

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

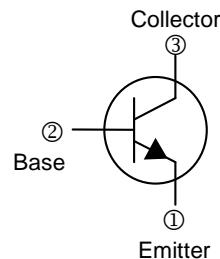
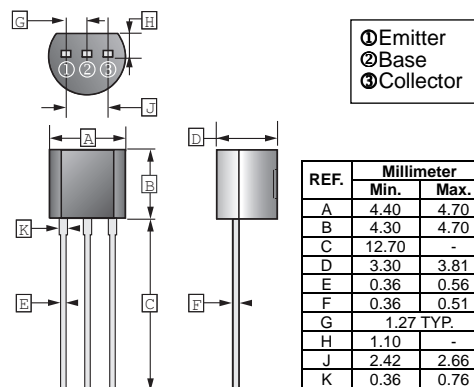
### FEATURES

- Power Dissipation  $P_{CM}$ : 625mW ( $T_a=25^\circ\text{C}$ )
- Collector Current  $I_{CM}$ : 200mA
- Collector – Base Voltage  $V_{(BR)CBO}$ : 60V

### CLASSIFICATION OF $h_{FE(1)}$

Product-Rank	2N3904-O	2N3904-Y	2N3904-G
Range	100~200	200~300	300~400

### TO-92



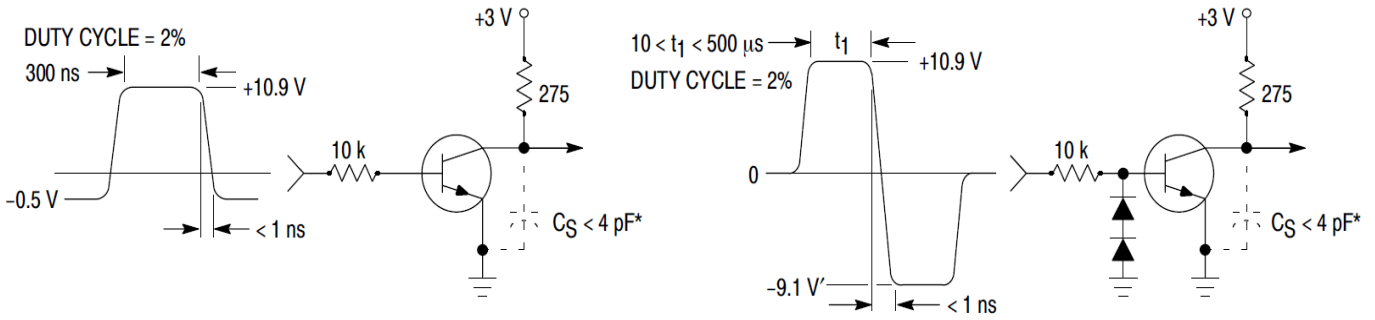
### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector - Base Voltage	$V_{CBO}$	60	V
Collector - Emitter Voltage	$V_{CEO}$	40	V
Emitter - Base Voltage	$V_{EBO}$	6	V
Collector Current -Continuous	$I_C$	0.2	A
Collector Power Dissipation	$P_C$	625	mW
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 Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	-	-	V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	-	-	V	$I_C=1\text{mA}, I_B=0$
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	6	-	-	V	$I_E=10\mu\text{A}, I_C=0$
Collector Cut-Off Current	$I_{CBO}$	-	-	0.1	$\mu\text{A}$	$V_{CB}=60\text{V}, I_E=0$
Collector Cut-Off Current	$I_{CEO}$	-	-	0.1	$\mu\text{A}$	$V_{CE}=40\text{V}, I_B=0$
Emitter Cut-Off Current	$I_{EBO}$	-	-	0.1	$\mu\text{A}$	$V_{EB}=5\text{V}, I_C=0$
DC Current Gain	$h_{FE(1)}$	100	-	400		$V_{CE}=1\text{V}, I_C=10\text{mA}$
	$h_{FE(2)}$	60	-	-		$V_{CE}=1\text{V}, I_C=50\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.3	V	$I_C=50\text{mA}, I_B=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	0.95	V	$I_C=50\text{mA}, I_B=5\text{mA}$
Transition Frequency	$f_T$	300	-	-	MHz	$V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$

**CHARACTERISTIC CURVES**



\* Total shunt capacitance of test jig and connectors

**Delay and Rise Time  
Equivalent Test Circuit**

**Storage and Fall Time  
Equivalent Test Circuit**

