



UTG30N65LNS1

Insulated Gate Bipolar Transistor

650V SMPS N-CHANNEL IGBT

DESCRIPTION

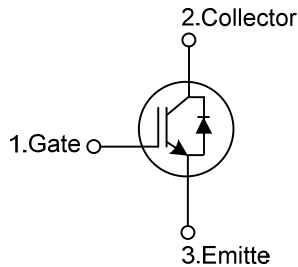
The UTC **UTG30N65LNS1** is a N-channel IGBT. it uses UTC's advanced technology to provide customers with high input impedance, high switching speed and low conduction loss, etc.

The UTC **UTG30N65LNS1** is suitable for high voltage switching, high frequency switch mode power supplies.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT), Typ.} = 1.89V @ I_C=30A, V_{GE}=15V$ ($T_C=25^{\circ}C$)

SYMBOL

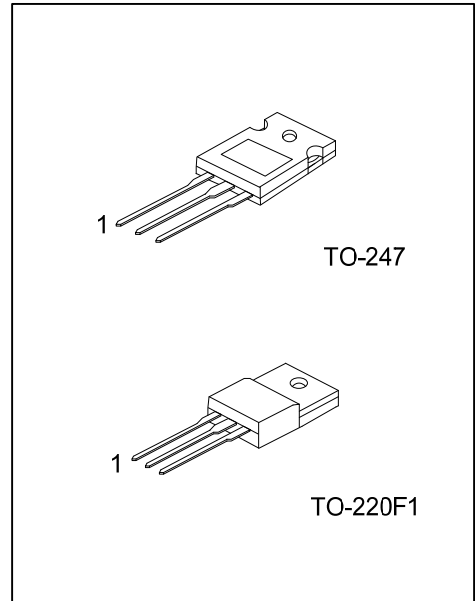


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG30N65LNS1L-TF1-T	UTG30N65LNS1G-TF1-T	TO-220F1	G	C	E	Tube
UTG30N65LNS1L-T47-T	UTG30N65LNS1G-T47-T	TO-247	G	C	E	Tube

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

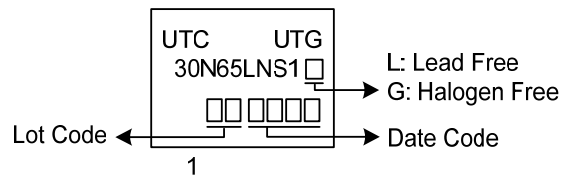
UTG30N65LNS1G-TF1-T		(1) Packing Type	(1) T: Tube
		(2) Package Type	(2) TF1: TO-220F1, T47: TO-247
		(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



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■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V _{CES}	650	V
Gate-Emitter Voltage		V _{GES}	±20	V
Transient Gate-Emitter Voltage (tp < 5 ms)			±25	V
Continuous Collector Current	T _C =25°C	I _C	30	A
	T _C =100°C		15	A
Collector Current Pulsed (Note 1)		I _{CM}	60	A
Diode Forward Current	T _C =25°C	I _F	30	A
	T _C =100°C		15	A
Power Dissipation (T _C =25°C)	TO-220F1	P _D	33	W
	TO-247		278	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-220F1	θ_{JC}	3.78	°C/W
	TO-247		0.45	°C/W

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

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			±250	nA
ON CHARACTERISTICS						
Gate to Emitter Threshold Voltage	V _{GE(TH)}	I _C =250μA, V _{CE} =V _{GE}	4.0		7.5	V
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =30A, V _{GE} =15V	T _C =25°C	1.89	2.4	V
			T _C =125°C	2.3		V
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz		934		pF
Output Capacitance	C _{OES}			68		pF
Reverse Transfer Capacitance	C _{RES}			14		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _G	V _{CE} =600V, I _C =30A, V _{GE} =15V		54		nC
Gate-Emitter Charge	Q _{GE}			20		nC
Gate-Collector Charge	Q _{GC}			20		nC
Turn-On Delay Time	t _{DON}	V _{CC} =600V, I _C =30A, R _G =5Ω, V _{GE} =0~15V, L=500μH		12		ns
Rise Time	t _R			24		ns
Turn-Off Delay Time	t _{DOFF}			34		ns
Fall Time	t _F			174		ns
Turn-On Switching Loss	E _{ON}			1.18		mJ
Turn-Off Switching Loss	E _{OFF}			0.85		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V _F	I _F =30A			3.0	V
Reverse Recovery Time	t _{rr}	I _F =30A, dI/dt=100A/μS, V _{CC} =400V		35		ns
Reverse Recovery Charge	Q _{rr}			72		nC

