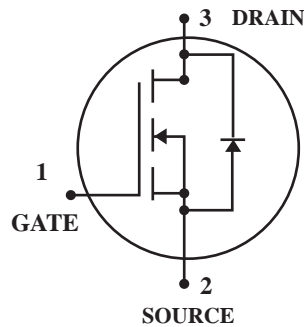


N-Channel Enhancement Mode Power MOSFET

 Lead(Pb)-Free



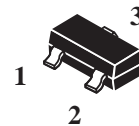
DRAIN CURRENT
5.8 AMPERES
DRAIN SOURCE VOLTAGE
30 VOLTAGE

Features:

- * Super High Dense Cell Design For Low $R_{DS(on)}$
 $R_{DS(on)} < 38m\Omega @ V_{GS} = 10V$
- * Rugged and Reliable
- * Simple Drive Requirement
- * SOT-23 Package

Applications:

- * Power Management in Notebook Computer
- * Portable Equipment
- * Battery Powered System



SOT-23

Maximum Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	5.8	A
Pulsed Drain Current ¹	I_{DM}	30	A
Total Power Dissipation ($T_A=25^\circ\text{C}$)	PD	1.4	W
Maximum Junction-Ambient ²	$R_{\theta JA}$	140	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55~+150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~+150	$^\circ\text{C}$

Note: 1. Repetitive Rating: Pulse width limited by the maximum junction temperature
 2. 1-in² 2oz Cu PCB board
 3. Guaranteed by design; not subject to production testing

Device Marking

WTC2306 = N06

Electrical Characteristics (TA=25°C Unless Otherwise Specified)

Characteristic	Symbol	Min	Typ	Max	Unit
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Static⁽²⁾

Drain-Source Breakdown Voltage $V_{GS}=0V, I_D=250\mu A$	$V_{(BR)DSS}$	30	-	-	V
Gate-Source Threshold Voltage $V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.7	-	1.4	V
Gate-Source Leakage Current $V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain Current $V_{DS}=24V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Drain-Source On-Resistance $V_{GS}=2.5V, I_D=4.0A$ $V_{GS}=4.5V, I_D=5.0A$ $V_{GS}=10V, I_D=5.8A$	$R_{DS(on)}$	- - -	45 34 31	62 43 38	m Ω
Gate Resistance $V_{GS}=0V, V_{DS}=0V, f=1MHz$	R_g	6	7	7.5	Ω
Forward Transconductance $V_{DS}=5V, I_D=5A$	g_{fs}	10	15	-	S

Dynamic⁽³⁾

Turn-On Delay Time $V_{DD}=15V, I_D=1A, V_{GEN}=10V, R_G=3\Omega, R_L=2.7\Omega$	$t_{d(on)}$	-	7	14	nS
Rise Time $V_{DD}=15V, I_D=1A, V_{GEN}=10V, R_G=3\Omega, R_L=2.7\Omega$	t_r	-	15	30	nS
Turn-Off Time $V_{DD}=15V, I_D=1A, V_{GEN}=10V, R_G=3\Omega, R_L=2.7\Omega$	$t_{d(off)}$	-	38	76	nS
Fall Time $V_{DD}=15V, I_D=1A, V_{GEN}=10V, R_G=3\Omega, R_L=2.7\Omega$	t_f	-	3	6	nS
Total Gate Charge $V_{DS}=15V, I_D=5.8A, V_{GS}=4.5V$	Q_g	-	11	14.3	nc
Gate-Source Charge $V_{DS}=15V, I_D=5.8A, V_{GS}=4.5V$	Q_{gs}	-	1.6	2.08	nc
Gate-Drain Charge $V_{DS}=15V, I_D=5.8A, V_{GS}=4.5V$	Q_{gd}	-	2.8	3.64	nc
Input Capacitance $V_{DS}=15V, V_{GS}=0V, f=1MHz$	C_{iss}	-	513.51	-	pF
Output Capacitance $V_{DS}=15V, V_{GS}=0V, f=1MHz$	C_{oss}	-	80.85	-	pF
Reverse Transfer Capacitance $V_{DS}=15V, V_{GS}=0V, f=1MHz$	C_{rss}	-	54.87	-	pF
Drain-Source Diode Forward Voltage $V_{GS}=0V, I_S=1.0A$	V_{SD}	-	-	1.2	V
Continuous Source Current (Body Diode)	I_S	-	-	2.5	A

