

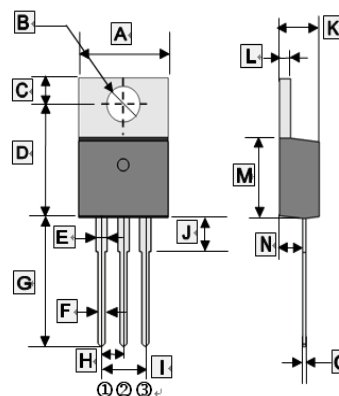
RoHS Compliant Product

A suffix of "-C" specifies halogen and lead free

FEATURES

- Medium Power Linear Switching Applications

TO-220J



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	10.010	10.350	I	4.980	5.180
B	3.735	3.935	J	3.560	3.960
C	2.590	2.690	K	4.470	4.670
D	12.060	12.460	L	1.200	1.400
E	1.170	1.370	M	8.500	8.900
F	0.710	0.910	N	2.520	2.820
G	13.400	13.800	Q	0.330	0.650
H	2.540 TYP.				

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Ratings				Unit
		TIP31	TIP31A	TIP31B	TIP31C	
Collector - Base Voltage	V _{CBO}	40	60	80	100	V
Collector - Emitter Voltage	V _{CEO}	40	60	80	100	V
Emitter - Base Voltage	V _{EBO}	5				V
Collector Current -Continuous	I _C	3				A
Collector Power Dissipation	P _C	2				W
Maximum Junction to Ambient	R _{θJA}	62.5				°C / W
Junction, Storage Temperature	T _J , T _{STG}	150, -55~150				°C

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector - Base Breakdown Voltage	TIP31	$V_{(BR)CBO}$	40	-	-	V	$I_C=1\text{mA}, I_E=0$
	TIP31A		60	-	-		
	TIP31B		80	-	-		
	TIP31C		100	-	-		
Collector - Emitter Breakdown Voltage ¹	TIP31	$V_{(BR)CEO}$	40	-	-	V	$I_C=30\text{mA}, I_B=0$
	TIP31A		60	-	-		
	TIP31B		80	-	-		
	TIP31C		100	-	-		
Emitter - Base Breakdown Voltage		$V_{(BR)EBO}$	5	-	-	V	$I_E=1\text{mA}, I_C=0$
Collector Cut - Off Current	TIP31	I_{CBO}	-	-	200	μA	$V_{CB}=40\text{V}, I_E=0$
	TIP31A						$V_{CB}=60\text{V}, I_E=0$
	TIP31B						$V_{CB}=80\text{V}, I_E=0$
	TIP31C						$V_{CB}=100\text{V}, I_E=0$
Collector Cut-Off Current	TIP31 / TIP31A	I_{CEO}	-	-	0.3	mA	$V_{CE}=30\text{V}, I_B=0$
	TIP31B / TIP31C						$V_{CE}=60\text{V}, I_B=0$
Emitter Cut-Off Current		I_{EBO}	-	-	1	mA	$V_{EB}=5\text{V}, I_C=0$
DC Current Gain		h_{FE}	25	-	-		$V_{CE}=4\text{V}, I_C=1\text{A}$
			15	-	75		$V_{CE}=4\text{V}, I_C=3\text{A}$
Collector - Emitter Saturation Voltage		$V_{CE(sat)}$	-	-	1.2	V	$I_C=3\text{A}, I_B=0.375\text{A}$
Base - Emitter Voltage		V_{BE}	-	-	1.8	V	$V_{CE}=4\text{V}, I_C=3\text{A}$
Transition Frequency		f_T	3	-	-	MHz	$V_{CE}=10\text{V}, I_C=0.5\text{A}$

Notes :

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