



TIP31C

NPN EXPITAXIAL TRANSISTOR

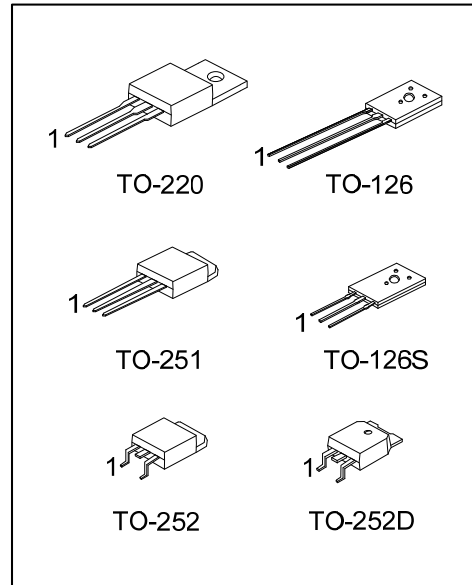
NPN EXPITAXIAL PLANAR TRANSISTOR

■ DESCRIPTION

The UTC **TIP31C** is a NPN epitaxial planar transistor, designed for using in general purpose amplifier and switching applications.

■ FEATURES

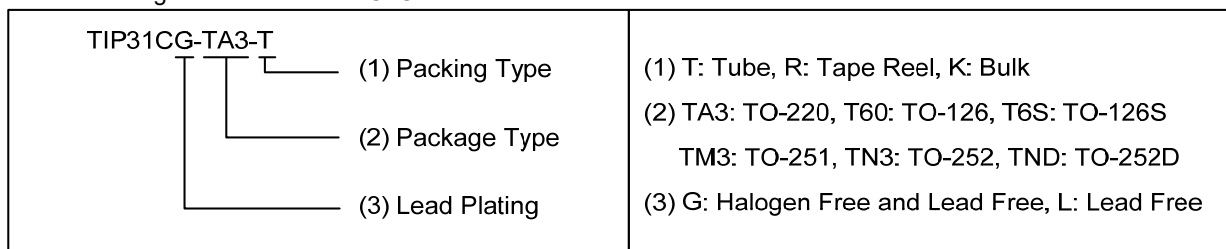
* Complement to TIP32C.



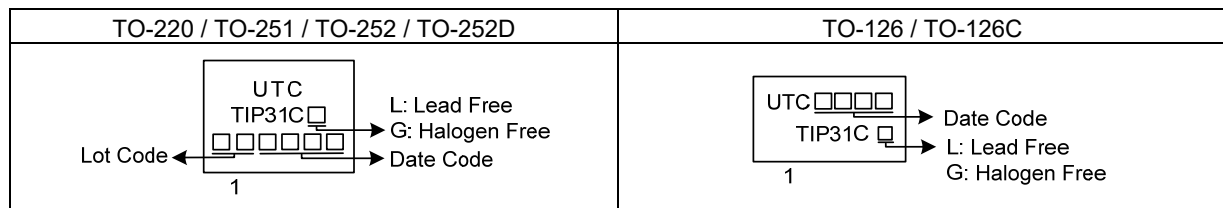
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
TIP31CL-TA3-T	TIP31CG-TA3-T	TO-220	B	C	E	Tube
TIP31CL-TM3-T	TIP31CG-TM3-T	TO-251	B	C	E	Tube
TIP31CL-TN3-R	TIP31CG-TN3-R	TO-252	B	C	E	Tape Reel
TIP31CL-TND-R	TIP31CG-TND-R	TO-252D	B	C	E	Tape Reel
TIP31CL-T60-K	TIP31CG-T60-K	TO-126	B	C	E	Bulk
TIP31CL-T6S-K	TIP31CG-T6S-K	TO-126S	B	C	E	Bulk

Note: Pin Assignment: B: Base C: Collector E: Emitter



■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	100	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	3	A
	Pulse		5	A
Base Current		I_B	1	A
Collector Dissipation ($T_A=25^\circ\text{C}$)	TO-126/TO-126S	P_C	1.4	W
	TO-220		2	W
	TO-251/TO-252		1.56	W
	TO-252D			
Collector Dissipation ($T_C=25^\circ\text{C}$)	TO-126/TO-126S		10	W
	TO-220		40	W
	TO-251/TO-252	15	W	
	TO-252D			
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-65 ~ +150	$^\circ\text{C}$

Note: 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.

