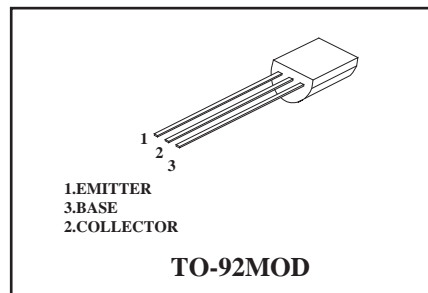


### NPN General Purpose Transistors

 Lead(Pb)-Free



#### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25$ unless otherwise specified )

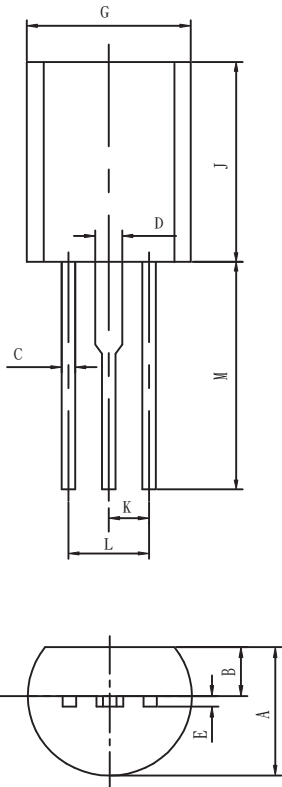
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100 \mu A, I_E=0$	50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100 \mu A, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=50V, I_E=0$			1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			1	$\mu A$
DC current gain	$h_{FE(1)}$	$V_{CE}=2V, I_C=500mA$	70		240	
	$h_{FE(2)}$	$V_{CE}=2V, I_C=1.5A$	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1A, I_B=0.05A$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1A, I_B=0.05A$			1.2	V
Transition frequency	$f_T$	$V_{CE}=2V, I_C=0.5A$		100		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$		30		pF
Switch time	Tune on Time	$t_{on}$		0.1		$\mu s$
	Storage Time	$t_{stg}$	$V_{CC}=30V, I_C=1A,$ $I_{B1}=-I_{B2}=0.05A$	1.0		
	Fall Time	$t_f$		0.1		

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

Rank	0	Y
Range	70-140	120-240

**TO-92MOD Outline Dimensions**

unit:mm



TO-92MOD		
Dim	Min	Max
A	4.70	5.10
B	1.73	2.03
C	0.40	0.60
D	0.90	1.10
E	0.40	0.50
G	5.80	6.20
J	8.40	8.80
K	1.50Typ	
L	2.90	3.10
M	12.20	13.45