



UTM2054

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

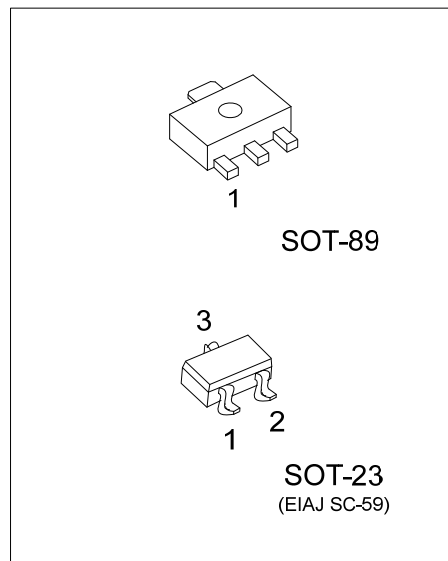
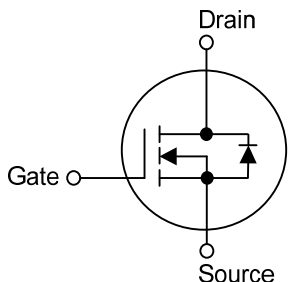
DESCRIPTION

The **UTM2054** uses advanced trench 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

- * $R_{DS(ON)} \leq 40m\Omega @ V_{GS}=10V, I_D=5.0A$
- * $R_{DS(ON)} \leq 54m\Omega @ V_{GS}=4.5V, I_D=3.5A$
- * $R_{DS(ON)} \leq 130m\Omega @ V_{GS}=2.5V, I_D=2.5A$
- * Ultra low gate charge (typical 11.5 nC)
- * Low reverse transfer capacitance (C_{RSS} = typical 60 pF)
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability, high ruggedness

SYMBOL



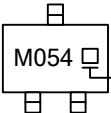
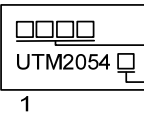
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTM2054L-AB3-R	UTM2054G-AB3-R	SOT-89	G	D	S	Tape Reel
UTM2054L-AE3-R	UTM2054G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UTM2054G-AB3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AB3: SOT-89, AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23	SOT-89
 <p>M054</p> <p>L: Lead Free G: Halogen Free</p>	 <p>□□□□ → Date Code UTM2054 → L: Lead Free G: Halogen Free 1</p>

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 16	V
Drain Current ($V_{GS}=10\text{V}$)	Continuous	5	A
	Pulsed	20	
Diode Continuous Forward Current	I_S	3	A
Power Dissipation	SOT-89	1.47	W
	SOT-23	1.25	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.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	20			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 16\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.6	0.9	1.5	V
Static Drain-Source On-State Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=5\text{A}$		35	40	m Ω
		$V_{GS}=4.5\text{V}, I_D=3.5\text{A}$		45	54	
		$V_{GS}=2.5\text{V}, I_D=2.5\text{A}$		110	130	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{DS}=15\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		450		pF
Output Capacitance	C_{OSS}			100		pF
Reverse Transfer Capacitance	C_{RSS}			60		pF
Gate resistance	R_G	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$		2.5		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD}=10\text{V}, R_L=10\Omega, I_{DS}=1\text{A}, V_{GEN}=4.5\text{V}, R_G=6\Omega$		7	10	ns
Turn-On Rise Time	t_R			15	25	ns
Turn-Off Delay Time	$t_{D(OFF)}$			19	26	ns
Turn-Off Fall Time	t_F			6	7	ns
Total Gate Charge	Q_G	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_{DS}=5\text{A}$		11.5	15	nC
Gate-Source Charge	Q_{GS}			3.8		nC
Gate-Drain Charge	Q_{DD}			5.2		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage (Note)	V_{SD}	$I_{SD}=3\text{A}, V_{GS}=0\text{V}$		0.7	1.3	V

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

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