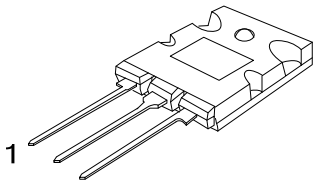
UG40N120

Insulated Gate Bipolar Transistor

1200V NPT PLANAR IGBT



TO-264

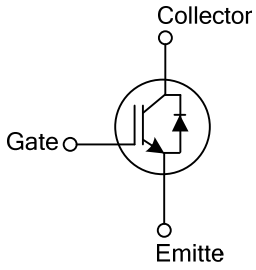
■ DESCRIPTION

The UTC **UG40N120** 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=40A

■ SYMBOL



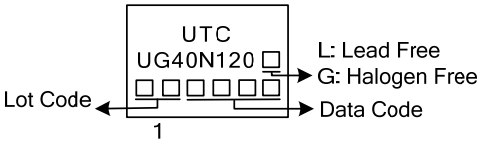
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UG40N120L-T64-T	UG40N120G-T64-T	TO-264	G	C	E	Tube

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

UG40N120G-T64-T (1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube (2) T64: TO-264 (3) G: Halogen Free and Lead Free, L: Lead Free

■ 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	T_C=25°C	I_C	160	A
	T_C=100°C		40	A
Collector Current Pulsed (Note 1)		I_{CM}	160	A
Diode Continuous Forward Current (T_C=100°C)		I_F	40	A
Diode Maximum Forward Current		I_{FM}	160	A
Power Dissipation		P_D	500	W
Operating Junction Temperature		T_J	-55 ~ +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 CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	25	°C/W
Junction to Case	θ_{JC}	0.25	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Off Characteristics							
Collector-Emitter Breakdown Voltage	B_{VCES}	I_C=1mA, V_{GE}=0V		1200			V
Collector Cut-Off Current	I_{CES}	V_{CE}=V_{CES}, V_{GE}=0V				1	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=250μA, V_{CE}=V_{GE}		3.5	5.5	7.5	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=40A, V_{GE}=15V			2.2	2.6	V
Dynamic Characteristics							
Input Capacitance	C_{IES}	V_{CE}=30V, V_{GE}=0V, f=1MHz			4000		pF
Output Capacitance	C_{OES}				340		pF
Reverse Transfer Capacitance	C_{RES}				95		pF
Switching Characteristics							
Turn-On Delay Time	$t_{DON)}$	V_{CC}=500V, I_C=64A, R_G=10Ω, V_{GE}=10V			52		ns
Rise Time	t_R				106		ns
Turn-Off Delay Time	$t_{DOFF)}$				25		ns
Fall Time	t_F				64		ns
Total Gate Charge	Q_G	V_{CE}=400V, I_C=64A, V_{GE}=15V			230		nC
Gate-Emitter Charge	Q_{GE}				64		nC
Gate-Collector Charge	Q_{GC}				120		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Forward Voltage Drop	V_{FM}	I_F=40A	T_C=25°C		3.2	4.0	V
			T_C=125°C		2.7		V
Reverse Recovery Time	t_{rr}	I_F=30A, dI/dt=200A/μS	T_C=25°C		460		ns
Reverse Recovery Charge	Q_{rr}		T_C=25°C		5		μC

■ TYPICAL CHARACTERISTICS