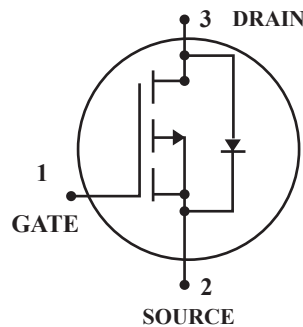


## P-Channel Enhancement Mode Power MOSFET

 Lead(Pb)-Free

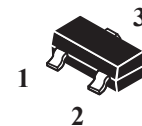


**DRAIN CURRENT**  
-4.2 AMPERES

**DRAIN SOURCE VOLTAGE**  
-30 VOLTAGE

### Features:

- \*Super High Dense Cell Design For Low  $R_{DS(ON)}$   
 $R_{DS(ON)} < 70m\Omega @ V_{GS} = 10V$
- \*Rugged and Reliable
- \*Simple Drive Requirement
- \*SOT-23 Package



**SOT-23**

### Applications

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

### Maximum Ratings ( $T_A = 25^\circ C$ Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current <sup>3</sup> , ( $T_A = 25^\circ C$ )	$I_D$	-4.2	A
Pulsed Drain Current <sup>1,2</sup>	$I_{DM}$	-30	
Total Power Dissipation ( $T_A = 25^\circ C$ )	$P_D$	1.4	W
Maximum Thermal Resistance Junction-ambient <sup>3</sup>	$R_{\theta JA}$	140	$^\circ C/W$
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~+150	$^\circ C$

### Device Marking

WTC2305=PO5

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>Static</b>					
Drain-Source Breakdown Voltage $V_{GS}=0, I_D=-250\mu\text{A}$	$V_{(BR)DSS}$	-30	-	-	V
Gate-Source Threshold Voltage $V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	$V_{GS(Th)}$	-0.7	-	-1.3	
Gate-Source Leakage Current $V_{GS} = \pm 12\text{V}$	$I_{GSS}$	-	-	$\pm 100$	nA
Drain- Source Leakage Current ( $T_j=25^\circ\text{C}$ ) $V_{DS}=-24\text{V}, V_{GS}=0$	$I_{DSS}$	-	-	-1	$\mu\text{A}$
Drain-Source On-Resistance <sup>2</sup> $V_{GS}=-10\text{V}, I_D=-4.2\text{A}$ $V_{GS}=-4.5\text{V}, I_D=-4.0\text{A}$ $V_{GS}=-2.5\text{V}, I_D=-1.0\text{A}$	$R_{DS(on)}$	-	53 64 86	70 85 130	m $\Omega$
Forward Transconductance $V_{DS}=-5.0\text{V}, I_D=-5.0\text{A}$	$g_{fs}$	7	11	-	

## Dynamic

Total Gate Charge $V_{DS} = -15\text{V}, I_D = -4\text{A}, V_{GS} = -4.5\text{V}$	$Q_g$	-	6.36	-	nC
Gate-Source Charge $V_{DS} = -15\text{V}, I_D = -4\text{A}, V_{GS} = -4.5\text{V}$	$Q_{gs}$	-	1.79	-	nC
Gate-Drain Charge $V_{DS} = -15\text{V}, I_D = -4\text{A}, V_{GS} = -4.5\text{V}$	$Q_{gd}$	-	1.42	-	nC
Turn-On Delay Time $V_{DD} = -15\text{V}, R_L = 3.6\Omega, I_D = -1\text{A}, V_{GEN} = -10\text{V}, R_G = 6\Omega$	$t_{d(on)}$		11.36		ns
Turn-On Rise Time $V_{DD} = -15\text{V}, R_L = 3.6\Omega, I_D = -1\text{A}, V_{GEN} = -10\text{V}, R_G = 6\Omega$	$t_r$		2.32		ns
Turn-Off Delay Time $V_{DD} = -15\text{V}, R_L = 3.6\Omega, I_D = -1\text{A}, V_{GEN} = -10\text{V}, R_G = 6\Omega$	$t_{d(off)}$		34.88		ns
Turn-Off Fall Time $V_{DD} = -15\text{V}, R_L = 3.6\Omega, I_D = -1\text{A}, V_{GEN} = -10\text{V}, R_G = 6\Omega$	$t_f$		3.52		ns
Input Capacitance $V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	$C_{iss}$		826.18		pF
Output Capacitance $V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	$C_{oss}$		90.74		pF
Reverse Transfer Capacitance $V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	$C_{rss}$		53.18		pF