■ TEST CIRCUIT AND WAVEFORMS

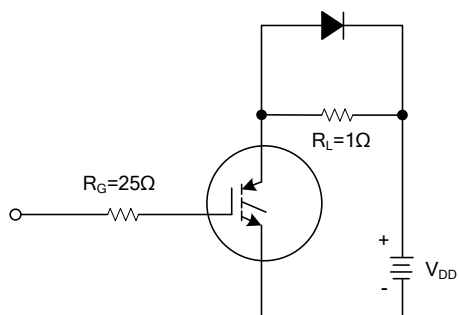


Fig 1. INDUCTIVE SWITCHING TEST CIRCUIT

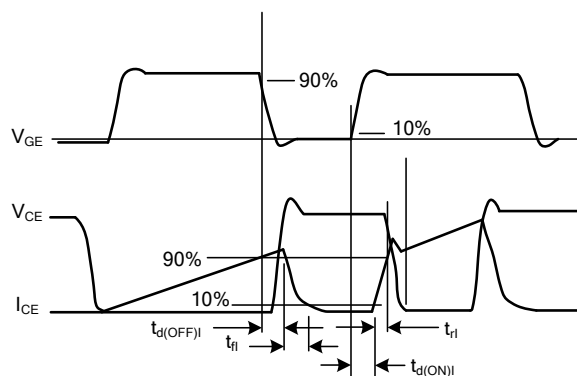
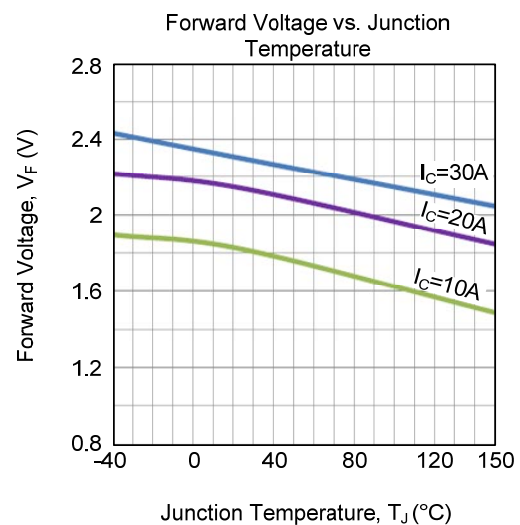
