



# UT9435

*Power MOSFET*

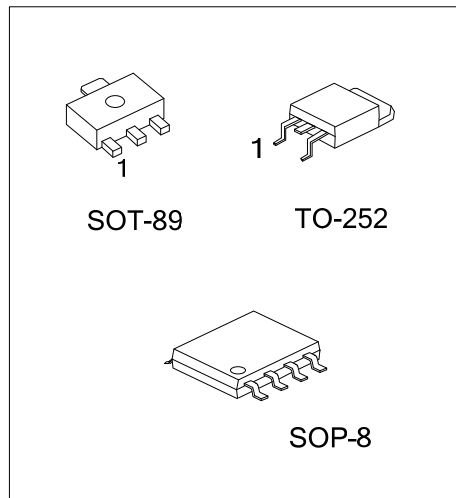
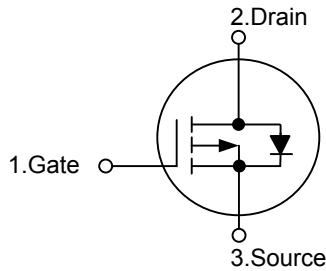
## P-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

The **UT9435** is P-Channel Power MOSFET, designed with high density cell with fast switching speed, ultra low on-resistance, and excellent thermal and electrical capabilities.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
-	UT9435G-AB3-R	SOT-89	G	D	S	-	-	-	-	-	Tape Reel
UT9435L-TN3-R	UT9435G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
-	UT9435G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

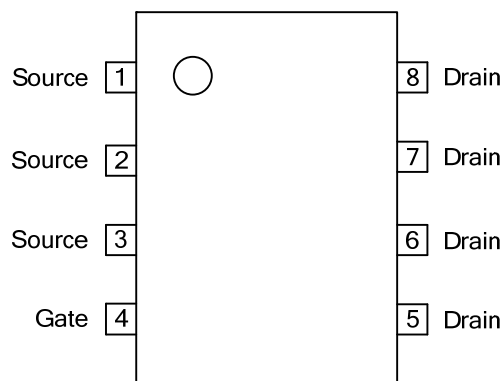
Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UT9435G-AB3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89, TN3: TO-252, SO8: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

PACKAGE	MARKING
SOT-89	<p>UT9435G → Data Code</p> <p>1</p>
SOP-8	<p>8 7 6 5 → Date Code</p> <p>UTC UT9435G</p> <p>● → Lot Code</p> <p>1 2 3 4</p>
TO-252	<p>UTC</p> <p>UT9435</p> <p>Lot Code →</p> <p>→ L: Lead Free</p> <p>→ G: Halogen Free</p> <p>→ Data Code</p> <p>1</p>

■ PIN CONFIGURATION (For SOP-8)



■ ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	-30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Continuous Drain Current		$I_D$	-4.2	A
Pulsed Drain Current (Note 1, 2)		$I_{DM}$	-20	A
Power Dissipation ( $T_A = 25^\circ\text{C}$ )	SOT-89	$P_D$	1.25	W
	SOP-8		2.5	
Power Dissipation ( $T_C = 25^\circ\text{C}$ )		$P_D$	12.5	W
Junction Temperature		$T_J$	+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	SOT-89	$\theta_{JA}$	100	$^\circ\text{C/W}$
	TO-252		110	
	SOP-8		50	

Note: Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board,  $t \leq 10s$ .