## Source-Drain Diode

Max. Diode Forward Current	$I_S$			-2.2	A
Diode Forward Voltage $I_S = -1.0\text{A}, V_{GS} = 0\text{V}$	$V_{SD}$			-1	V

- Note:**
1. Pulse test: pulse width  $\leq 300\mu\text{s}$ , 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

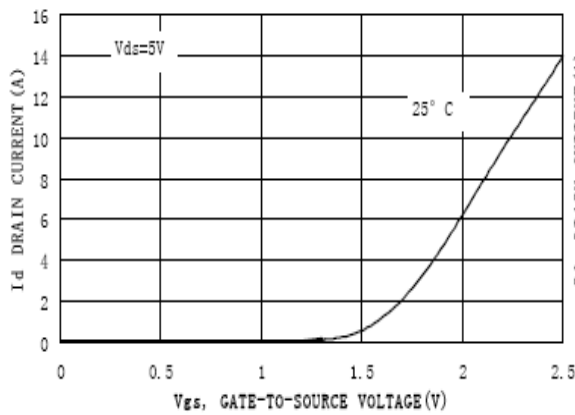


Figure 1. Transfer Characteristics

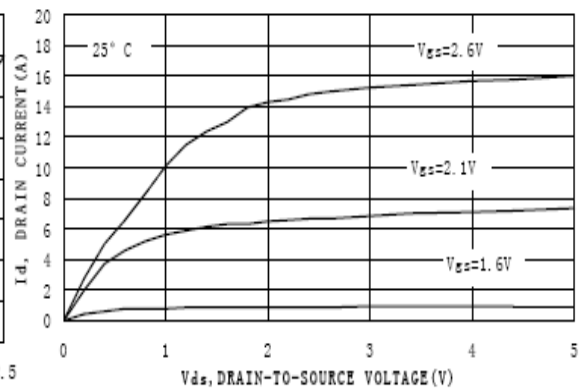


Figure 2. On-Region Characteristics

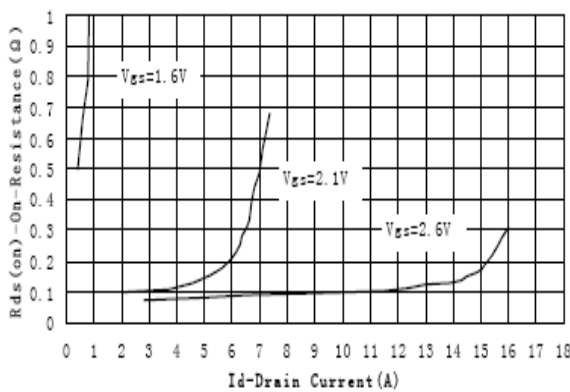


Figure 3. On-Resistance versus Drain Current

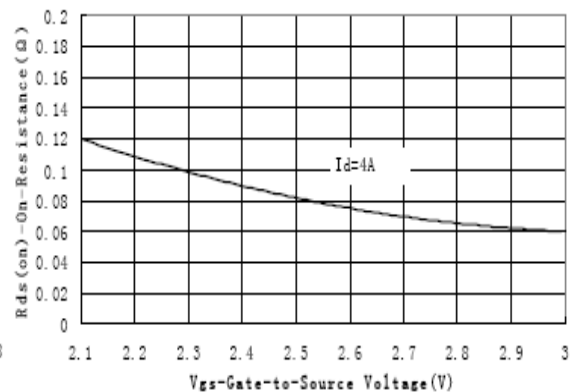


Figure 4. On-Resistance vs. Gate-to-Source Voltage

**SOT-23 Outline Dimension**

