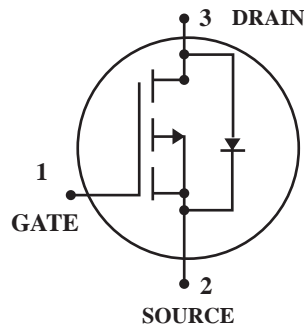


## P-Channel Enhancement Mode Power MOSFET

 Lead(Pb)-Free



**DRAIN CURRENT**  
-5.3 AMPERES

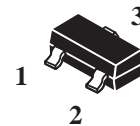
**DRAIN SOURCE VOLTAGE**  
-30 VOLTAGE

### Features:

- \* Super High Dense Cell Design For Low  $R_{DS(on)}$   
 $R_{DS(on)} < 100m\Omega @ V_{GS} = -4.5V$
- \* Rugged and Reliable
- \* Simple Drive Requirement
- \* SOT-23 Package

### Applications:

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



**SOT-23**

### Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-5.3	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-20	A
Total Power Dissipation (TA=25°C) (TA=75°C)	$P_D$	2.5 1.2	W
Maximum Junction-Case	$R_{\theta JC}$	24	°C/W
Maximum Junction-Ambient <sup>2</sup>	$R_{\theta JA}$	62.5	°C/W
Ambient Temperature	$T_a$	+150	°C
Case Temperature	$T_c$	+150	°C
Operating Junction Temperature Range	$T_J$	+150	°C
Storage Temperature Range	$T_{stg}$	-55~+150	°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

WTC9435 = P94

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### Static

Drain-Source Breakdown Voltage $V_{GS}=0V, I_D=-250\mu A$	$V_{(BR)DSS}$	-30	-	-	V
Gate-Source Threshold Voltage $V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.7	-3.0	V
Gate-Source Leakage Current $V_{DS}=0V, V_{GS}=\pm 20V$	$I_{GSS}$	-	-	$\pm 100$	nA
Zero Gate Voltage Drain Current $V_{DS}=-24V, V_{GS}=0V$	$I_{DSS}$	-	-	-1	$\mu A$
Drain-Source On-Resistance $V_{GS}=-4.5V, I_D=-4.2A$ $V_{GS}=-10V, I_D=-5.3A$	$R_{DS(on)}$	-	70 50	100 70	m $\Omega$
Forward Transconductance $V_{DS}=-10V, I_D=-5.3A$	$g_{fs}$	-	10	-	S

### Dynamic

Input Capacitance $V_{DS}=-15V, V_{GS}=0V, f=1MHz$	$C_{iss}$	-	745	-	PF
Output Capacitance $V_{DS}=-15V, V_{GS}=0V, f=1MHz$	$C_{oss}$	-	440	-	
Reverse Transfer Capacitance $V_{DS}=-15V, V_{GS}=0V, f=1MHz$	$C_{rss}$	-	120	-	

### Switching

Turn-On Delay Time <sup>(2)</sup> $V_{DD}=-15V, I_D=-1A, V_{GEN}=-10V, R_G=6\Omega, R_L=15\Omega$	$t_{d(on)}$	-	9	-	nS
Rise Time $V_{DD}=-15V, I_D=-1A, V_{GEN}=-10V, R_G=6\Omega, R_L=15\Omega$	$t_r$	-	15	-	nS
Turn-Off Time $V_{DD}=-15V, I_D=-1A, V_{GEN}=-10V, R_G=6\Omega, R_L=15\Omega$	$t_{d(off)}$	-	75	-	nS
Fall Time $V_{DD}=-15V, I_D=-1A, V_{GEN}=-10V, R_G=6\Omega, R_L=15\Omega$	$t_f$	-	40	-	nS
Total Gate Charge <sup>(2)</sup> $V_{DS}=-15V, I_D=-5.3A, V_{GS}=-10V$	$Q_g$	-	28	-	nc
Gate-Source Charge $V_{DS}=-15V, I_D=-5.3A, V_{GS}=-10V$	$Q_{gs}$	-	3	-	nc
Gate-Drain Charge $V_{DS}=-15V, I_D=-5.3A, V_{GS}=-10V$	$Q_{gd}$	-	7	-	nc
Drain-Source Diode Forward Voltage <sup>(2)</sup> $V_{GS}=0V, I_S=-2.6A$	$V_{SD}$	-	-	-1.3	V
Continuous Source Current (Body Diode)	$I_S$	-	-	-2.6	A

Notes: 1. Pulse width limited by Max. junction temperature.

