



UTG8N65LNS1

Insulated Gate Bipolar Transistor

650V TRENCH GATE FIELD-STOP IGBT

DESCRIPTION

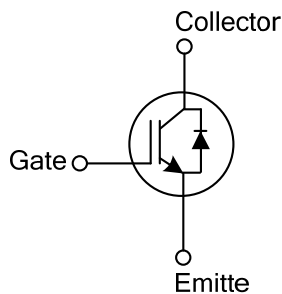
The UTC **UTG8N65LNS1** is an Trench Field-Stop Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to provide customers with high switching speed, low saturation voltage and low switching loss, etc.

The UTC **UTG8N65LNS1** is suitable for the resonant or soft switching applications.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(sat), typ} = 1.45V @ I_C=8.0A, V_{GE}=15V$ ($T_C=25^\circ C$)

SYMBOL

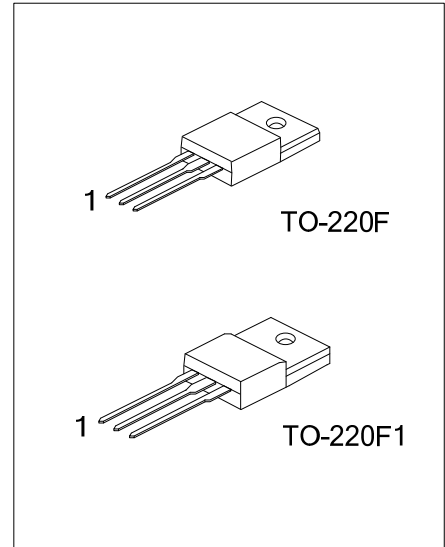


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG8N65LNS1L-TF1-T	UTG8N65LNS1G-TF1-T	TO-220F1	G	C	E	Tube
UTG8N65LNS1L-TF3-T	UTG8N65LNS1G-TF3-T	TO-220F	G	C	E	Tube

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

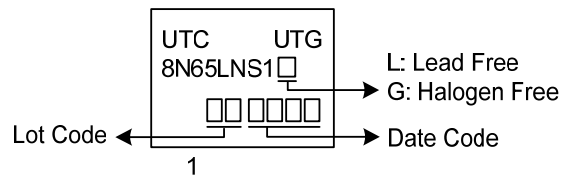
UTG8N65LNS1G-TF1-T		(1) Packing Type	(1) T: Tube
		(2) Package Type	(2) TF1: TO-220F1, TF3: TO-220F
		(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



UTG8N65LNS1

Insulated Gate Bipolar Transistor

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V_{CES}	650	V
Gate-Emitter Voltage		V_{GES}	±20	V
Continuous Collector Current	$T_C=25^{\circ}\text{C}$	I_C	16	A
	$T_C=100^{\circ}\text{C}$		8	A
Collector Current Pulsed (Note 3)		I_{CM}	32	A
Diode Forward Current	$T_C=25^{\circ}\text{C}$	I_F	16	A
	$T_C=100^{\circ}\text{C}$		8	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)		P_D	32	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}	3.96	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, 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}	$V_{CE}=V_{CES}, V_{GE}=0V$			5	μA
G-E Leakage Current	I_{GES}	$V_{GE}=V_{GES}, V_{CE}=0V$			± 100	nA
On Characteristics						
Gate to Emitter Threshold Voltage	$V_{GE(TH)}$	$I_C=250\mu A, V_{CE}=V_{GE}$	4.5		6.5	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=8.0A, V_{GE}=15V$	$T_C=25^{\circ}C$	1.45	1.9	V
			$T_C=125^{\circ}C$	1.8		V
Dynamic Characteristics						
Input Capacitance	C_{IES}	$V_{CE}=25V, V_{GE}=0V, f=1MHz$		8625		pF
Output Capacitance	C_{OES}			47		pF
Reverse Transfer Capacitance	C_{RES}			14		pF
Switching Characteristics						
Total Gate Charge	Q_G	$V_{CE}=520V, I_C=8.0A, V_{GE}=15V$		58		nC
Gate-Emitter Charge	Q_{GE}			17		nC
Gate-Collector Charge	Q_{GC}			24		nC
Turn-On Delay Time	t_{DON}	$V_{CC}=400V, I_C=8.0A, R_G=5\Omega, V_{GE}=0\sim 15V, L=500\mu H$		5		ns
Rise Time	t_R			12		ns
Turn-Off Delay Time	t_{DOFF}			32		ns
Fall Time	t_F			207		ns
Turn-On Switching Loss	E_{ON}			0.27		mJ
Turn-Off Switching Loss	E_{OFF}			0.25		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V_{FM}	$I_F=8.0A$			3.3	V
Reverse Recovery Time	t_{rr}	$I_F=8.0A, dI/dt=100A/\mu S$		50		ns
Reverse Recovery Charge	Q_{rr}			187		μC

