N-Channel MOSFET
WNM2020

SOT-23   Unit: mm

■ Features

● $V_{DS\,(V)}$ = 20V

● I_D = 0.83 A

● $R_{DS(ON)}$ < 310mΩ (V_{GS} = 4.5V)

● $R_{DS(ON)}$ < 360mΩ (V_{GS} = 2.5V)

● $R_{DS(ON)}$ < 460mΩ (V_{GS} = 1.8V)

1. Gate
2. Source
3. Drain
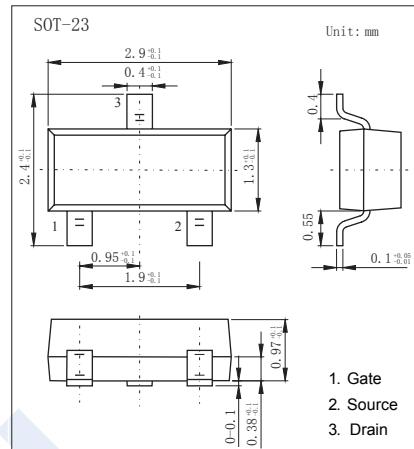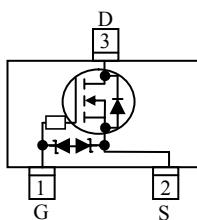
■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±6		
Continuous Drain Current (Note.1)	Ta=25℃	I_D	0.9	0.83	A
	Ta=70℃		0.72	0.66	
Power Dissipation (Note.1)	Ta=25℃	P_D	0.38	0.32	W
	Ta=70℃		0.24	0.2	
Continuous Drain Current (Note.2)	Ta=25℃	I_D	0.79	0.71	A
	Ta=70℃		0.63	0.57	
Power Dissipation (Note.2)	Ta=25℃	P_D	0.29	0.24	W
	Ta=70℃		0.19	0.15	
Pulsed Drain Current (Note.3)		I_{DM}	1.4		A
Thermal Resistance.Junction- to-Ambient	(Note.1)	R_{thJA}	325	385	℃/W
	(Note.2)		420	520	
Thermal Resistance.Junction- to-Case		R_{thJC}	-	300	
Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{stg}	-55 to 150		

Note.1:Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

Note.2:Surface mounted on FR4 board using minimum pad size, 1oz copper

Note.3:Repetitive rating, pulse width limited by junction temperature, tp=10μs, Duty Cycle=1%

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■ Electrical Characteristics Ta = 25℃

| Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250 μA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±5V			±5	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250 μA	0.45		0.85	V
Static Drain-Source On-Resistance	$R_{DS(On)}$	V_{GS}=4.5V, I_D=0.55A			310	mΩ
		V_{GS}=2.5V, I_D=0.45A			360	
		V_{GS}=1.8V, I_D=0.35A			460	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=0.55A		2		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=100KHz		50		pF
Output Capacitance	C_{oss}			13		
Reverse Transfer Capacitance	C_{rss}			8		
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=0.55A		1.15		nC
Threshold Gate Charge	$Q_{g(th)}$			0.06		
Gate Source Charge	Q_{gs}			0.15		
Gate Drain Charge	Q_{gd}			0.23		
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=10V, V_{GS}=4.5V, I_D =0.55A, R_G=6Ω		22		ns
Turn-On Rise Time	t_r			80		
Turn-Off DelayTime	$t_{d(off)}$			700		
Turn-Off Fall Time	t_f			380		
Maximum Body-Diode Continuous Current	I_S				0.35	A
Diode Forward Voltage	V_{SD}	I_S=0.35A,V_{GS}=0V	0.5		1.5	V

