



UTG7N65ZLND1

Preliminary

Insulated Gate Bipolar Transistor

650V TRENCH GATE FIELD-STOP IGBT

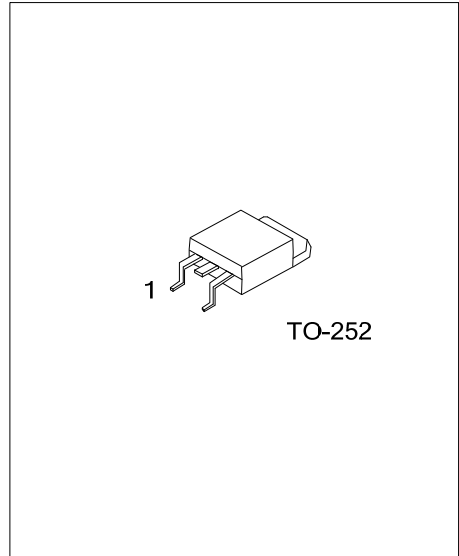
DESCRIPTION

The UTC **UTG7N65ZLND1** 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.

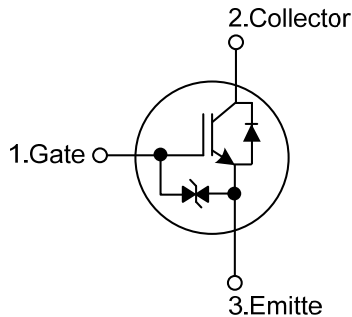
The UTC **UTG7N65ZLND1** is suitable for the resonant or soft switching applications.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT),Typ.}=1.5V @ I_C=7.0A, V_{GE}=15V$ ($T_C = 25^\circ C$)
- * With ESD Protected



SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG7N65ZLND1L-TN3-R	UTG7N65ZLND1G-TN3-R	TO-252	G	C	E	Tape Reel

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

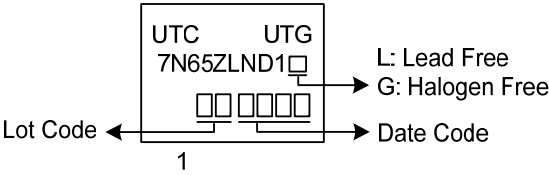
UTG7N65ZLND1G-TN3-R 	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	V _{CE}	650	V
Gate-Emitter Voltage	V _{GE}	±20	V
Transient Gate-emitter voltage (t _p < 5 ms)		±25	V
Continuous Collector Current	I _C	T _C =25°C	14
		T _C =100°C	7
Collector Current Pulsed (Note 1)	I _{CM}	28	A
Diode Forward Current	I _F	T _C =25°C	14
		T _C =100°C	7
Power Dissipation (T _C =25°C)	P _D	40	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	θ _{JC}	3.12	°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 _{CE}		650			V
Collector Cut-Off Current	I _{CE}	V _{CE} =650V, V _{GE} =0V			5	μA
G-E Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} =±20V			±10	μA
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 =7.0A, V _{GE} =15V	T _C =25°C	1.5	2.0	V
			T _C =125°C	1.9		V
Dynamic Characteristics						
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz		798		pF
Output Capacitance	C _{OES}			35		pF
Reverse Transfer Capacitance	C _{RES}			14		pF
Switching Characteristics						
Total Gate Charge	Q _G	V _{CE} =520V, I _C =7.0A, V _{GE} =15V		52		nC
Gate-Emitter Charge	Q _{GE}			17		nC
Gate-Collector Charge	Q _{GC}			22		nC
Turn-On Delay Time	t _{DON)}	V _{CC} =400V, I _C =7.0A, R _G =5Ω, V _{GE} =0~15V, L=500μH		6		ns
Rise Time	t _R			13		ns
Turn-Off Delay Time	t _{DOFF)}			45		ns
Fall Time	t _F			207		ns
Turn-On Switching Loss	E _{ON}			0.3		mJ
Turn-Off Switching Loss	E _{OFF}			0.2		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V _F	I _F =7.0A			2.1	V
Reverse Recovery Time	t _{rr}	I _F =7.0A, dI/dt=100A/μS		50		ns
Reverse Recovery Charge	Q _{rr}			364		nC

■ TEST CIRCUIT AND WAVEFORMS

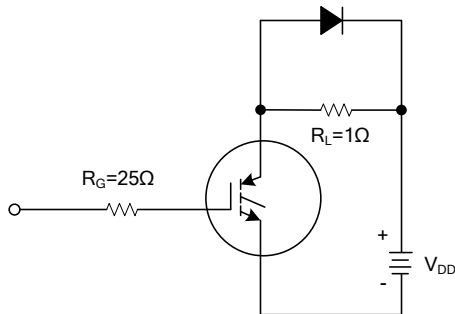


Fig 1. INDUCTIVE SWITCHING TEST CIRCUIT

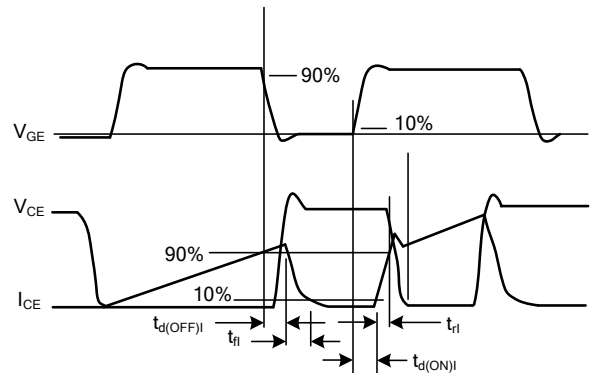


Fig 2. SWITCHING TEST WAVEFORMS

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