



UPG5N65Z

Preliminary

Insulated Gate Bipolar Transistor

650V, SMPS N-CHANNEL IGBT

DESCRIPTION

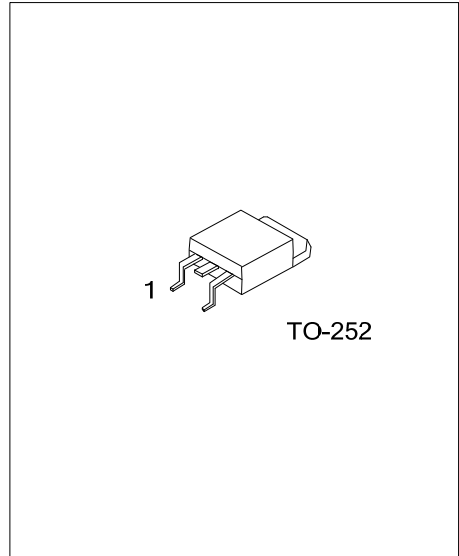
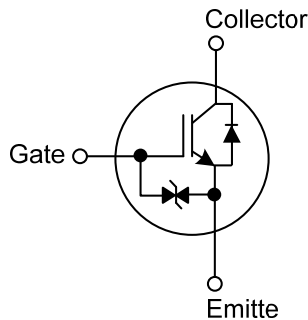
The UTC **UPG5N65Z** is a N-channel IGBT. it uses UTC's advanced technology to provide customers with high input impedance, high switching speed and low conduction loss, etc.

The UTC **UPG5N65Z** is suitable for high voltage switching, high frequency switch mode power supplies.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT),Typ.}=1.9V @ I_C=5.0A, V_{GE}=15V$ ($T_C = 25^{\circ}C$)
- * With ESD Protected

SYMBOL



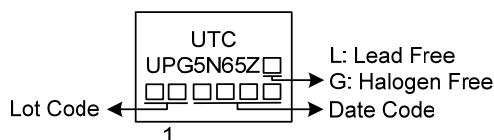
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UPG5N65ZL-TN3-R	UPG5N65ZG-TN3-R	TO-252	G	C	E	Tape Reel

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

UPG5N65ZG-TN3-R		
(1)Packing Type	(1) R: Tape Reel	
(2)Package Type	(2) TN3: TO-252	
(3)Green Package	(3) 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}	650	V
Gate-Emitter Voltage	V _{GES}	±20	V
Transient Gate-emitter voltage (t _p < 5 ms)		±25	V
Continuous Collector Current	I _C	T _C =25°C	10
		T _C =100°C	5
Collector Current Pulsed (Note 1)	I _{CM}	20	A
Diode Forward Current	I _F	T _C =25°C	10
		T _C =100°C	5
Power Dissipation (T _C =25°C)	P _D	39	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}	3.2	°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}	I _C =250μA, V _{GE} =0V	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			±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 =5.0A, V _{GE} =15V	T _C =25°C	1.9	2.4	V	
			T _C =125°C	2.3		V	
Dynamic Characteristics							
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz		188		pF	
Output Capacitance	C _{OES}			31		pF	
Reverse Transfer Capacitance	C _{RES}			6		pF	
Switching Characteristics							
Total Gate Charge	Q _G	V _{CE} =520V, I _C =5.0A, V _{GE} =15V		26		nC	
Gate-Emitter Charge	Q _{GE}			13		nC	
Gate-Collector Charge	Q _{GC}			7		nC	
Turn-On Delay Time	t _{DON)}	V _{CC} =400V, I _C =5.0A, R _G =5Ω, V _{GE} =0~15V, L=500μH		3		ns	
Rise Time	t _R			12		ns	
Turn-Off Delay Time	t _{DOFF)}			3		ns	
Fall Time	t _F			212		ns	
Turn-On Switching Loss	E _{ON}			0.17		mJ	
Turn-Off Switching Loss	E _{OFF}			0.13		mJ	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Forward Voltage Drop	V _F		I _F =5.0A			2.0	V
Reverse Recovery Time	t _{rr}	I _F =5.0A, dI/dt=100A/μS, V _{CC} =400V		51		ns	
Reverse Recovery Charge	Q _{rr}			99		nC	

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