■ TEST CIRCUIT AND WAVEFORMS

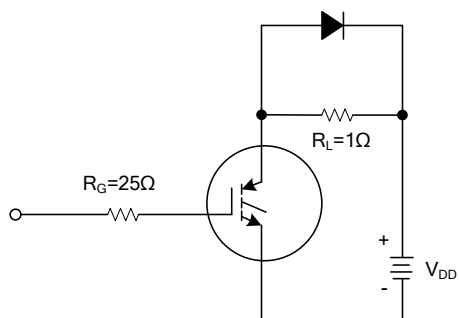


Fig 1. INDUCTIVE SWITCHING TEST CIRCUIT

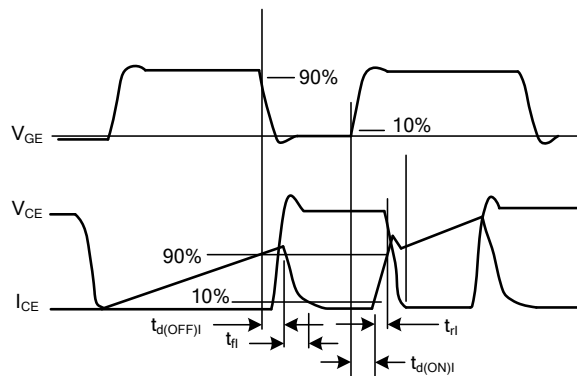
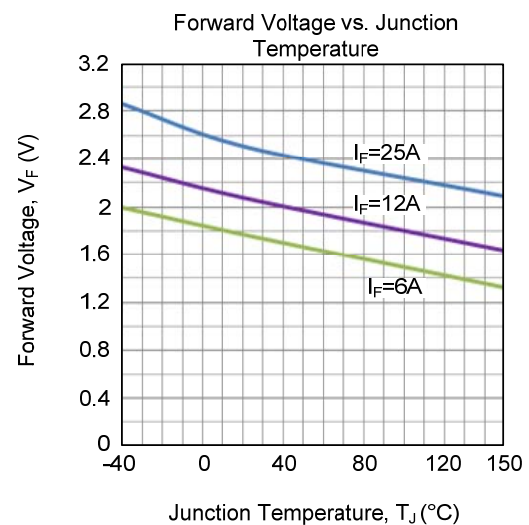
