



## P-CHANNEL ENHANCEMENT MODE POWER MOSFET

### DESCRIPTION

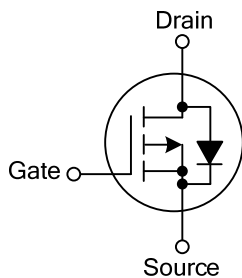
The UTC **UT9564** is a P-ch enhancement mode power MOSFET and it uses UTC perfect technology to provide customers with fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The UTC **UT9564** is ideal for applications such as low voltage applications, DC/DC converters and all commercial-industrial surface mount applications.

### FEATURES

- \* Simple Drive Requirement
- \* Fast Switching Speed
- \* Low On-Resistance

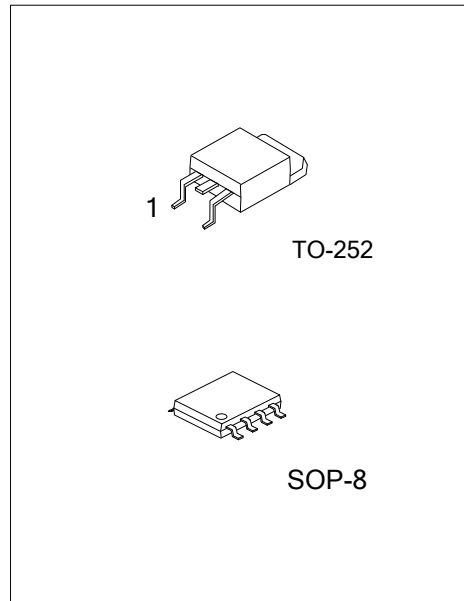
### SYMBOL



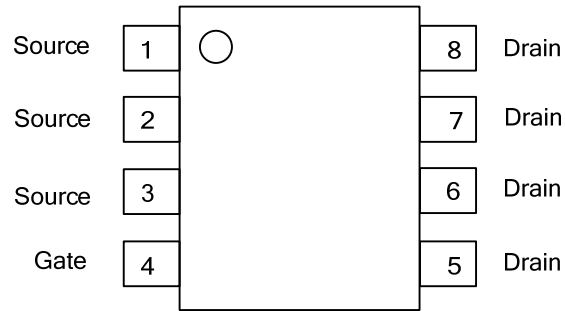
### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT9564L-TN3-R	UT9564G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT9564L-S08-R	UT9564G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT9564L-S08-T	UT9564G-S08-T	SOP-8	S	S	S	G	D	D	D	D	Tube

<p>UT9564L-S08-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Halogen Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) S08: SOP-8, TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ PIN CONFIGURATION



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	$V_{DS}$	-40	V	
Gate-Source Voltage	$V_{GS}$	$\pm 25$	V	
Continuous Drain Current (Note 2)	$I_D$	$T_A=25^\circ\text{C}$	-7.3	A
		$T_A=70^\circ\text{C}$	-5.9	A
Pulsed Drain Current (Note 1)	$I_{DM}$	-30	A	
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	TO-252	2	W
		SOP-8	2.5	
Linear Derating Factor		0.02	W/ $^\circ\text{C}$	
Junction Temperature	$T_J$	-55 ~ 150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55 ~ 150	$^\circ\text{C}$	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient (Note 2)	$\theta_{JA}$	TO-252	62.5	$^\circ\text{C}/\text{W}$
		SOP-8	50	

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

2. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board,  $t \leq 10\text{sec}$ ; 125 $^\circ\text{C}/\text{W}$  when mounted on Min. copper pad.

### ■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=-250\mu\text{A}$ , $V_{GS}=0\text{V}$	-40			V	
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25 $^\circ\text{C}$ , $I_D=-1\text{mA}$		-0.03		V/ $^\circ\text{C}$	
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-40\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$			-1	$\mu\text{A}$	
		$V_{DS}=-32\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=70^\circ\text{C}$			-25		
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 25\text{V}$			$\pm 100$	nA	
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=-250\mu\text{A}$	-1		-3	V	
Static Drain-Source On-State Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ , $I_D=-7\text{A}$			28	m $\Omega$	
		$V_{GS}=-4.5\text{V}$ , $I_D=-5\text{A}$			40		
Forward Transconductance	$g_{FS}$	$V_{DS}=-10\text{V}$ , $I_D=-7\text{A}$		13		S	
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=-25\text{V}$ , $f=1.0\text{MHz}$		2240	3600	pF	
Output Capacitance	$C_{OSS}$			300			pF
Reverse Transfer Capacitance	$C_{RSS}$			250			pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge (Note)	$Q_G$	$V_{GS}=-4.5\text{V}$ , $V_{DS}=-32\text{V}$ , $I_D=-7\text{A}$		27	43	nC	
Gate to Source Charge	$Q_{GS}$			6			nC
Gate to Drain Charge	$Q_{GD}$			14			nC
Turn-ON Delay Time (Note)	$t_{D(ON)}$	$V_{GS}=-10\text{V}$ , $V_{DS}=-20\text{V}$ , $I_D=-1\text{A}$ , $R_G=3.3\Omega$ , $R_D=20\Omega$		14		ns	
Rise Time	$t_R$			8			ns
Turn-OFF Delay Time	$t_{D(OFF)}$			46			ns
Fall-Time	$t_F$			17			ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Drain-Source Diode Forward Voltage (Note)	$V_{SD}$	$I_S=-2\text{A}$ , $V_{GS}=0\text{V}$			-1.2	V	
Reverse Recovery Time (Note)	$t_{RR}$	$I_S=-7\text{A}$ , $V_{GS}=0\text{V}$ ,		37		ns	
Reverse Recovery Charge	$Q_{RR}$	$dI/dt=100\text{A}/\mu\text{s}$		57		nC	

Note: Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

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