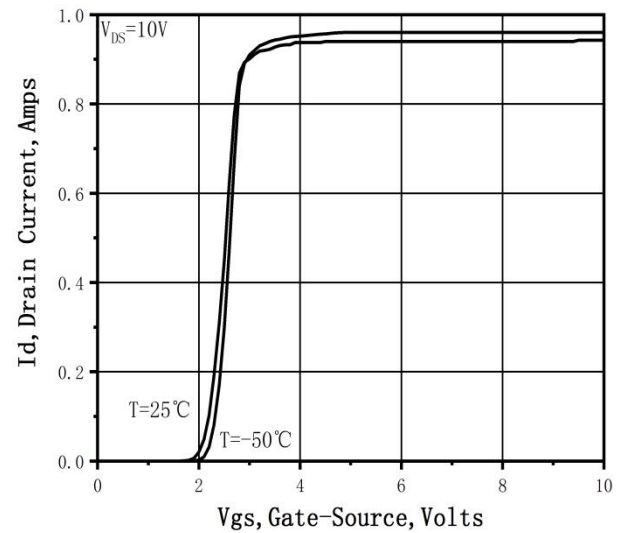


Figure 2. Transfer Characteristics

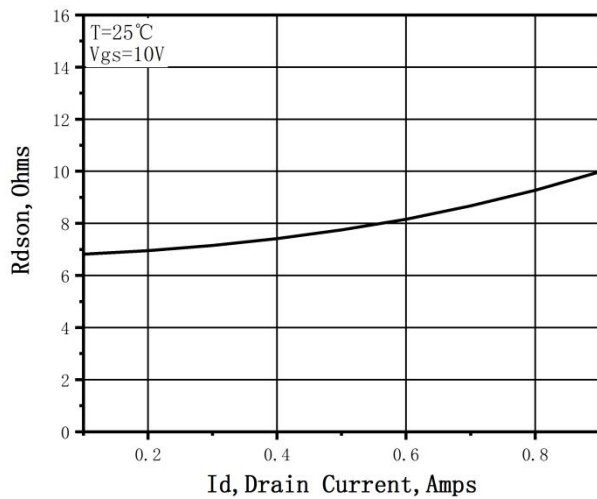


Figure 3. Static Drain-Source On Resistance

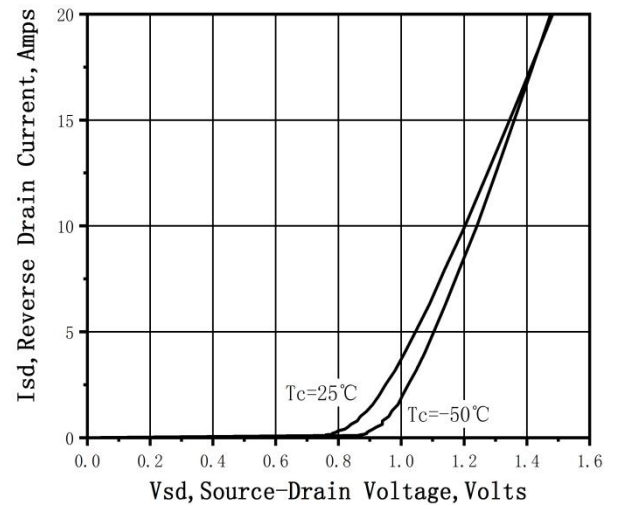
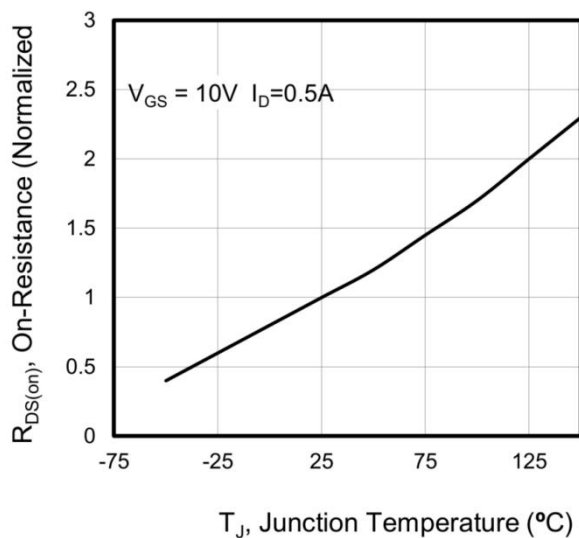
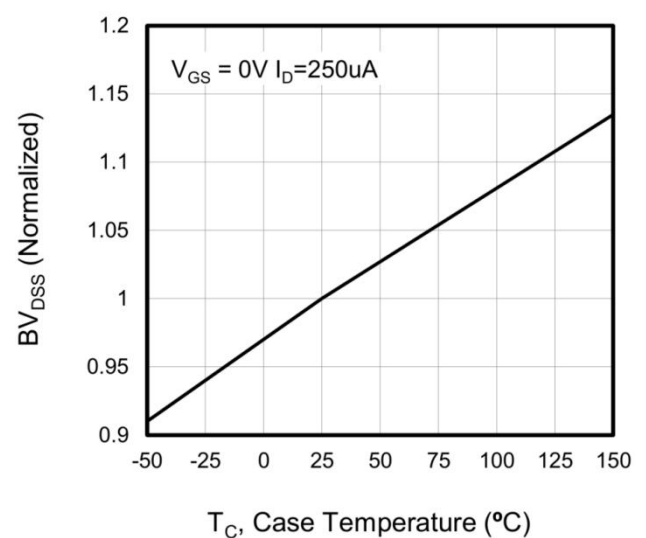


Figure 4. Typical Body Diode Transfer Characteristics

Figure 5. Normalized $R_{DS(on)}$ vs. TemperatureFigure 6. Normalized BV_{DSS} vs. Temperature