■ Marking

| Marking	W28*

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■ Typical Characterisitics

Output characteristics


Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-Source voltage

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature
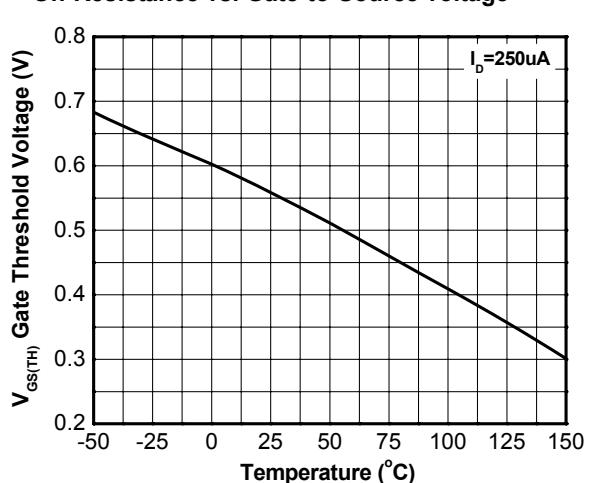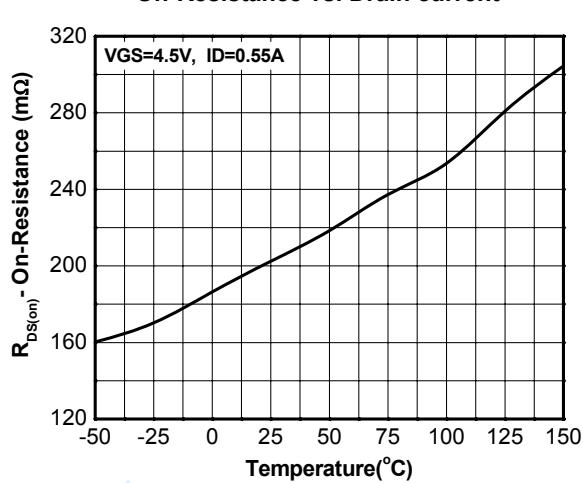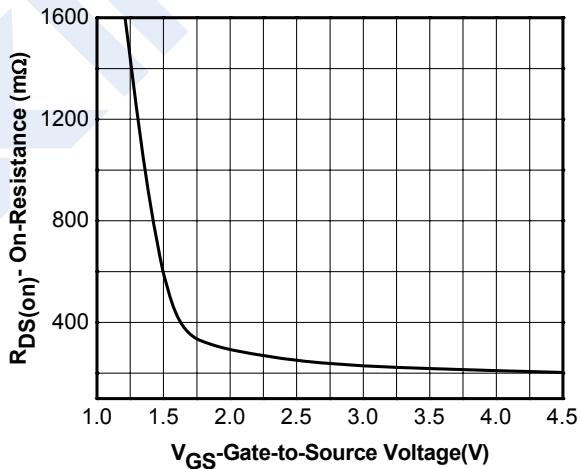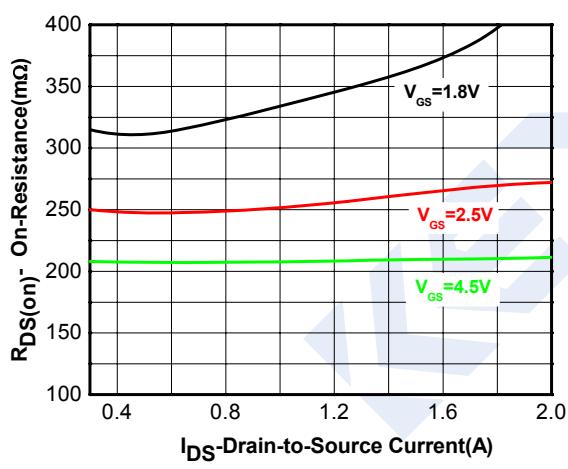