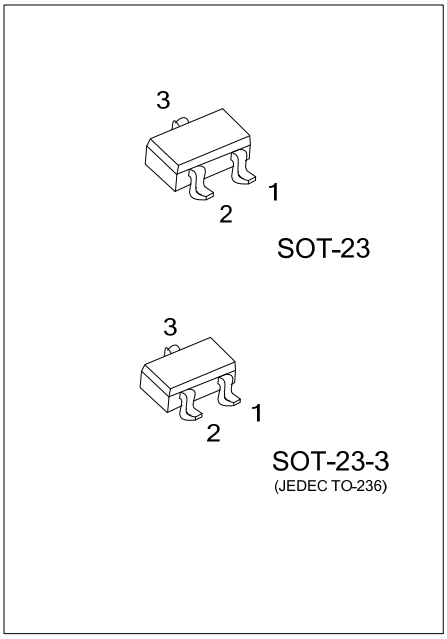
UTR4502

Power MOSFET

-1.95 Amps, -30 Volts
P-CHANNEL POWER MOSFET



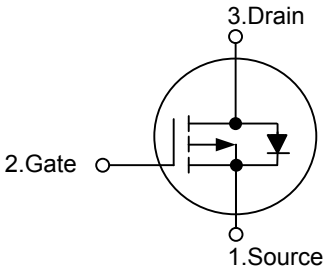
■ DESCRIPTION

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

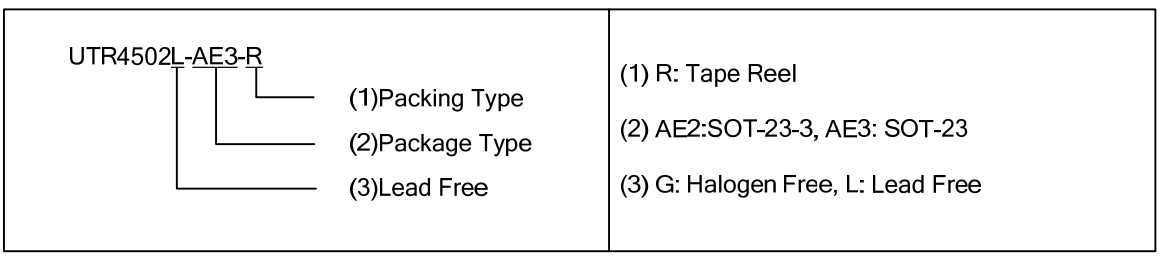
* $R_{DS(ON)}$<155mΩ @V_{GS}=-10V
* $R_{DS(ON)}$<240mΩ @V_{GS}=-4.5V
* Low capacitance
* Optimized gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL

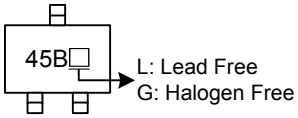


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTR4502L-AE2-R	UTR4502G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UTR4502L-AE3-R	UTR4502G-AE3-R	SOT-23	S	G	D	Tape Reel



■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25℃, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±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	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

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	θ_{JA}			300	℃/W

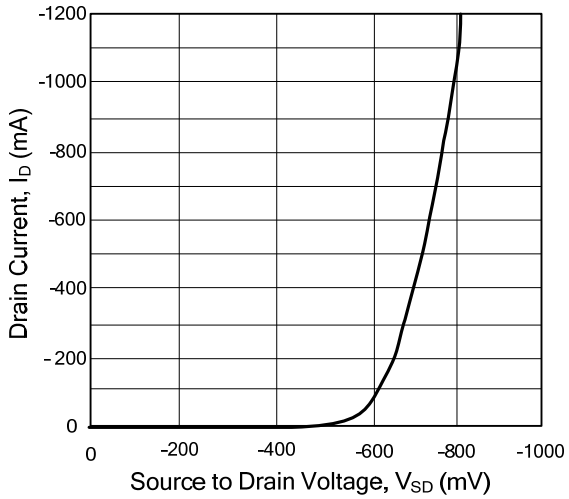
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_D=-250μA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.0		-3.0	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-1.95A		155	200	mΩ
		V_{GS}=-4.5V, I_D=-1.5A		240	350	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		200		pF
Output Capacitance	C_{OSS}			80		pF
Reverse Transfer Capacitance	C_{RSS}			50		pF
SWITCHING PARAMETERS (Note 4)						
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=-10V, V_{DD}=-15V, I_D=-1.95A, R_{GEN}=6Ω		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}=-15V, V_{GS}=-10V, I_D =-1.95A		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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 3)						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	I_S=-1.25A, V_{GS}=0V		-0.8	-1.2	V
Reverse Recovery Time	t_{RR}	V_{GS}=0V, dI_{SD}/d_t=100A/s I_S=-1.25A		23		ns

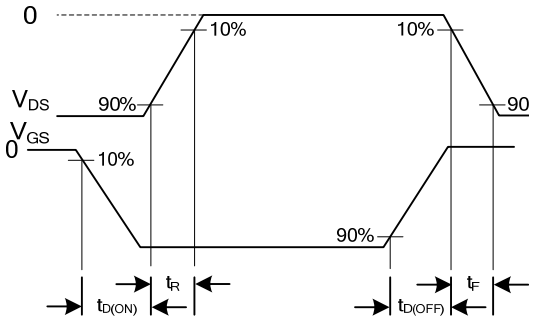
Note: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤2%.

■ TYPICAL CHARACTERISTICS

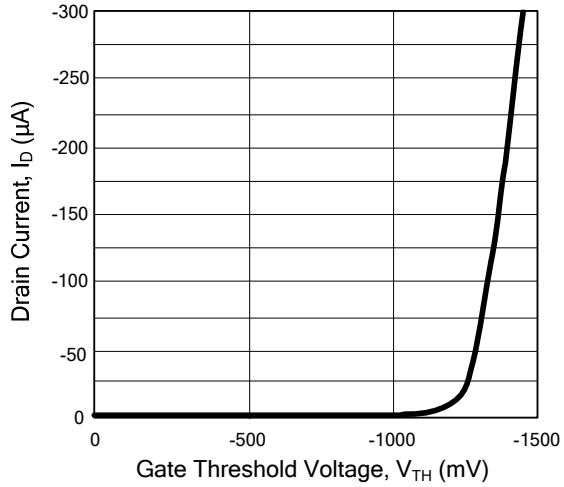
Drain Current vs. Source to Drain Voltage



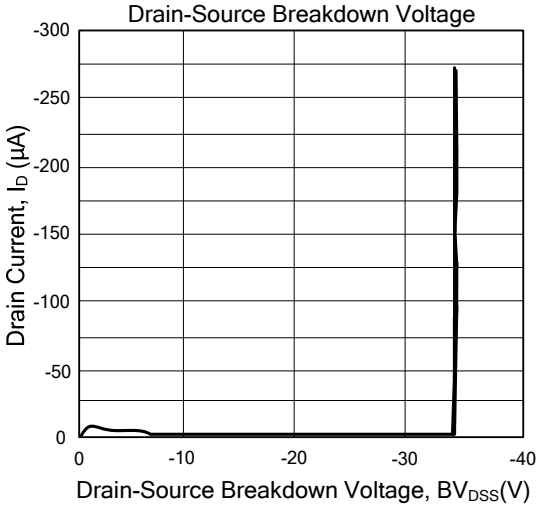
Switching Time Waveforms



Drain Current vs. Gate Threshold Voltage



Drain Current vs.
Drain-Source Breakdown Voltage



Drain-Source
On-State Resistance Characteristics