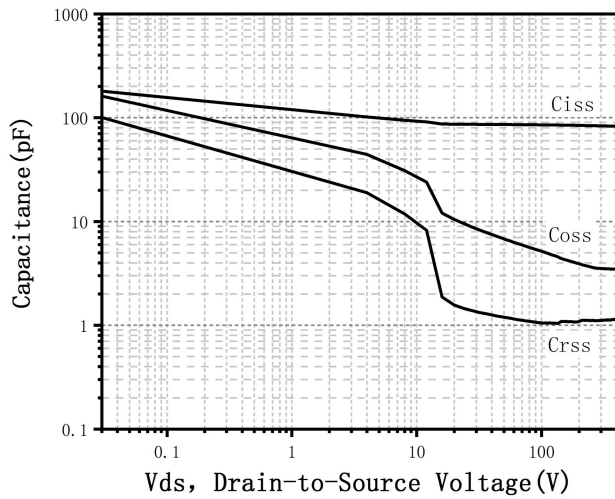


Figure 7. Capacitance Characteristics

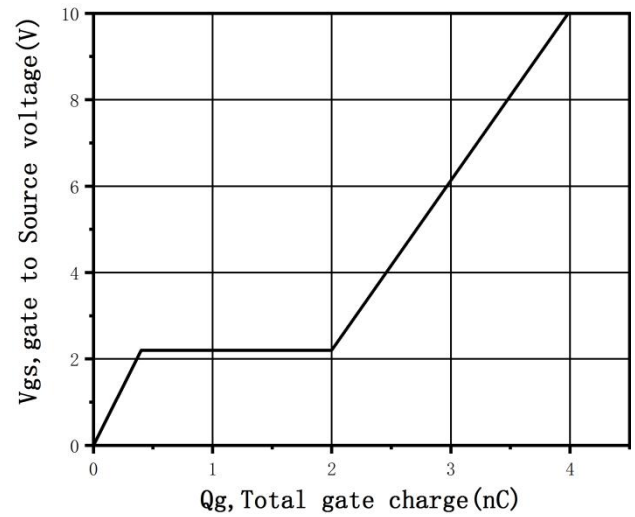