■ THERMAL DATA (NOTE)

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-126/TO-126S	θ_{JA}	89	$^\circ\text{C/W}$
	TO-220		62.5	$^\circ\text{C/W}$
	TO-251/TO-252		80	$^\circ\text{C/W}$
	TO-252D			
Junction to Case	TO-126/TO-126S	θ_{JC}	12.5	$^\circ\text{C/W}$
	TO-220		3.125	$^\circ\text{C/W}$
	TO-251/TO-252		8.33	$^\circ\text{C/W}$
	TO-252D			

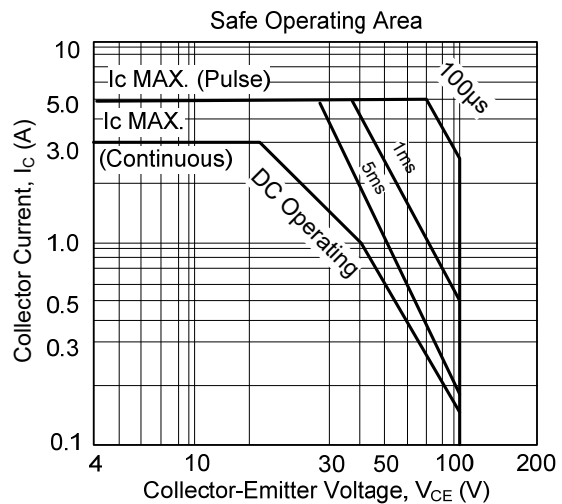
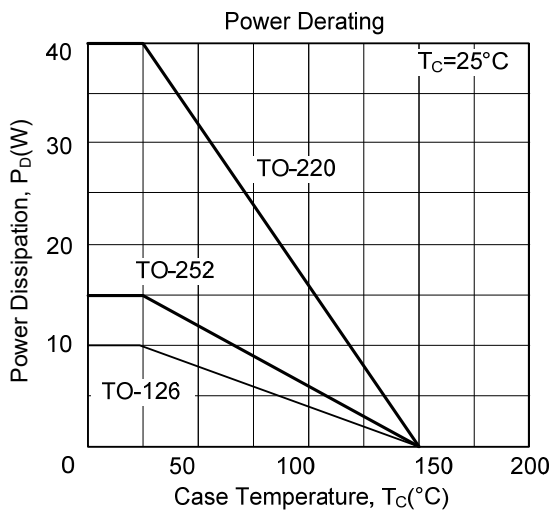
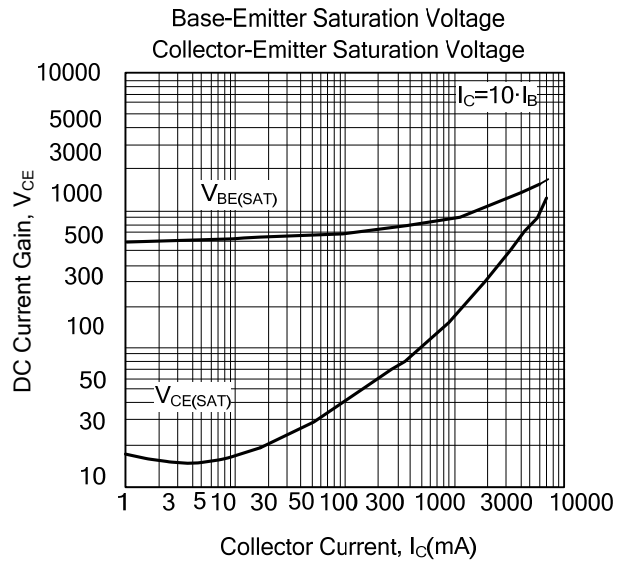
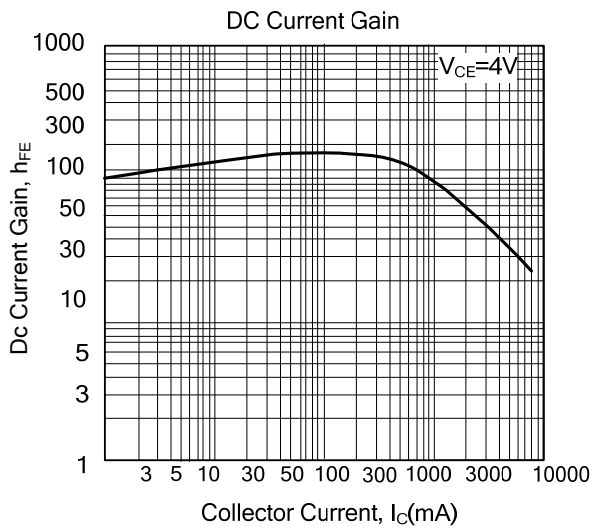
Note: These ratings are applicable when surface mounted on the minimum pad sizes recommended.

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Emitter Sustaining Voltage (Note)	BV_{CEO}	$I_C=30\text{mA}, I_B=0$	100			V
Collector Cutoff Current	I_{CES}	$V_{CE}=100\text{V}, V_{EB}=0$			200	μA
Collector Cutoff Current	I_{CEO}	$V_{CE}=60\text{V}, I_B=0$			0.3	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$			1	mA
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=3\text{A}, I_B=375\text{mA}$			1.2	V
Base-Emitter On Voltage (Note)	$V_{BE(ON)}$	$I_C=3\text{A}, V_{CE}=4\text{V}$			1.8	V
DC Current Gain (Note)	h_{FE1}	$I_C=1\text{A}, V_{CE}=4\text{V}$	25			
	h_{FE2}	$I_C=3\text{A}, V_{CE}=4\text{V}$	10		50	
Current Gain Bandwidth Product	f_T	$I_C=0.5\text{A}, V_{CE}=10\text{V} f=1\text{MHz}$	3			MHz

Note: Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS



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