



## UTR4502

Power MOSFET

### POWER MOSFET -30 V, -1.95A, SINGLE, P-CHANNEL

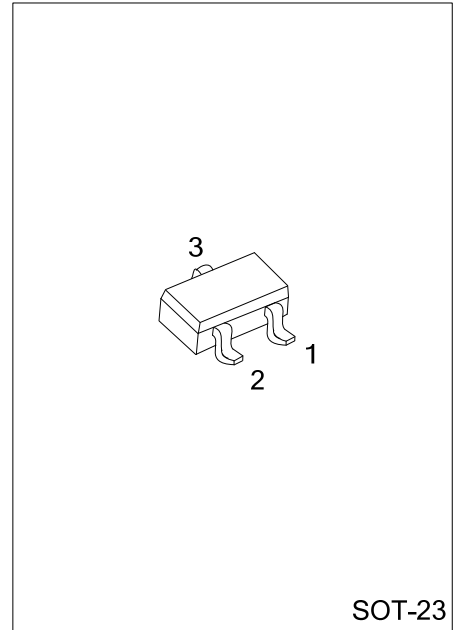
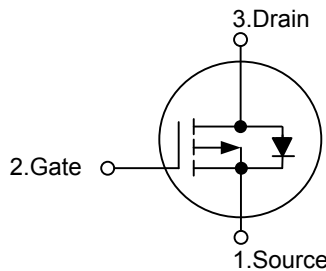
#### DESCRIPTION

The **UTR4502** uses UTC advanced technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

#### FEATURES

- \*  $R_{DS(ON)} < 155m\Omega @ V_{GS} = -10V$
- \*  $R_{DS(ON)} < 240m\Omega @ V_{GS} = -4.5V$
- \* Low capacitance
- \* Optimized gate charge
- \* Fast switching capability
- \* Avalanche energy specified

#### SYMBOL

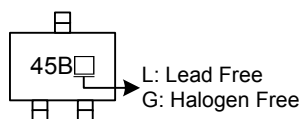


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTR4502L-AE3-R	UTR4502G-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UTR4502L-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free</p>
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#### MARKING



■ 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 (Note 3)	$I_D$	-1.13	A
Pulsed Drain Current (Note 1, 2)	$I_{DM}$	-6.8	A
Total Power Dissipation	$P_D$	0.4	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