Figure 8. Gate Charge Characteristics

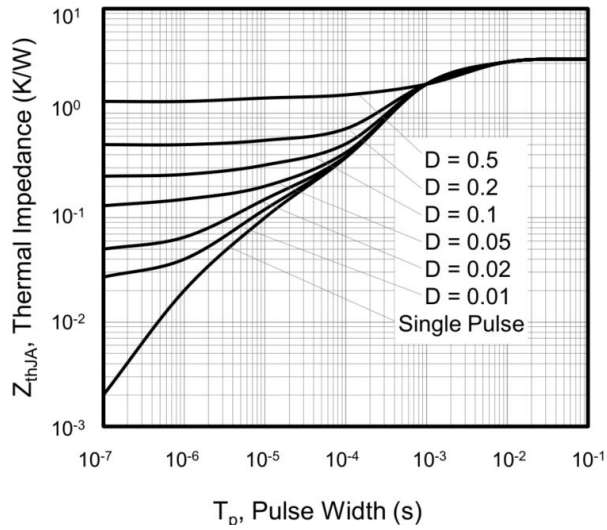
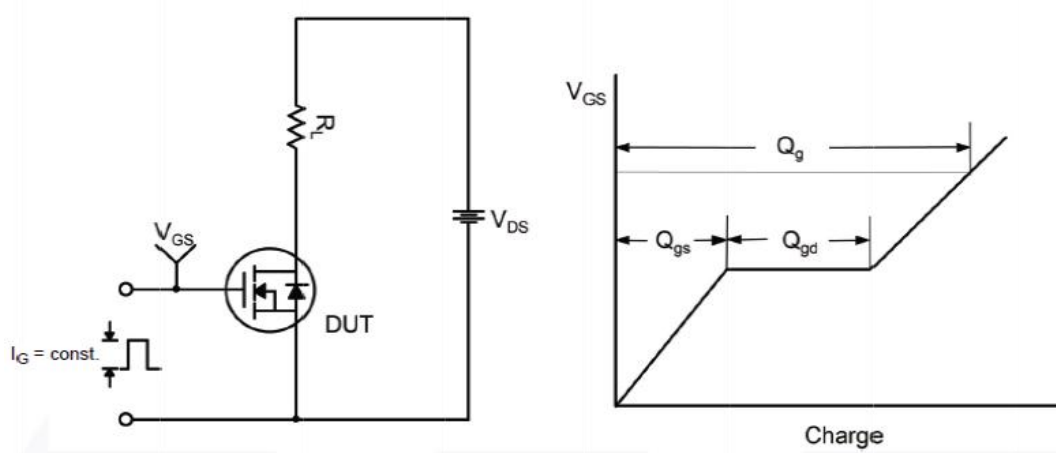
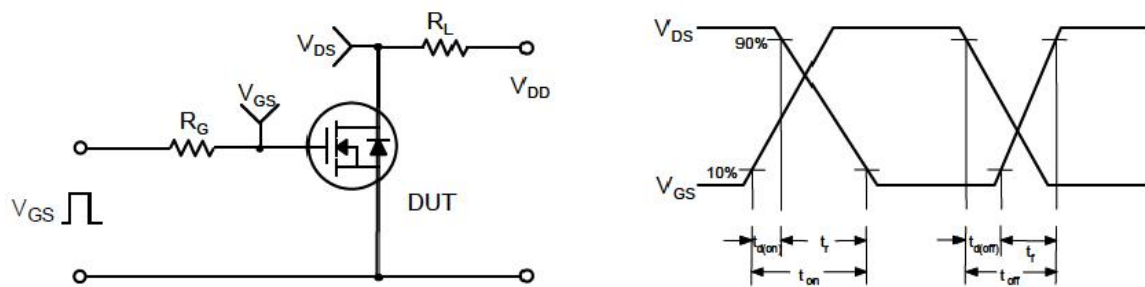


