



UG25N120

Preliminary

Insulated Gate Bipolar Transistor

1200V NPT TRENCH IGBT

■ DESCRIPTION

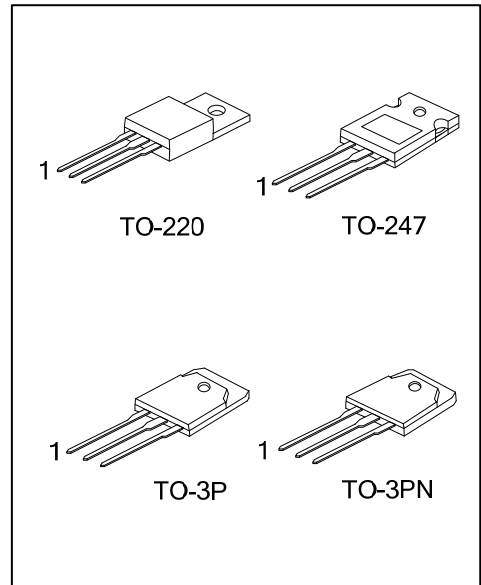
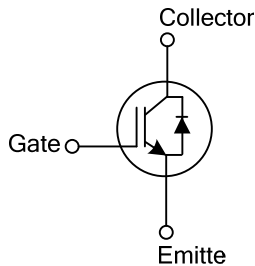
The UTC **UG25N120** is an NPT ignition Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to provide customers with high switching speed, high avalanche ruggedness, low saturation voltage and low switching loss, etc.

The UTC **UG25N120** is suitable for the resonant or soft switching applications.

■ FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(sat), typ} = 2.0V @ I_C=25A$ and $T_C=25^\circ C$
- * Low switching loss: $E_{off, typ} = 0.96mJ @ I_C=25A$ and $T_C=25^\circ C$

■ SYMBOL



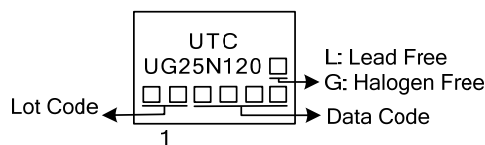
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UG25N120L-TA3-T	UG25N120G-TA3-T	TO-220	G	C	E	Tube
UG25N120L-T3P-T	UG25N120G-T3P-T	TO-3P	G	C	E	Tube
UG25N120L-T3N-T	UG25N120G-T3N-T	TO-3PN	G	C	E	Tube
UG25N120L-T47-T	UG25N120G-T47-T	TO-247	G	C	E	Tube

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

<p>UG25N120L-TA3-T</p>	<p>(1) T: Tube (2) TA3: TO-220, T3P: TO-3P, T3N: TO-3PN, T47: TO-247 (3) L: Lead Free, G: Halogen Free and Lead Free</p>
------------------------	--

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Continuous Collector Current	$T_C=25^\circ\text{C}$	I_C	50	A
	$T_C=100^\circ\text{C}$		25	A
Collector Current Pulsed (Note 1)		I_{CM}	75	A
Diode Continuous Forward Current ($T_C=100^\circ\text{C}$)		I_F	25	A
Diode Maximum Forward Current		I_{FM}	150	A
Power Dissipation	$T_C=25^\circ\text{C}$	TO-220	89	W
		TO-247	200	W
		TO-3P/TO-3PN	312	W
Operating Junction Temperature		T_J	-55~+150	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-55~+150	$^\circ\text{C}$

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 CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^\circ\text{C/W}$
	TO-247		40	$^\circ\text{C/W}$
	TO-3P/TO-3PN		35	$^\circ\text{C/W}$
Junction to Case	TO-220	θ_{JC}	1.4	$^\circ\text{C/W}$
	TO-247		0.62	$^\circ\text{C/W}$
	TO-3P/TO-3PN		0.4	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT		
Off Characteristics								
Collector Cut-Off Current	I _{CES}	V _{CE} =V _{CES} , V _{GE} =0V			3	mA		
G-E Leakage Current	I _{GES}	V _{GE} =V _{GES} , V _{CE} = 0V			±250	mA		
On Characteristics								
Gate to Emitter Threshold Voltage	V _{GE(TH)}	I _C =25mA, V _{CE} =V _{GE}	3.5	5.5	7.5	V		
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =25A, V _{GE} =15V		2.0	2.5	V		
		I _C =25A, V _{GE} =15V, T _C =125°C		2.15		V		
		I _C =50A, V _{GE} =15V		2.65		V		
Dynamic Characteristics								
Input Capacitance	C _{IES}	V _{CE} =30V, V _{GE} =0V, f=1MHz		3700		pF		
Output Capacitance	C _{OES}			130		pF		
Reverse Transfer Capacitance	C _{RES}			80		pF		
Switching Characteristics								
Turn-On Delay Time	t _{DON}	V _{CC} =600V, I _C =25A, R _G =10Ω, V _{GE} =15V, Inductive Load, T _C =25°C		50		ns		
Rise Time	t _R			40		ns		
Turn-Off Delay Time	t _{DOFF}			190		ns		
Fall Time	t _F			180		ns		
Turn-On Switching Loss	E _{ON}			4.1	6.2	mJ		
Turn-Off Switching Loss	E _{OFF}			0.96	1.5	mJ		
Total Switching Loss	E _{TS}			5.06	7.7	mJ		
Turn-On Delay Time	t _{DON}		V _{CC} =600V, I _C =25A, R _G =10Ω, V _{GE} =15V, Inductive Load, T _C =125°C		50		ns	
Rise Time	t _R				60		ns	
Turn-Off Delay Time	t _{DOFF}				200		ns	
Fall Time	t _F				154		ns	
Turn-On Switching Loss	E _{ON}				4.3	6.9	mJ	
Turn-Off Switching Loss	E _{OFF}				1.5	2.4	mJ	
Total Switching Loss	E _{TS}				5.8	9.3	mJ	
Total Gate Charge	Q _G			V _{CE} =600V, I _C =25A, V _{GE} =15V		200	300	nC
Gate-Emitter Charge	Q _{GE}				15	23	nC	
Gate-Collector Charge	Q _{GC}				100	150	nC	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Forward Voltage Drop	V _{FM}	I _F =25A		T _C =25°C		2.0	3.0	V
				T _C =125°C		2.1		V
Reverse Recovery Time	t _{rr}	I _F =25A,		T _C =25°C		235	350	ns
				T _C =125°C		300		ns
Peak Reverse Recovery Current	I _{rr}	dI/dt=200A/μS	T _C =25°C		27	40	A	
			T _C =125°C		31		A	
Reverse Recovery Charge	Q _{rr}		T _C =25°C		3130	4700	nC	
			T _C =125°C		4650		nC	

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.