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

3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board; 125°C/W when mounted on Min. copper pad.

## TYPICAL ELECTRICAL CHARACTERISTICS

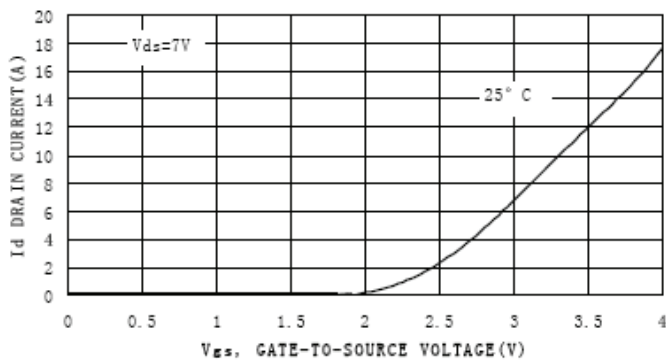


Figure 1. Transfer Characteristics

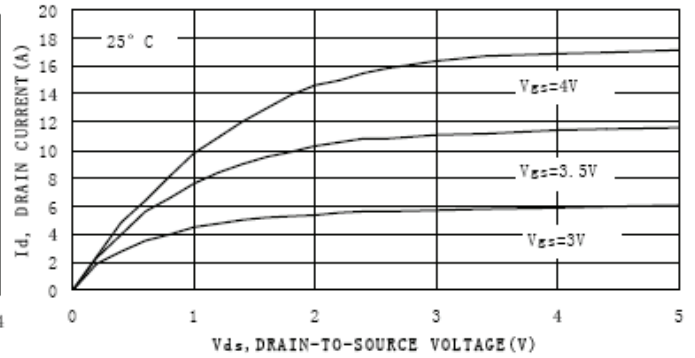


Figure 2. On-Region Characteristics

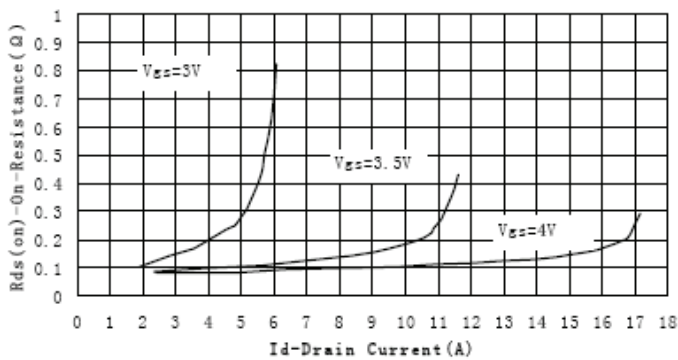


Figure 3. On-Resistance versus Drain Current

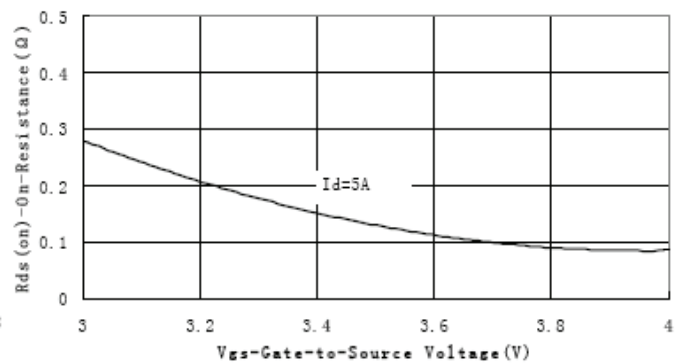


Figure 4. On-Resistance vs. Gate-to-Source Voltage

### SOT-23 Outline Dimension