Figure 9. Transient Thermal Impedance

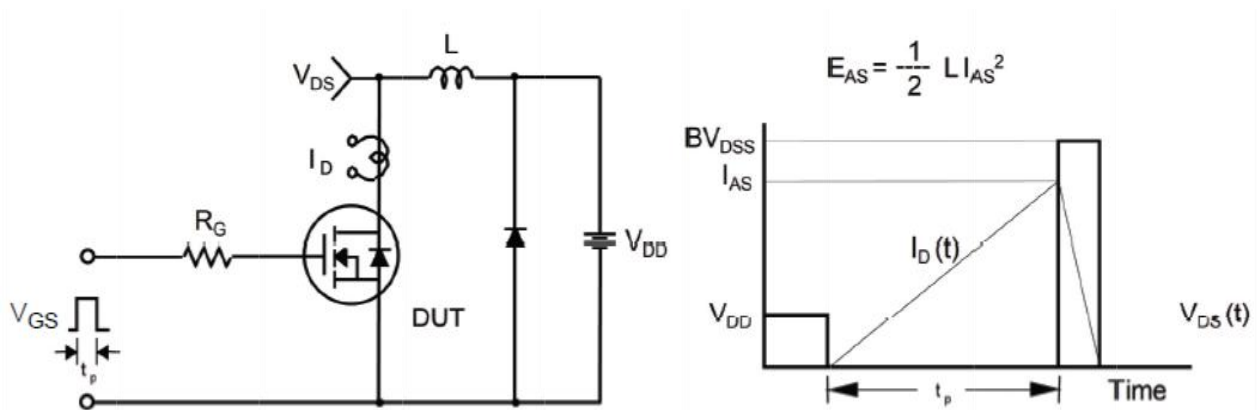
Gate Charge Test Circuit & Waveform



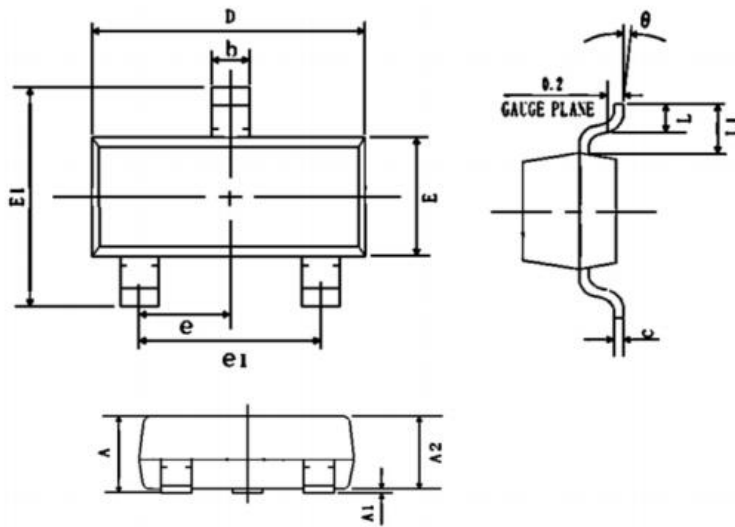
Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Mechanical Dimensions for SOT-23



SYMBOLS	MILLIMETERS	
	MIN	MAX
A	0.90	1.20
A1	0.00	0.10
A2	0.90	1.10
b	0.30	0.50
C	0.10	0.15
e1	1.80	2.00
D	2.80	3.00
E	1.20	1.40
E1	2.30	2.50
L	0.30	0.50
ø	0.00	10.00
e	0.95BSC	
L1	0.55REF	
e1	1.90REF	

Ordering Information

Part	Package	Marking	Packing method
WMC1N40D1	SOT-23	1N40	Tape and reel

Contact Information

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WAYON website: <http://www.way-on.com>

For additional information, please contact your local Sales Representative.

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