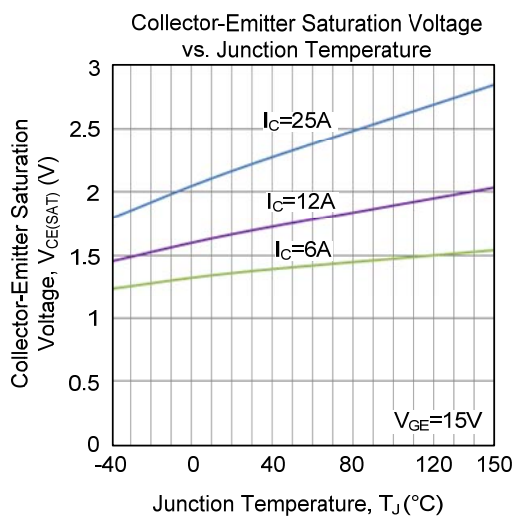
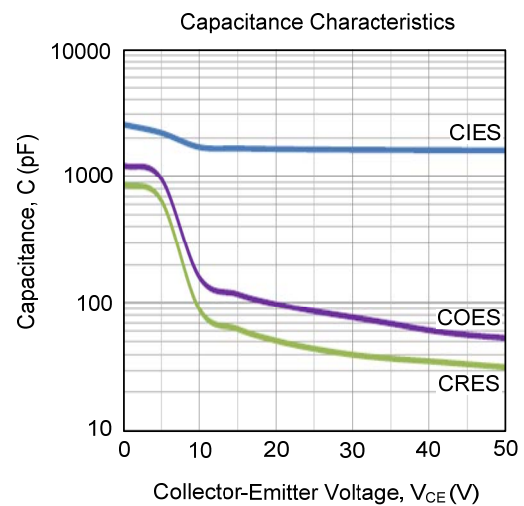
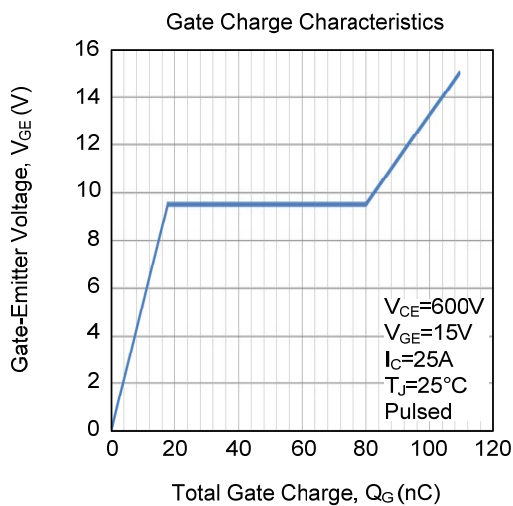
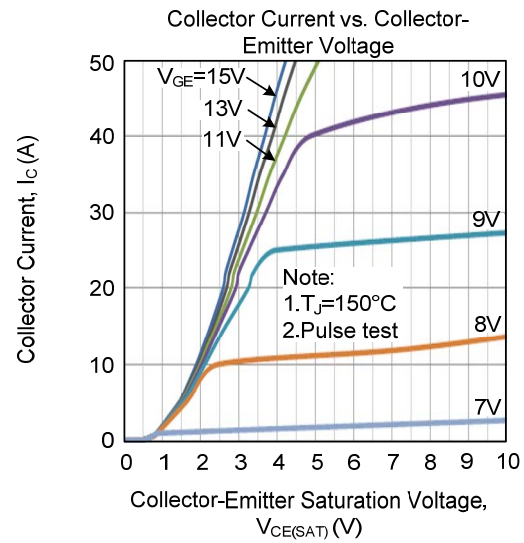
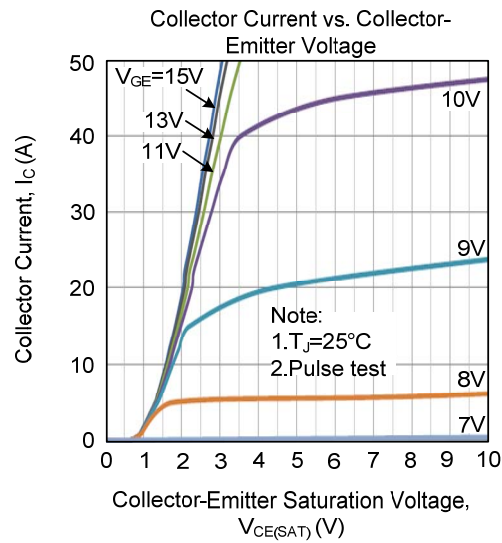
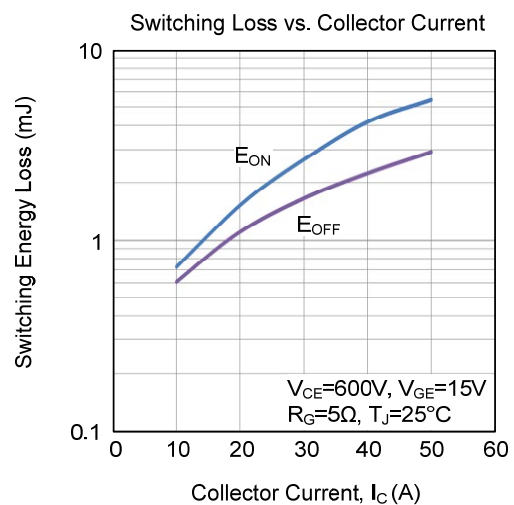