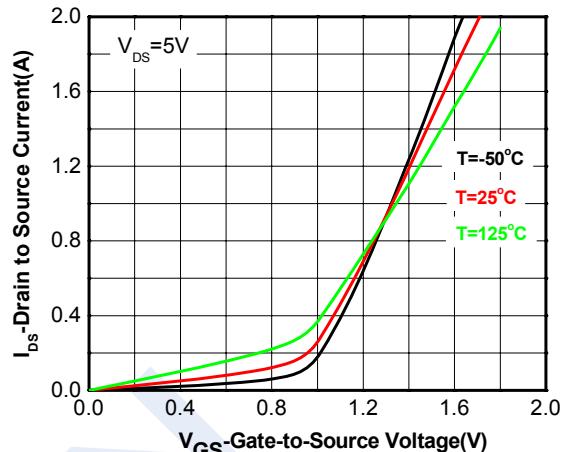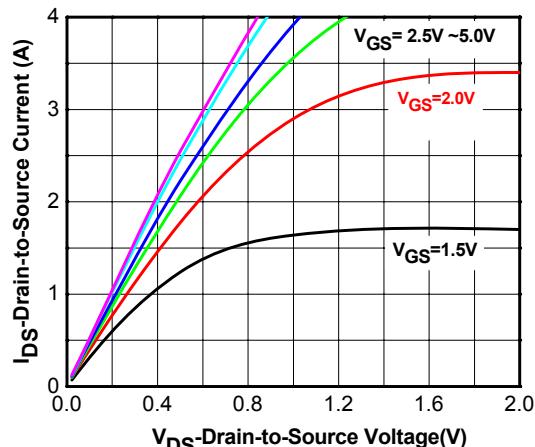
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■ Typical Characterisitics
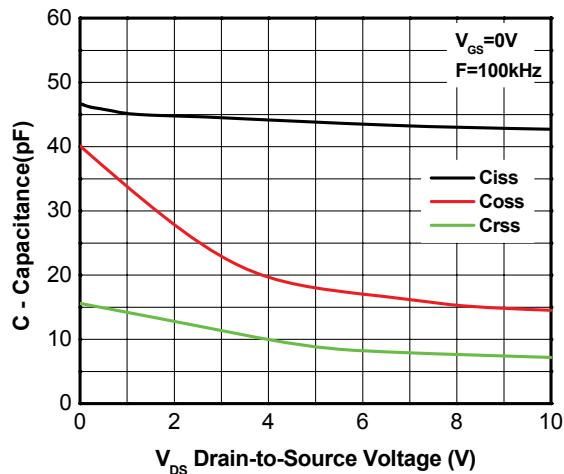
Capacitance
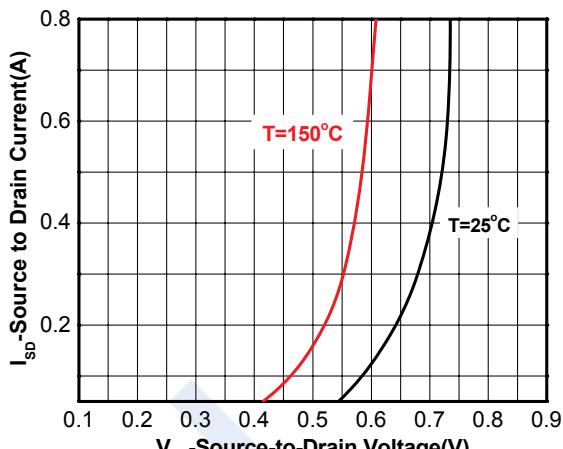
Body diode forward voltage
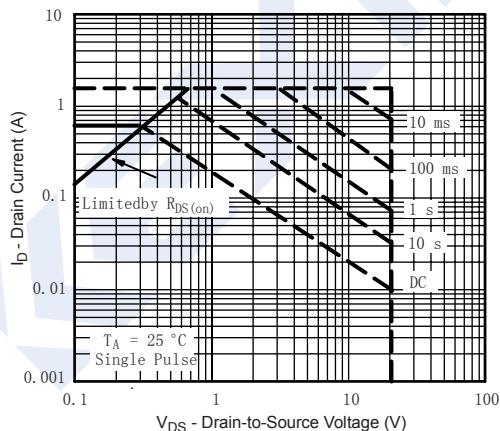
Safe operating power
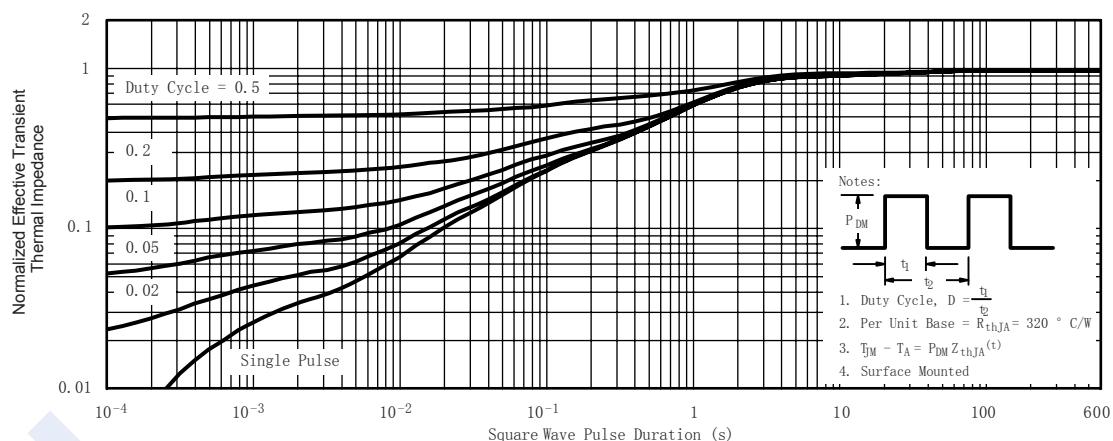
Transient thermal response (Junction-to-Ambient)