



UTG25N65LLS1

Preliminary

Insulated Gate Bipolar Transistor

650V TRENCH GATE FIELDTOP IGBT

DESCRIPTION

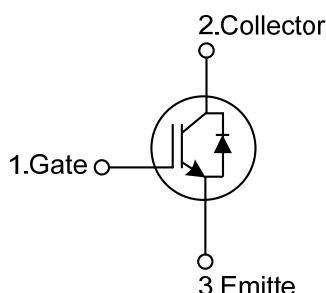
The UTC **UTG25N65LLS1** is an Trench Fieldtop Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to provide customers with high switching speed, low saturation voltage and low switching loss, etc.

The UTC **UTG25N65LLS1** is suitable for the resonant or soft switching applications.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT), Typ.} = 1.67V @ I_C = 25A, V_{GE} = 15V$ ($T_C = 25^\circ C$)

SYMBOL

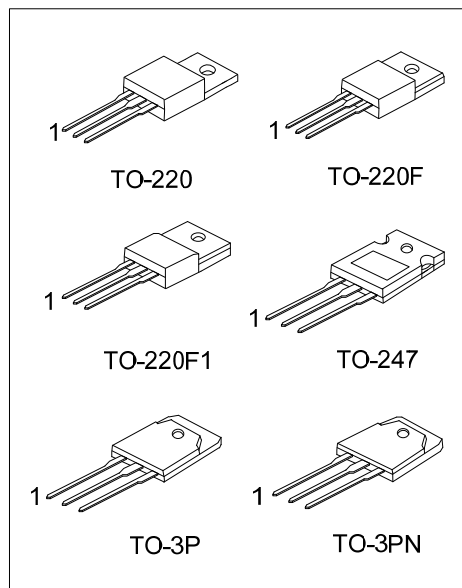


ORDERING INFORMATION

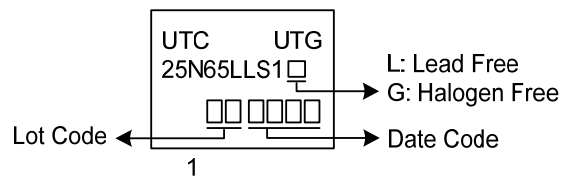
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG25N65LLS1L-TA3-T	UTG25N65LLS1G-TA3-T	TO-220	G	C	E	Tube
UTG25N65LLS1L-TF1-T	UTG25N65LLS1G-TF1-T	TO-220F1	G	C	E	Tube
UTG25N65LLS1L-TF3-T	UTG25N65LLS1G-TF3-T	TO-220F	G	C	E	Tube
UTG25N65LLS1L-T47-T	UTG25N65LLS1G-T47-T	TO-247	G	C	E	Tube
UTG25N65LLS1L-T3P-T	UTG25N65LLS1G-T3P-T	TO-3P	G	C	E	Tube
UTG25N65LLS1L-T3N-T	UTG25N65LLS1G-T3N-T	TO-3PN	G	C	E	Tube

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

UTG25N65LLS1G-TA3-T	(1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TF3: TO-220F T47: TO-247, T3P: TO-3P, T3N: TO-3PN (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V_{CES}	650	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Transient Gate-emitter voltage ($t_p < 5\text{ ms}$)			± 25	V
Continuous Collector Current	$T_C=25^{\circ}\text{C}$	I_C	50	A
	$T_C=100^{\circ}\text{C}$		25	A
Collector Current Pulsed (Note 1)		I_{CM}	100	A
Diode Forward Current	$T_C=25^{\circ}\text{C}$	I_F	50	A
	$T_C=100^{\circ}\text{C}$		25	A
Short Circuit Withstand Time $V_{GE} = 15\text{V}$, $V_{CC} \leq 200\text{V}$ Allowed number of short circuits < 1000 Time between short circuits: $\geq 1.0\text{s}$ $T_{VJ}= 25^{\circ}\text{C}$		t_{SC}	3	μs
Power Dissipation ($T_C=25^{\circ}\text{C}$)	TO-220	P_D	100	W
	TO-220F		35	W
	TO-220F1			
	TO-247			
	TO-3P/TO-3PN			
Operating Junction Temperature		T_J	-40 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ +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	RATING	UNIT
Junction to Case	TO-220	θ_{JC}	1.25	$^\circ\text{C/W}$
	TO-220F		3.57	$^\circ\text{C/W}$
	TO-220F1		0.43	$^\circ\text{C/W}$
	TO-247		0.4	$^\circ\text{C/W}$
	TO-3P/TO-3PN			

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off Characteristics						
Collector-Emitter Breakdown Voltage	BV _{CES}		650			V
Collector Cut-Off Current	I _{CES}	V _{CE} =650V, V _{GE} =0V			5	μA
G-E Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} =±20V			±400	nA
On Characteristics						
Gate to Emitter Threshold Voltage	V _{GE(TH)}	I _C =250μA, V _{CE} =V _{GE}	4.0		7.0	V
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =25A, V _{GE} =15V	T _C =25°C	1.67	2.2	V
			T _C =125°C	2.1		V
Dynamic Characteristics						
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz		1220		pF
Output Capacitance	C _{OES}			103		pF
Reverse Transfer Capacitance	C _{RES}			18		pF
Switching Characteristics						
Total Gate Charge	Q _G	V _{CE} =520V, I _C =25A, V _{GE} =15V		66		nC
Gate-Emitter Charge	Q _{GE}			22		nC
Gate-Collector Charge	Q _{GC}			29		nC
Turn-On Delay Time	t _{DON}	V _{CC} =400V, I _C =25A, R _G =5Ω, V _{GE} =0~15V, L=1000μH		23		ns
Rise Time	t _r			28		ns
Turn-Off Delay Time	t _{DOFF}			44		ns
Fall Time	t _f			179		ns
Turn-On Switching Loss	E _{ON}			1.04		mJ
Turn-Off Switching Loss	E _{OFF}			0.75		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V _F	I _F =25A			2.5	V
Reverse Recovery Time	t _{rr}	I _F =25A, dI/dt=100A/μS, V _{CC} =400V		49		ns
Reverse Recovery Charge	Q _{rr}			724		nC

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