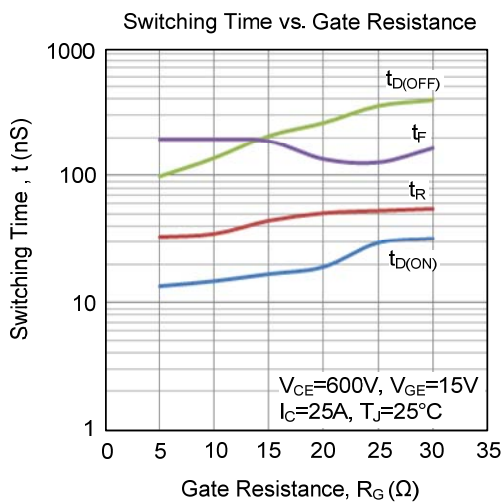
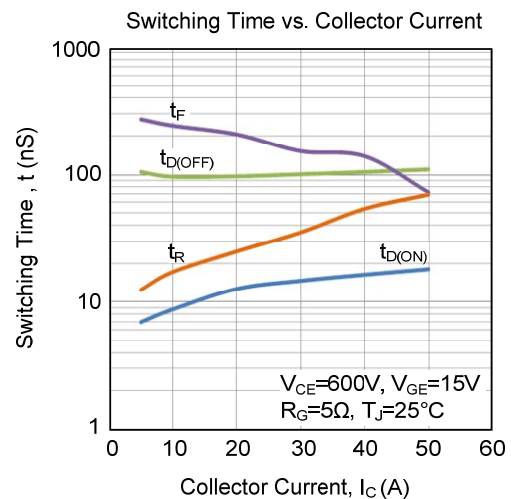
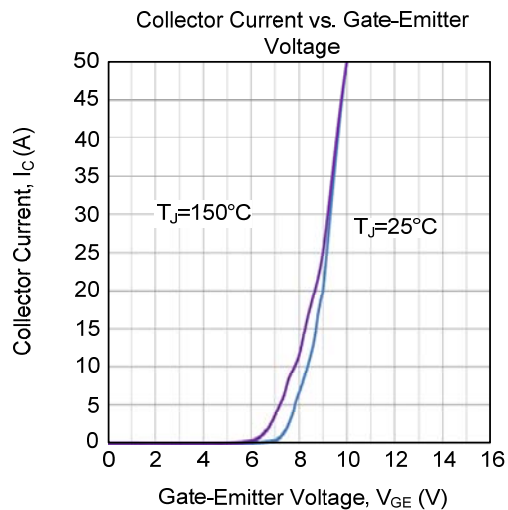
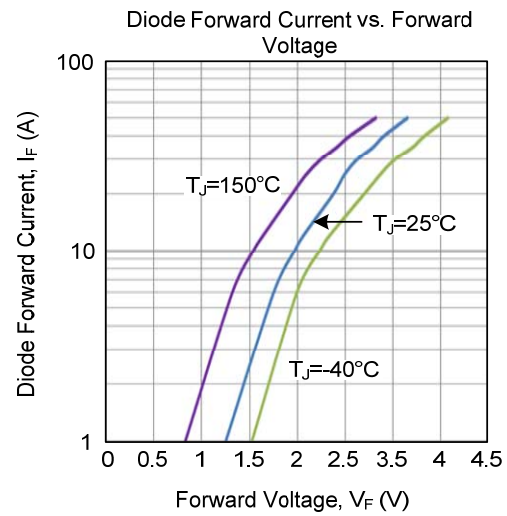
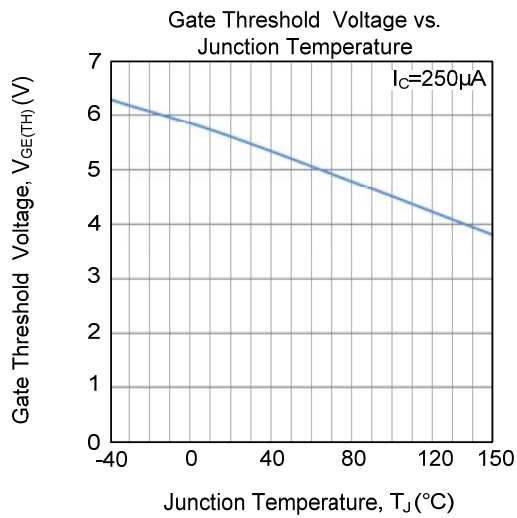