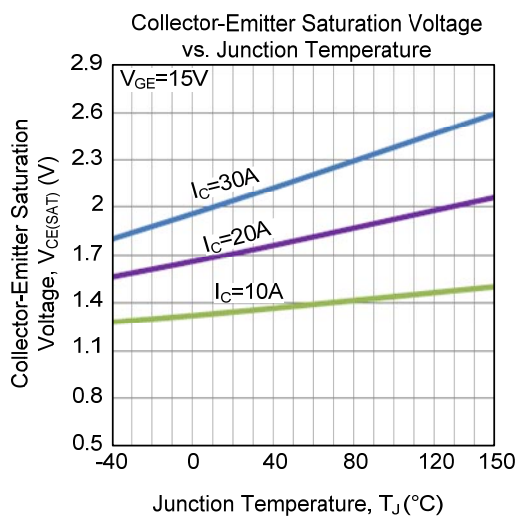
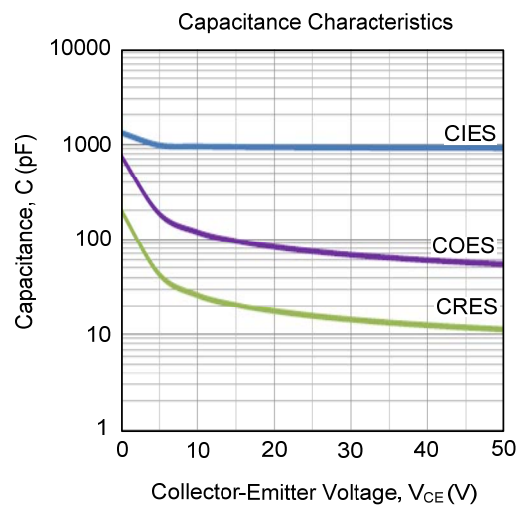
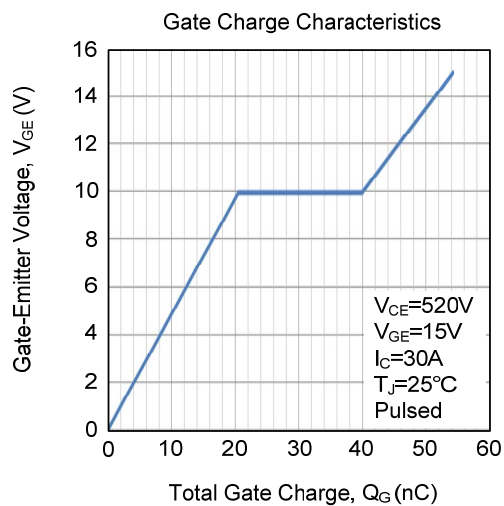
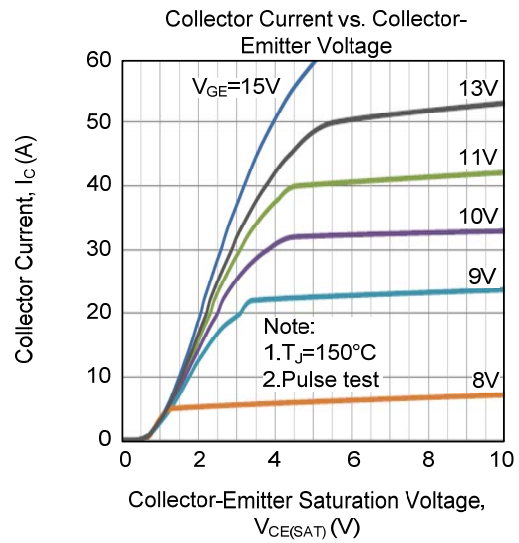
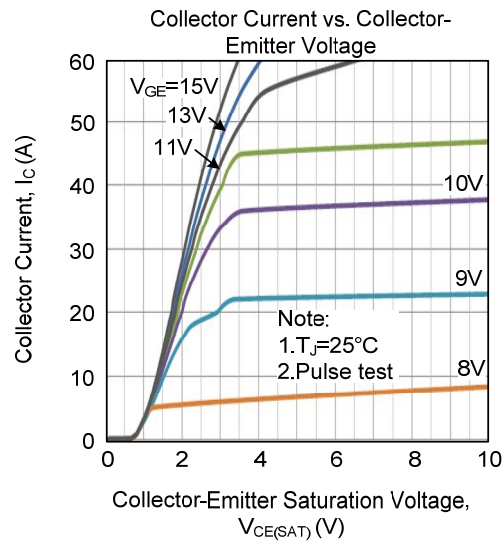
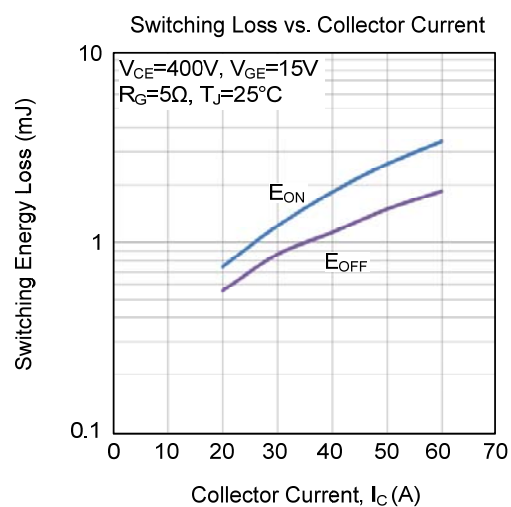