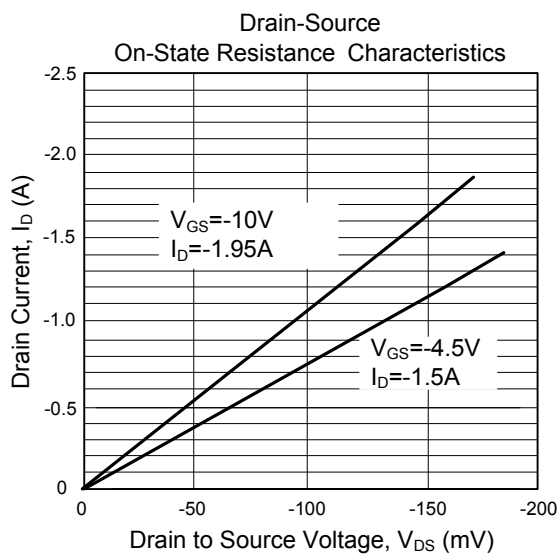
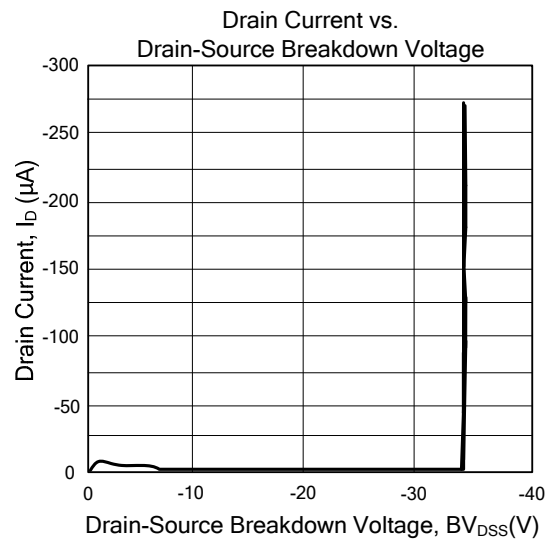
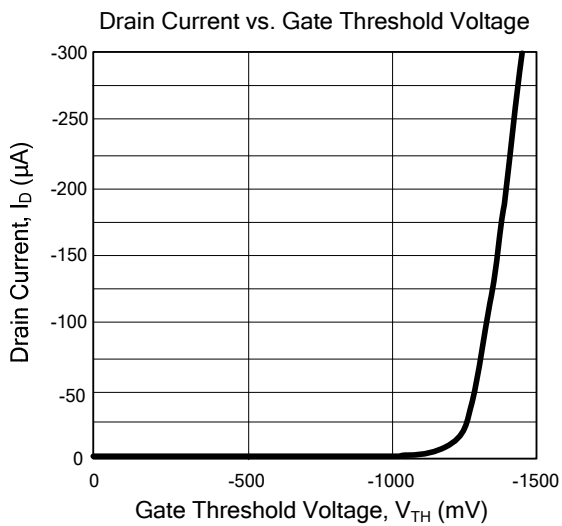
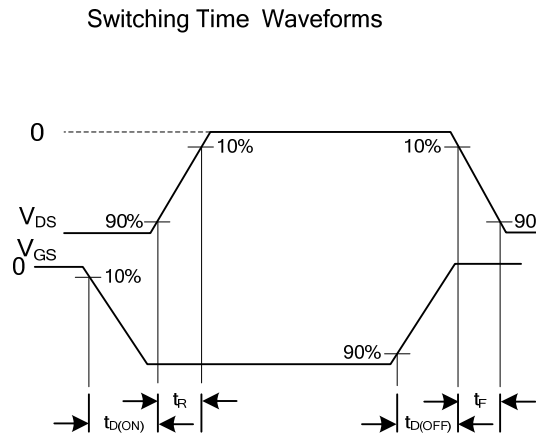
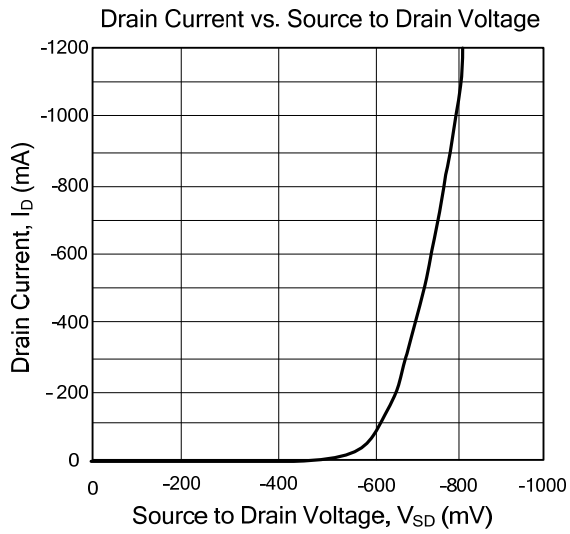
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	$\theta_{JA}$			300	$^{\circ}\text{C}/\text{W}$

■ 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	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1.0		-3.0	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-1.95\text{A}$		155	200	m $\Omega$
		$V_{GS}=-4.5\text{V}, I_D=-1.5\text{A}$		240	350	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=-15\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		200		pF
Output Capacitance	$C_{OSS}$			80		pF
Reverse Transfer Capacitance	$C_{RSS}$			50		pF
<b>SWITCHING PARAMETERS (Note 4)</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=-10\text{V}, V_{DD}=-15\text{V}, I_D=-1.95\text{A}, R_{GEN}=6\Omega$		5.2	10	ns
Turn-ON Rise Time	$t_R$			12	24	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			19	96	ns
Turn-OFF Fall-Time	$t_F$			17.5	48	ns
Total Gate Charge	$Q_{G(TOT)}$	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-1.95\text{A}$		6	10	nC
Threshold Gate Charge	$Q_{G(TH)}$			0.3		nC
Gate Source Charge	$Q_{GS}$			1		nC
Gate Drain Charge	$Q_{GD}$			1.7		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 3)</b>						
Drain-Source Diode Forward Voltage(Note2)	$V_{SD}$	$I_S=-1.25\text{A}, V_{GS}=0\text{V}$		-0.8	-1.2	V
Reverse Recovery Time	$t_{RR}$	$V_{GS}=0\text{V}, dI_{SD}/dt=100\text{A/s}, I_S=-1.25\text{A}$		23		ns

Note: 1. Pulse width limited by  $T_{J(MAX)}$   
 2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

## TYPICAL CHARACTERISTICS



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