

Insulated Gate Bipolar Transistor

1200V, SMPS N-CHANNEL IGBT

DESCRIPTION

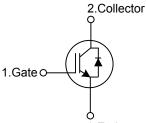
The UTC **UPG25N120** is a N-channel IGBT. it uses UTC's advanced technology to provide customers with high input impedance, high switching speed and low conduction loss, etc.

The UTC **UPG25N120** is suitable for high voltage switching, high frequency switch mode power supplies.

FEATURES

- * $V_{CE(SAT)} \le 2.8V @ I_C=25A, V_{GE}=15V$
- * 1200V Switching SOA Capability
- * High switching speed
- * High input impedance
- * Low conduction loss

SYMBOL



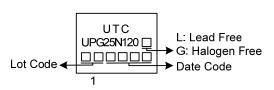
3.Emitte

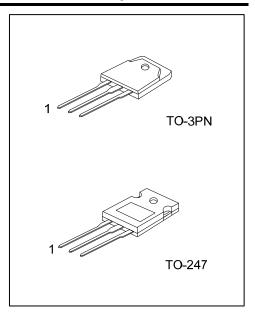
ORDERING INFORMATION

Ordering Number		Deekege	Pin	Assignn	Decking		
Lead Free	Halogen Free	Package	1	2	3	Packing	
UPG25N120L-T47-T	UPG25N120G-T47-T	TO-247	G	С	Е	Tube	
UPG25N120L-T3N-T	UPG25N120G-T3N-T	TO-3PN	G	С	E	Tube	
Note: Pin Assignment: G: Ga	te C: Collector E: Emit	ter					

UPG25N120G-T47-T	(1)Packing Type	(1) T: Tube
	(2)Package Type	(2) T47: TO-247, T3N: TO-3PN
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING





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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V _{CES}	1200	V
Gate to Emitter Voltage Continuous		V _{GES}	±20	V
Continuous Collector Current	T _C =25°C	- I _C	50	А
Continuous Collector Current	T _C =100°C		25	А
Collector Current Pulsed (Note 2)		I _{CM}	100	А
Dower Discipation	TO-247	PD	350	W
Power Dissipation	TO-3PN		390	W
Junction Temperature		ТJ	-55 ~ +150	°C
Storage Temperature Range		T _{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Case	TO-247	0	0.35	°C/W
	TO-3PN	θ _{JC}	0.32	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT	
Collector-Emitter Breakdown Voltage	BV _{CES}	I _C =250μΑ, V _{GE} =0V		1200			V	
Collector-Emitter Leakage Current	I _{CES}	V _{CE} =1200V, V _{GE} =0V				200	μA	
Collector Emitter Seturation Voltage	V _{CE(SAT)}		TJ=25°C		2.3	2.8	V	
Collector-Emitter Saturation Voltage		I _C =25A, V _{GE} =15V	T _J =150°C		2.65		V	
Gate to Emitter Threshold Voltage	V _{GE(TH)}	I _C =250μA, V _{CE} =V _{GE}		4.0		6.5	V	
Gate to Emitter Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} =15V				±400	nA	
Input Capacitance	CIES	V _{CE} =25V, V _{GE} =0V, f=1MHz			1600		рF	
Output Capacitance	C _{OES}				180		рF	
Reverse Transfer Capacitance	C _{RES}				50		рF	
Total Gate Charge	Q_{G}	I _C =25A, V _{CE} =100V, V _{GE} =15V			126		nC	
Gate-Emitter Charge	Q_{GE}				27		nC	
Gate-Collector Charge	Q_{GC}				45		nC	
Current Turn-On Delay Time	t _{D(ON)}				16		ns	
Current Rise Time	t _R	I _C =25A, V _{CE} =100V, V _{GE} =15V, R _G =10Ω			27		ns	
Current Turn-Off Delay Time	t _{D(OFF)}				92		ns	
Current Fall Time	t⊢				75		ns	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Forward Voltage Drop	V _{FM}	I _F =25A			2.1		V	
Reverse Recovery Time	t _{rr}				210		ns	
Reverse Recovery Charge	Qrr	I _F =25A, dI/dt=100A/μS			0.35		μC	

Note: Pulse Test: Pulse width ${\leq}\,50\mu s.$



TEST CIRCUIT AND WAVEFORMS

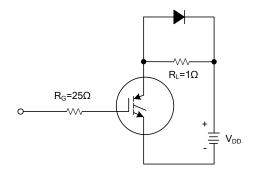


Fig 1. INDUCTIVE SWITCHING TEST CIRCUIT

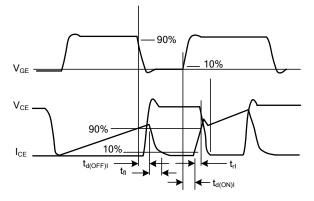
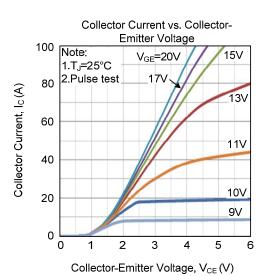
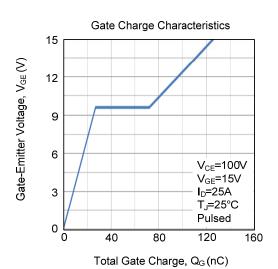