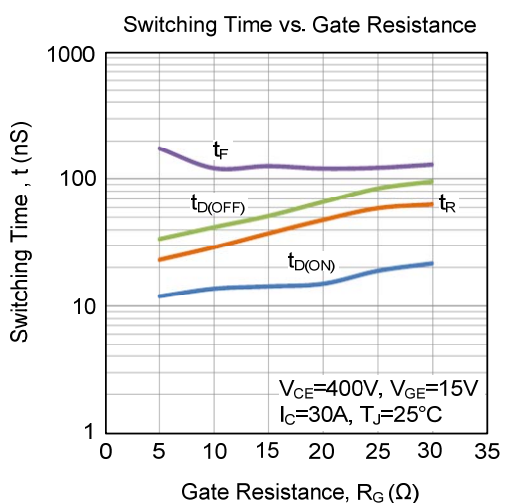
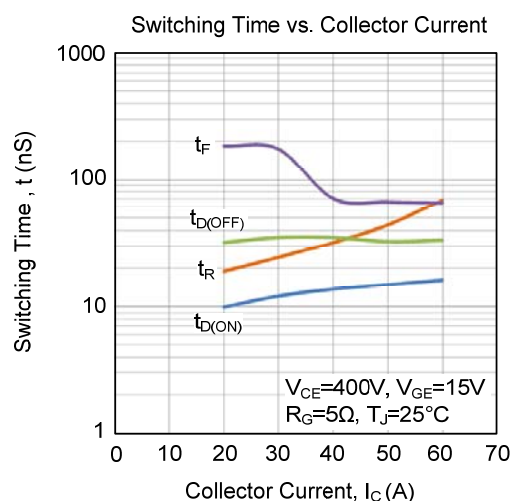
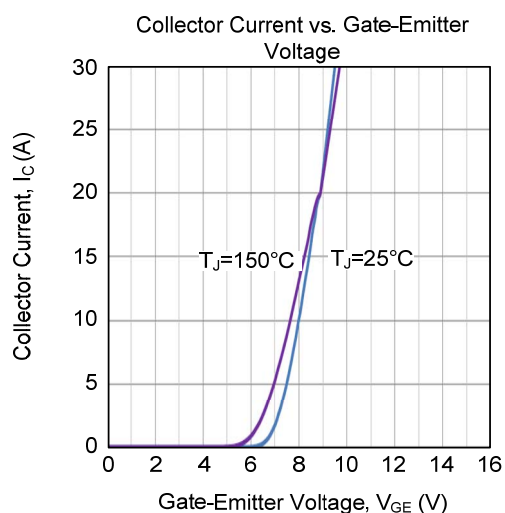
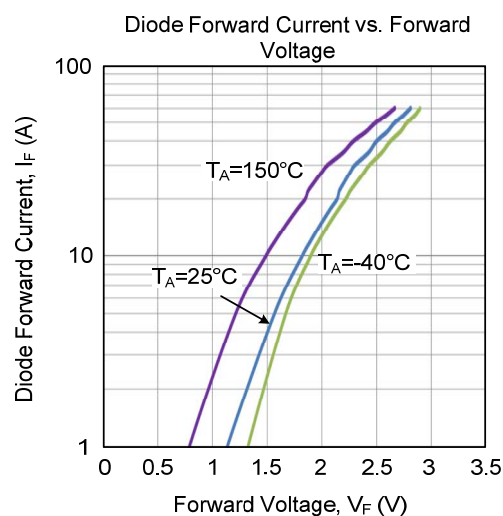
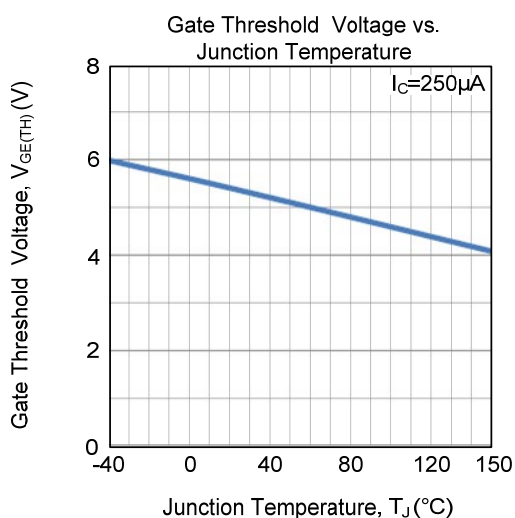


