



UPG50N120

Insulated Gate Bipolar Transistor

1200V NPT PLANAR IGBT

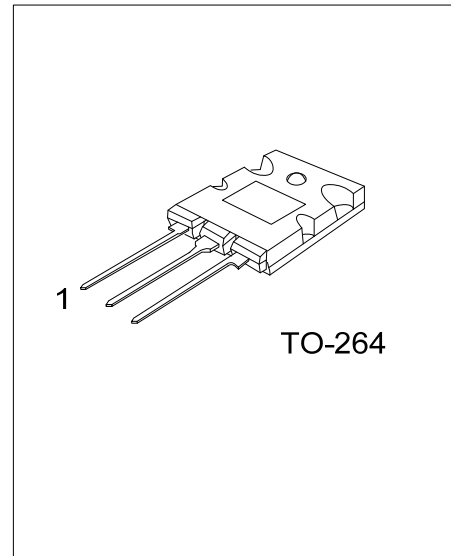
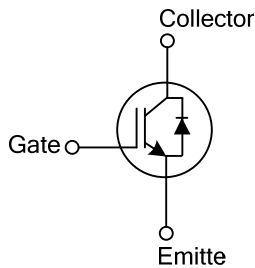
■ DESCRIPTION

The UTC **UPG50N120** is a 1200V NPT Planar Insulated Gate Bipolar Transistor. it uses UTC's advanced technology to offers superior conduction and switching performance, high avalanche ruggedness and easy parallel operation.

■ FEATURES

- * High speed switching
- * High input impedance
- * Low saturation voltage: $V_{CE(SAT)} = 2.6V @ I_C=50A$

■ SYMBOL



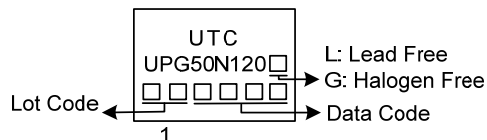
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UPG50N120L-T64-T	UPG50N120G-T64-T	TO-264	G	C	E	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UPG50N120G-T64-T</p>	<p>(1) T: Tube (2) T64: TO-264 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT	
Collector-Emitter Voltage	V_{CES}	1200	V	
Gate-Emitter Voltage	V_{GES}	± 25	V	
Continuous Collector Current	I_C	$T_C=25^\circ\text{C}$	100	A
		$T_C=100^\circ\text{C}$	50	A
Collector Current Pulsed (Note 1)	I_{CM}	160	A	
Power Dissipation	P_D	500	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.

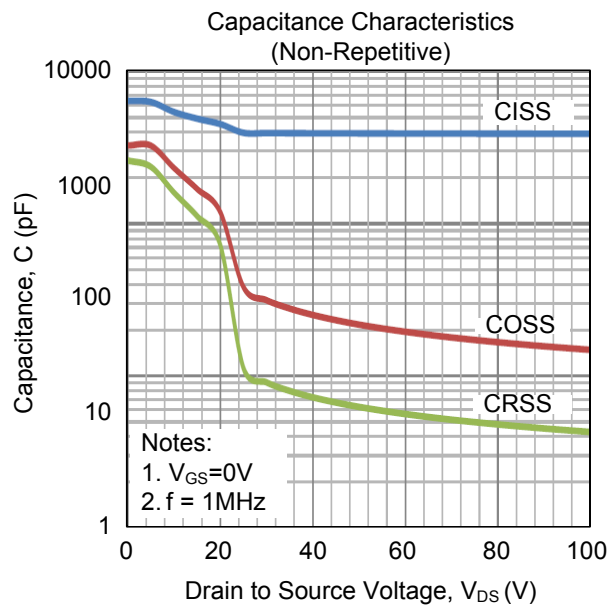
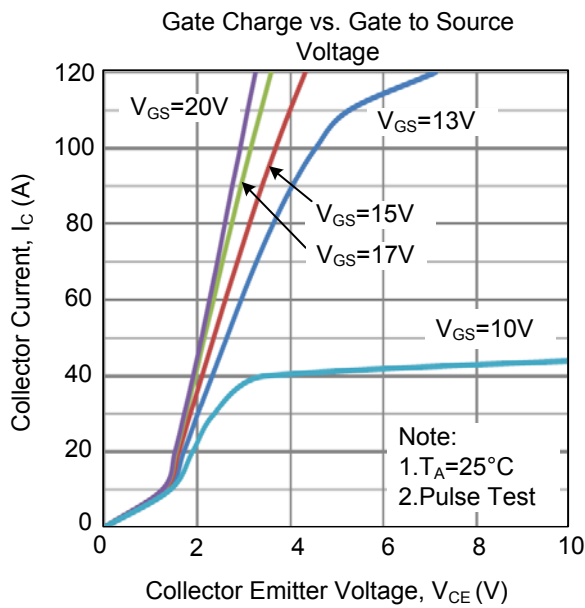
■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	25	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	0.25	$^\circ\text{C/W}$

■ 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	$B_{V_{CES}}$	$I_C=1\text{mA}, V_{GE}=0\text{V}$	1200			V
Collector Cut-Off Current	I_{CES}	$V_{CE}=V_{CES}, V_{GE}=0\text{V}$			1	mA
G-E Leakage Current	I_{GES}	$V_{GE}=V_{GES}, V_{CE}=0\text{V}$			± 250	mA
On Characteristics						
Gate to Emitter Threshold Voltage	$V_{GE(TH)}$	$I_C=250\mu\text{A}, V_{CE}=V_{GE}$	3.5	5.5	7.5	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=50\text{A}, V_{GE}=15\text{V}$		2.4	2.6	V
Dynamic Characteristics						
Input Capacitance	C_{IES}	$V_{CE}=30\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$		3930		pF
Output Capacitance	C_{OES}			310		pF
Reverse Transfer Capacitance	C_{RES}			95		pF
Switching Characteristics						
Total Gate Charge	Q_G	$V_{CE}=400\text{V}, I_C=64\text{A}, V_{GE}=15\text{V}$		230		nC
Gate-Emitter Charge	Q_{GE}			64		nC
Gate-Collector Charge	Q_{GC}			120		nC
Turn-On Delay Time	$t_{D(ON)}$	$V_{CC}=400\text{V}, I_C=50\text{A}, R_G=10\Omega, V_{GE}=15\text{V}$		32		ns
Rise Time	t_R			37		ns
Turn-Off Delay Time	$t_{D(OFF)}$			200		ns
Fall Time	t_F			134		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V_{FM}	$I_F=50\text{A}$	$T_C=25^\circ\text{C}$	1.6	4.0	V
Reverse Recovery Time	t_{rr}	$I_F=30\text{A}$,	$T_C=25^\circ\text{C}$	510		ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=200\text{A}/\mu\text{S}$	$T_C=25^\circ\text{C}$	5.5		μC

TYPICAL CHARACTERISTICS



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