Fig 2. SWITCHING TEST WAVEFORMS

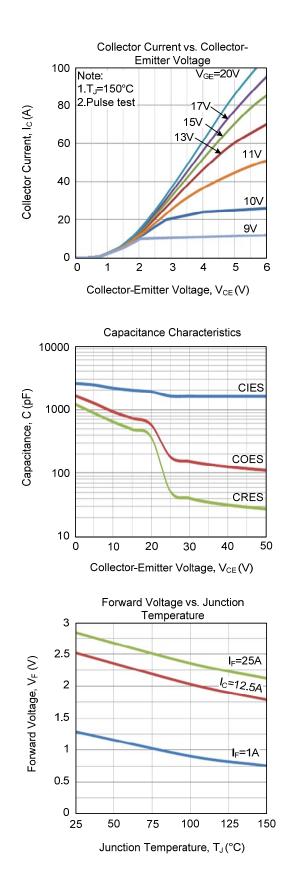


TYPICAL CHARACTERISTICS



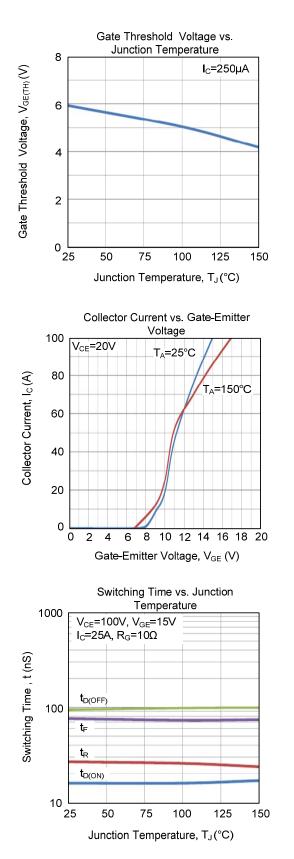


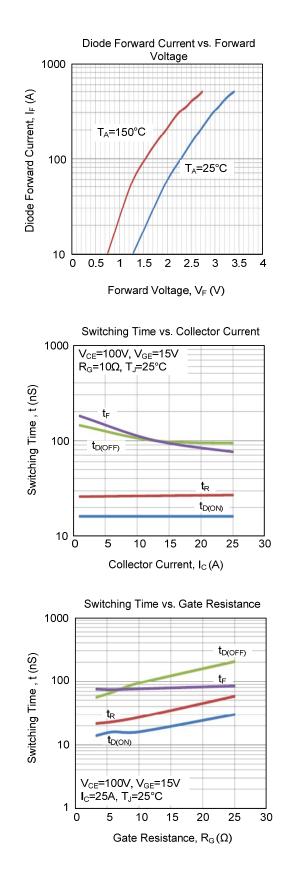
Collector-Emitter Saturation Voltage vs. Junction Temperature 3.2 Collector-Emitter Saturation =25A 2.4 C Voltage, V_{CE(SAT)} (V) =12.5A 1.6 I_C=1A 0.8 0 25 50 75 100 125 150 Junction Temperature, T_J (°C)



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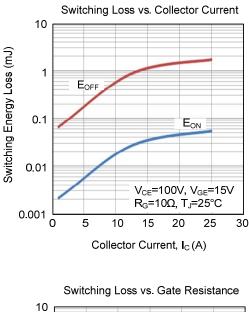
■ TYPICAL CHARACTERISTICS (Cont.)

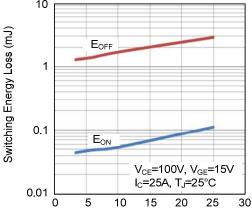




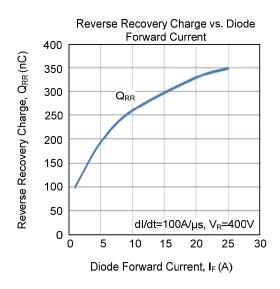


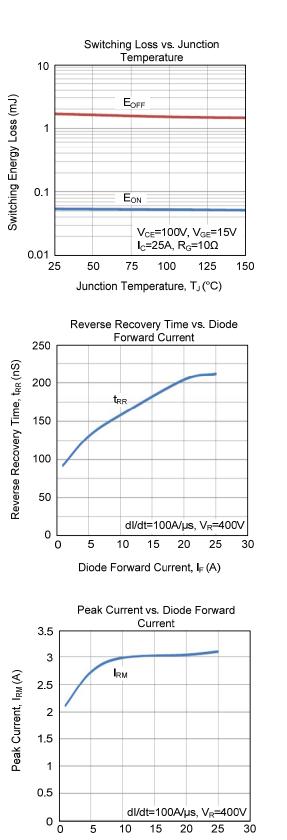
■ TYPICAL CHARACTERISTICS (Cont.)





Gate Resistance, $R_G(\Omega)$

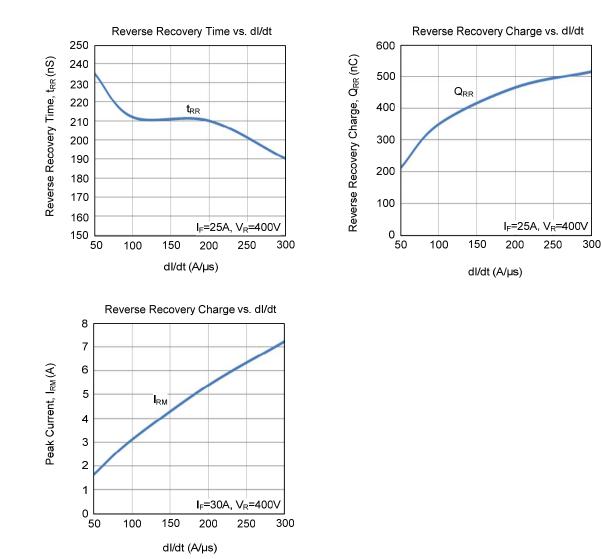




Diode Forward Current, $I_F(A)$



TYPICAL CHARACTERISTICS (Cont.)



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