Fig 2. SWITCHING TEST WAVEFORMS

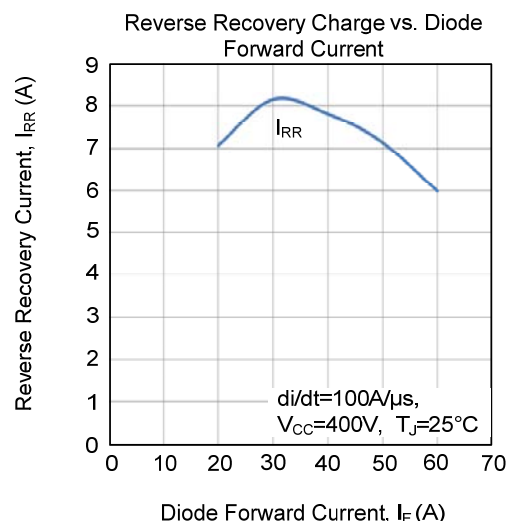
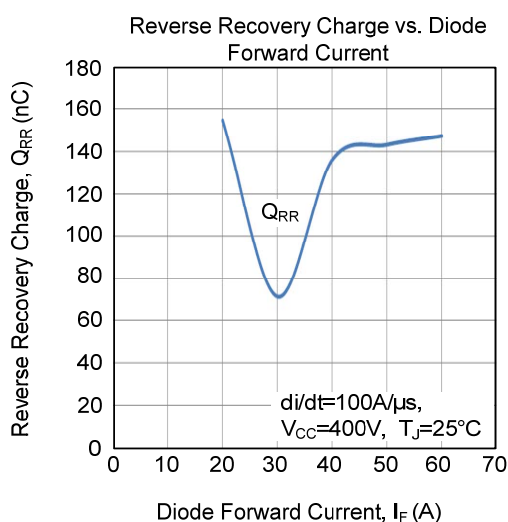
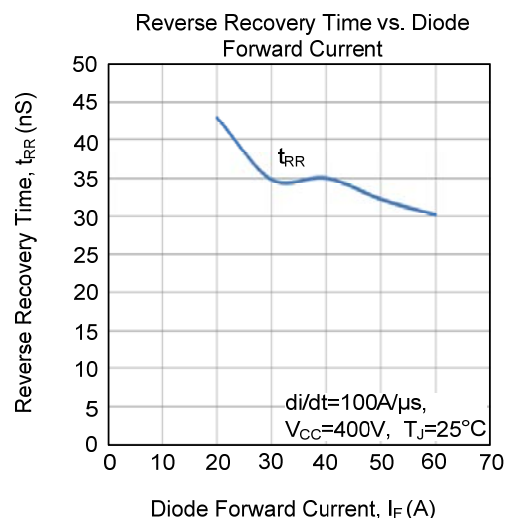
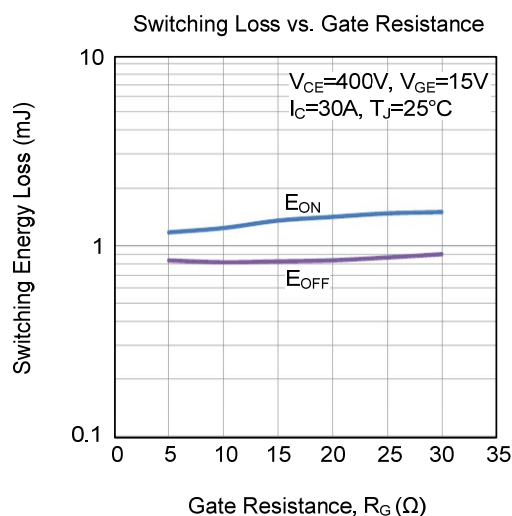
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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