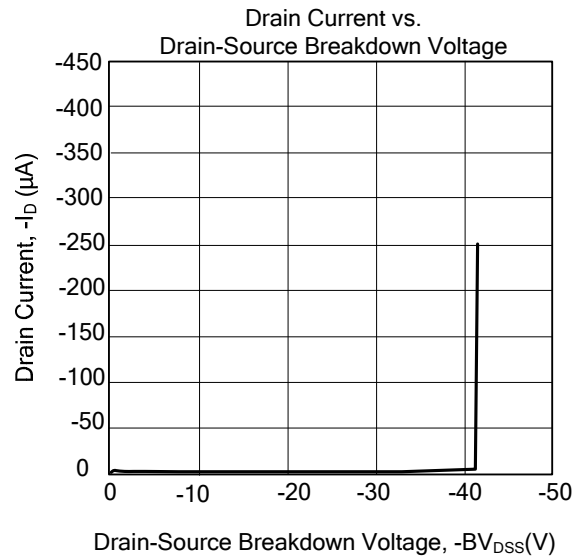
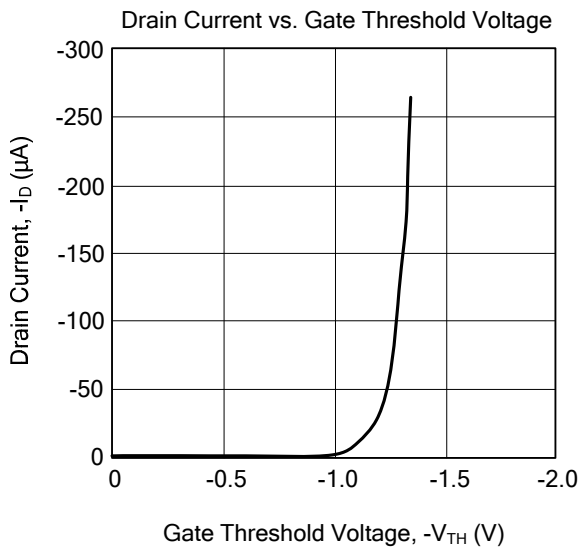
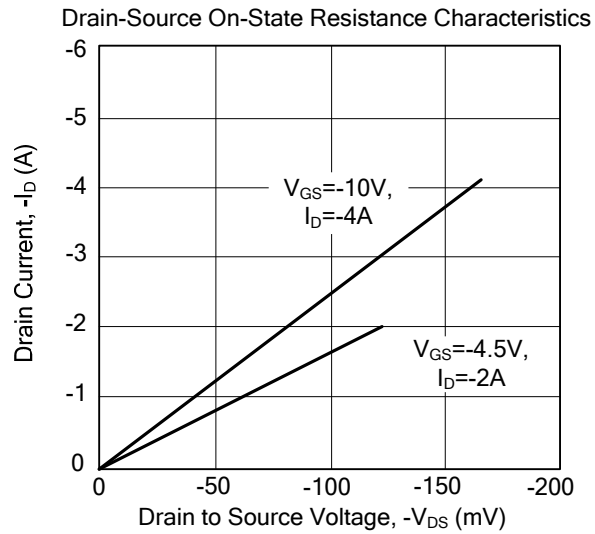
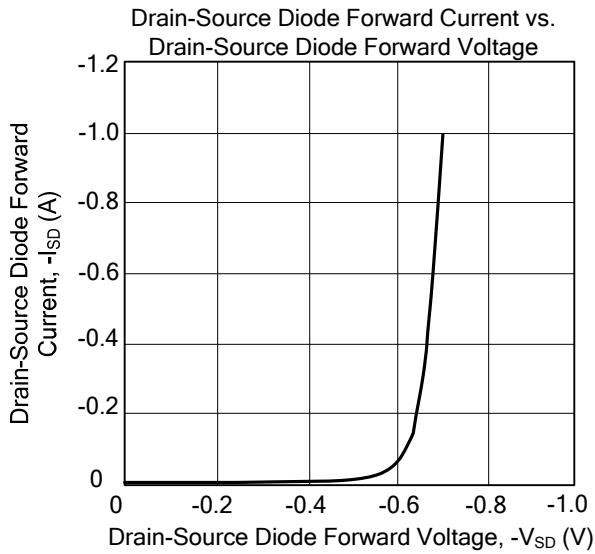
■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{V}, I_D = -250\text{uA}$	-30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$			-1	$\text{uA}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}, I_D = -1\text{mA}$		-0.1		$\text{V}/^\circ\text{C}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\text{uA}$	-1		-3	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -4\text{A}$			50	$\text{m}\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -2\text{A}$			90	$\text{m}\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{V}, V_{DS} = -25\text{V}, f = 1.0\text{MHz}$		520	830	pF
Output Capacitance	$C_{OSS}$		180			pF
Reverse Transfer Capacitance	$C_{RSS}$		130			pF
<b>SWITCHING CHARACTERISTICS</b>						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS} = -15\text{V}, I_D = -1\text{A}, R_G = 3.3\Omega, V_{GS} = -10\text{V}, R_D = 15\Omega$		10	48	ns
Turn-ON Rise Time	$t_R$		7	40	ns	
Turn-OFF Delay Time	$t_{D(OFF)}$		26	292	ns	
Turn-OFF Fall Time	$t_F$		14	112	ns	
Total Gate Charge (Note 2)	$Q_G$		10	16	nC	
Gate-Source Charge	$Q_{GS}$	$V_{DS} = -25\text{V}, V_{GS} = -4.5\text{V}, I_D = -4\text{A}$		2		nC
Gate-Drain Charge	$Q_{GD}$			6		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S = -1\text{A}, V_{GS} = 0\text{V}$			-1.3	V
Reverse Recovery Time	$t_{RR}$	$I_S = -4\text{A}, V_{GS} = 0\text{V}, dI/dt = -100\text{A}/\mu\text{s}$		30		ns
Reverse Recovery Charge	$Q_{RR}$			24		nC

Notes: 1. Pulse width limited by  $T_{J(MAX)}$

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

## TYPICAL CHARACTERISTICS



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