



**UTG4009**

Advance

*Insulated Gate Bipolar Transistor*

**400V TRENCH GATE  
FIELD-STOP IGBT**

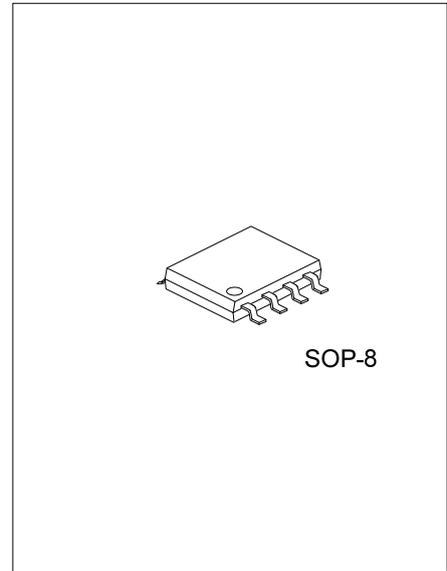
■ DESCRIPTION

The UTC **UTG4009** is an Trench Field-Stop Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to provide customers with high switching speed, low saturation voltage and low switching loss, etc.

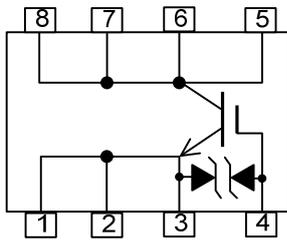
The UTC **UTG4009** is suitable for the resonant or soft switching applications.

■ FEATURES

- \* High switching speed
- \* High avalanche ruggedness
- \* Low saturation voltage:  $V_{CE(SAT),Typ.}=4.3V @ I_C=40.A, V_{GE}=2.5V$   
( $T_C = 25^{\circ}C$ )



■ SYMBOL



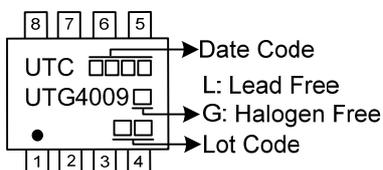
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
UTG4009L-S08-R	UTG4009G-S08-R	SOP-8	E	E	E	G	C	C	C	C	Tape Reel

Note: Pin Assignment: E: Emitter G: Gate C: Collector

<p>UTG4009G-S08-R</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) TS08: SOP-8</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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■ MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	$V_{CES}$	400	V
Gate-Emitter Voltage	$V_{GES}$	$\pm 6$	V
Continuous Collector Current	$T_C=25^\circ\text{C}$	75	A
	$T_C=100^\circ\text{C}$	40	A
Collector Current Pulsed (Note 1)	$I_{CM}$	150	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	1.8	W
Operating Junction Temperature	$T_J$	-40 ~ +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Absolute maximum ratings are those values beyond which the device could be permanently damaged.

2. Pulse width limited by maximum junction temperature.

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	$\theta_{JC}$	69.4 (Note)	$^\circ\text{C}/\text{W}$

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

### ■ ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ , unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>Off Characteristics</b>						
Collector-Emitter Breakdown Voltage	$BV_{CES}$		400			V
Collector Cut-Off Current	$I_{CES}$	$V_{CE}=400\text{V}, V_{GE}=0\text{V}$			1	$\mu\text{A}$
G-E Leakage Current	$I_{GES}$	$V_{CE}=0\text{V}, V_{GE}=\pm 6\text{V}$			$\pm 10$	$\mu\text{A}$
<b>On Characteristics</b>						
Gate to Emitter Threshold Voltage	$V_{GE(TH)}$	$I_C=250\mu\text{A}, V_{CE}=V_{GE}$	0.4		1.2	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=40\text{A}, V_{GE}=2.5\text{V}$			5.3	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{IES}$	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$		3410		pF
Output Capacitance	$C_{OES}$			34		pF
Reverse Transfer Capacitance	$C_{RES}$			25		pF

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