



UTG30N135FQ-S

Preliminary

Insulated Gate Bipolar Transistor

1350V TRENCH GATE FIELD-STOP IGBT

DESCRIPTION

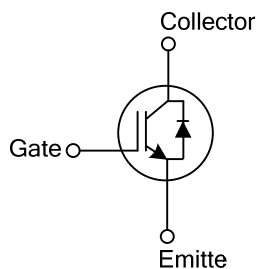
The UTC **UTG30N135FQ-S** is an Trench Field-Stop Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to provide customers with high switching speed, low saturation voltage and low switching loss, etc.

The UTC **UTG30N135FQ-S** is suitable for the resonant or soft switching applications.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT), Typ.} = 1.64V @ I_C = 30A, V_{GE} = 15V$ ($T_C = 25^\circ C$)

SYMBOL



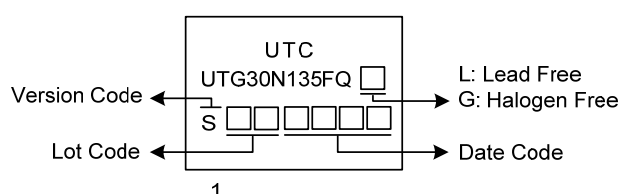
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG30N135FQL-S-T3N-T	UTG30N135FQG-S-T3N-T	TO-3PN	G	C	E	Tube
UTG30N135FQL-S-T47-T	UTG30N135FQG-S-T47-T	TO-247	G	C	E	Tube

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

	(1) Packing Type	(1) T: Tube
	(2) Package Type	(2) T3N: TO-3PN, T47: TO-247
	(3) Version Code	(3) Version S
	(4) Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V _{CES}	1350	V
Gate-Emitter Voltage		V _{GES}	±20	V
Transient Gate-emitter voltage (t _p < 5 ms)			±25	V
Continuous Collector Current	T _C =25°C	I _C	60	A
	T _C =100°C		30	A
Collector Current Pulsed (Note 1)		I _{CM}	120	A
Diode Forward Current	T _C =25°C	I _F	36	A
	T _C =100°C		18	A
Power Dissipation (T _C =25°C)	TO-3PN	P _D	270	W
	TO-247		245	W
Operating Junction Temperature		T _J	-40 ~ +150	°C
Storage Temperature Range		T _{STG}	-55 ~ +150	°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-3PN	θ_{JC}	0.46	°C/W
	TO-247		0.51	°C/W

■ 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}			1350			V
Collector Cut-Off Current	I _{CES}	V _{CE} =1350V, 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}		4.5		7.5	V
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =30A, V _{GE} =15V	T _C =25°C		1.64	2.1	V
			T _C =125°C		2.0		V
Dynamic Characteristics							
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz			2860		pF
Output Capacitance	C _{OES}				96.3		pF
Reverse Transfer Capacitance	C _{RES}				30.9		pF
Switching Characteristics							
Total Gate Charge	Q _G	V _{CE} =600V, I _C =30A, V _{GE} =15V			132		nC
Gate-Emitter Charge	Q _{GE}				29.5		nC
Gate-Collector Charge	Q _{GC}				59.7		nC
Turn-On Delay Time	t _{DON}	V _{CC} =600V, I _C =30A, R _G =5Ω, V _{GE} =0~15V, L=500uH			16.7		ns
Rise Time	t _R				32.2		ns
Turn-Off Delay Time	t _{DOFF}				120		ns
Fall Time	t _F				213		ns
Turn-On Switching Loss	E _{ON}				2.149		mJ
Turn-Off Switching Loss	E _{OFF}				2.207		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Forward Voltage Drop	V _F	I _F =50A				2.0	V
Reverse Recovery Time	t _{rr}	I _F =30A, dI/dt=100A/μS, V _{CC} =400V			54.1		ns
Reverse Recovery Charge	Q _{rr}				1.28		μC

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