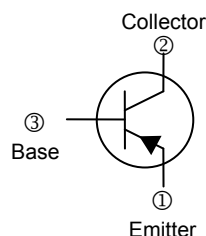
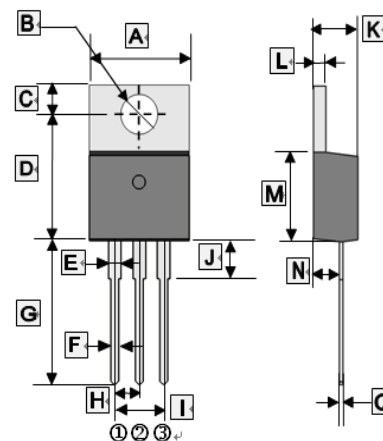


RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## FEATURES

- General Purpose Switching and Amplification.
- Wide ASO (Adoption of MBIT Process)
- Low Saturation Voltage.

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

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	-60	V
Collector to Emitter Voltage	$V_{CEO}$	-60	V
Emitter to Base Voltage	$V_{EBO}$	-6	V
Collector Current - Continuous	$I_C$	-3	A
Collector Power Dissipation	$P_C$	2	W
Junction, Storage Temperature	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit	Test condition
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	-60	-	-	V	$I_C = -1\text{mA}, I_E = 0$
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60	-	-	V	$I_C = -5\text{mA}, I_B = 0$
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-	-	V	$I_E = -1\text{mA}, I_C = 0$
Collector Cut-Off Current	$I_{CBO}$	-	-	-0.1	$\mu\text{A}$	$V_{CB} = -40\text{V}, I_E = 0$
Emitter Cut-Off Current	$I_{EBO}$	-	-	-0.1	$\mu\text{A}$	$V_{EB} = -4\text{V}, I_C = 0$
DC Current Gain	$h_{FE}$	100	-	200		$V_{CE} = -5\text{V}, I_C = -500\text{mA}$
		20	-	-		$V_{CE} = -5\text{V}, I_C = -3\text{A}$
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	-1	V	$I_C = -2\text{A}, I_B = -200\text{mA}$
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	-1	V	$V_{CE} = -5\text{V}, I_C = -500\text{mA}$
Transition Frequency	$f_T$	-	100	-	MHz	$V_{CE} = -5\text{V}, I_C = -500\text{mA}$
Collector output capacitance	$C_{ob}$	-	60	-	pF	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$