Notes: Pulse test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2. Static parameters are based on package level with recommended wire-bonding

3. Guaranteed by design; not subject to production testing

TYPICAL ELECTRICAL CHARACTERISTICS

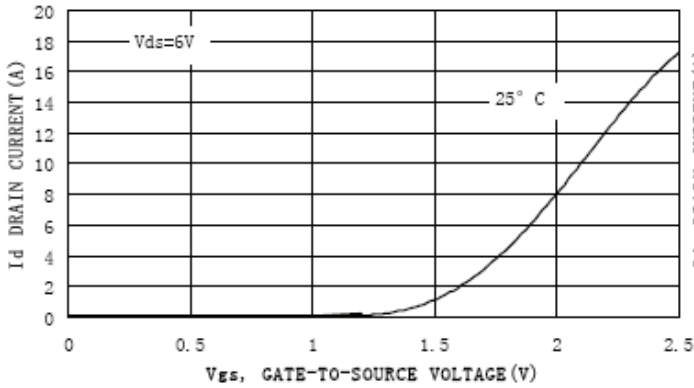


Figure 1. Transfer Characteristics

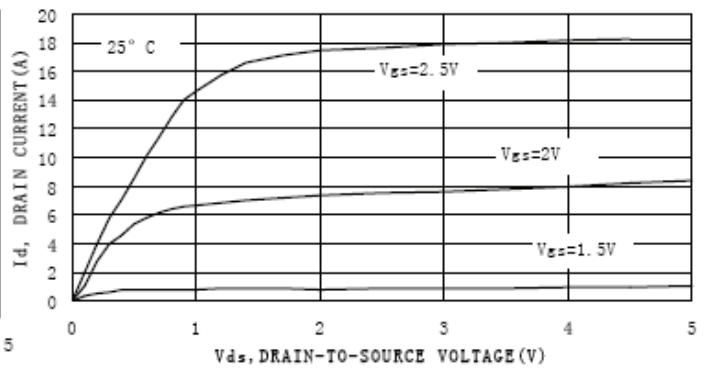


Figure 2. On-Region Characteristics

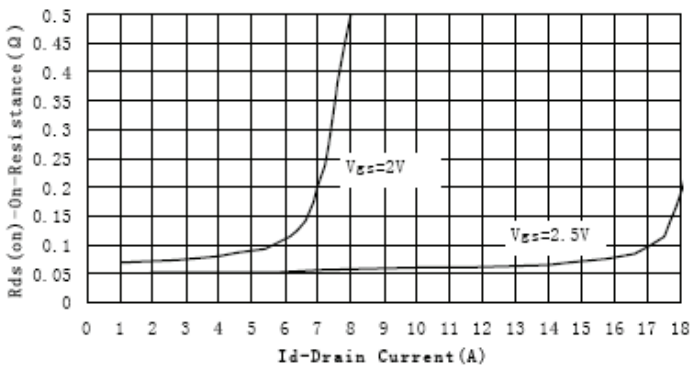


Figure 3. On-Resistance versus Drain Current

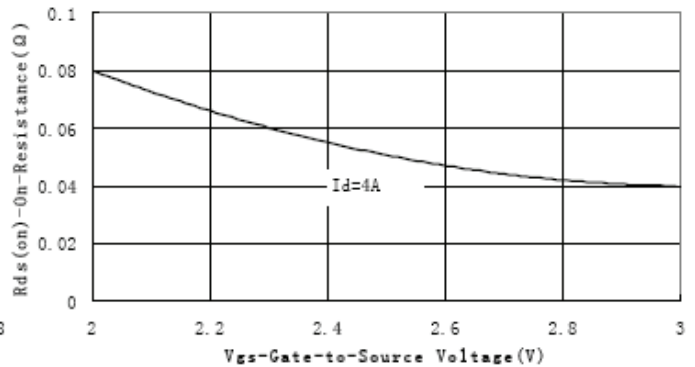


Figure 4. On-Resistance vs. Gate-to-Source Voltage

SOT-23 Outline Dimension

