



UTM2054

Power MOSFET

N-CHANNEL ENHANCEMENT
MODE

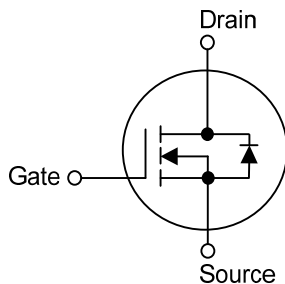
■ DESCRIPTION

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

- * $R_{DS(ON)} \leq 45 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=5.0\text{A}$
- * $R_{DS(ON)} \leq 55 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=3.5\text{A}$
- * $R_{DS(ON)} \leq 120 \text{ m}\Omega$ @ $V_{GS}=2.5\text{V}$, $I_D=2.5\text{A}$
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability, high ruggedness

■ SYMBOL

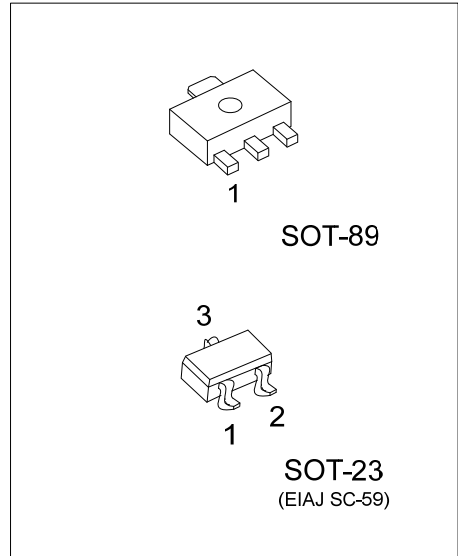


■ ORDERING INFORMATION

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 D: Drain S: Source

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

SOT-89	SOT-23
UTM2054 1 → Date Code → L: Lead Free → G: Halogen Free	M054 → L: Lead Free → G: Halogen Free

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	20	V
Gate-Source Voltage		V _{GSS}	±12	V
Drain Current (V _{GS} =10V)	Continuous	I _D	5	A
	Pulsed	I _{DM}	20	A
Diode Continuous Forward Current		I _S	3	A
Power Dissipation	SOT-89	P _D	1.4	W
	SOT-23		1.2	W
Junction Temperature		T _J	150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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	θ _{JA}	89	°C/W
	SOT-23		104	°C/W

Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =12V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.2	V
Static Drain-Source On-State Resistance (Note)	R _{DS(ON)}	V _{GS} =10V, I _D =5A		38	45	mΩ
		V _{GS} =4.5V, I _D =3.5A		45	55	mΩ
		V _{GS} =2.5V, I _D =2.5A		70	120	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		152		pF
Output Capacitance	C _{OSS}			45		pF
Reverse Transfer Capacitance	C _{RSS}			3.6		pF
Gate resistance	R _G	V _{DS} =0V, f=1MHz		2.5		Ω
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _G	V _{DS} =16V, V _{GS} =4.5V, I _{DS} =5.0A		6.2		nC
Gate-Source Charge	Q _{GS}			1.1		nC
Gate-Drain Charge	Q _{DD}			1.7		nC
Turn-On Delay Time	t _{D(ON)}	V _{DD} =10V, R _L =10Ω, I _{DS} =5.0A, V _{GEN} =4.5V, R _G =3Ω		3		ns
Turn-On Rise Time	t _R			17		ns
Turn-Off Delay Time	t _{D(OFF)}			19		ns
Turn-Off Fall Time	t _F			23		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage (Note)	V _{SD}	I _{SD} =5.0A, V _{GS} =0V		0.7	1.3	V

Note: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

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