Fig 2. SWITCHING TEST WAVEFORMS

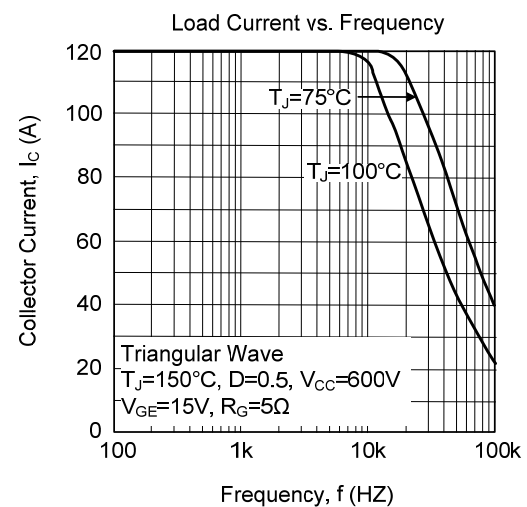
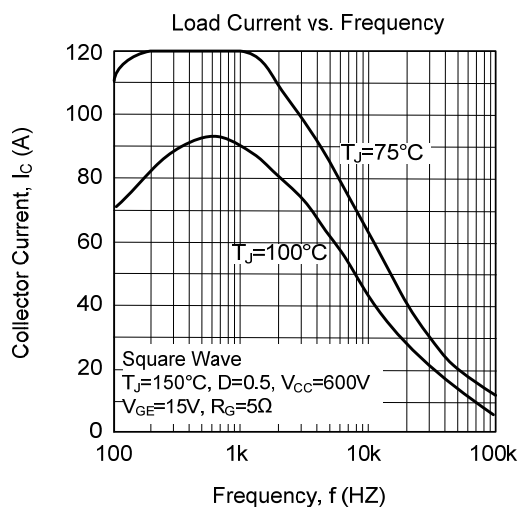
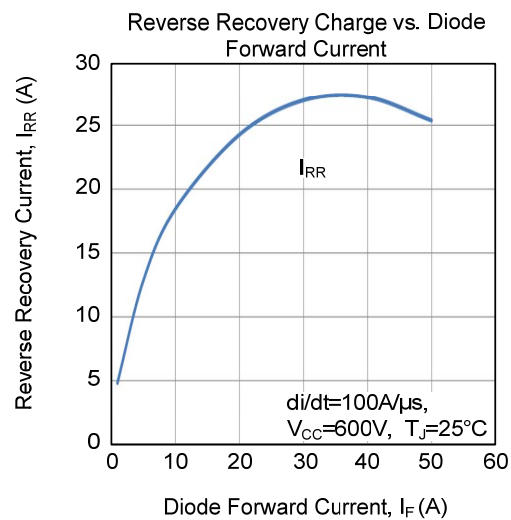
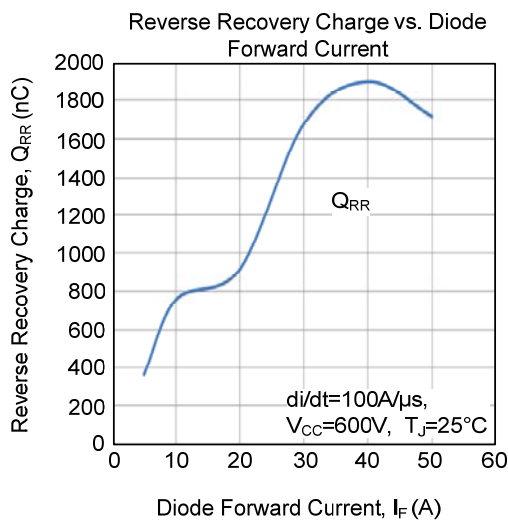
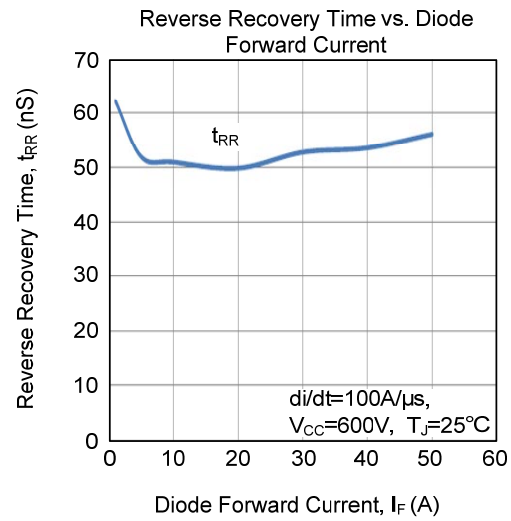
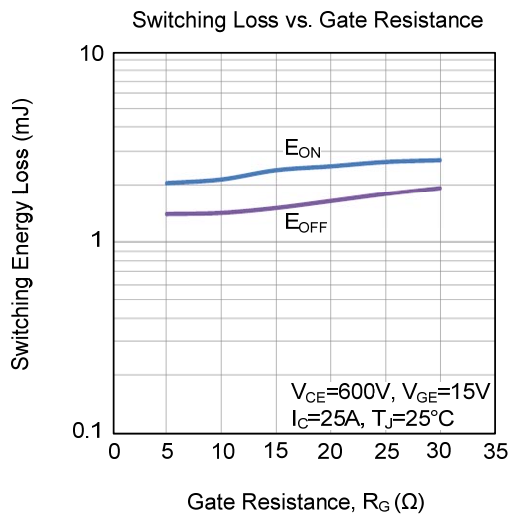
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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