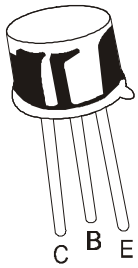
Continental Device India Limited

An ISO/TS16949 and ISO 9001 Certified Company

NPN SILICON PLANAR EPITAXIAL TRANSISTORS

2N3019
2N3020



TO-39
Metal Can Package

Designed for use in General Purpose Amplifier and High Speed Switching Applications
These Transistors are also Suitable for High Current Amplifier Applications

ABSOLUTE MAXIMUM RATINGS (Ta=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL			VALUE		UNITS
Collector Emitter Voltage	V_{CEO}			80		V
Collector Base Voltage	V_{CBO}			140		V
Emitter Base Voltage	V_{EBO}			7		V
Collector Current	I_{CM}			1		A
Power Dissipation @ Ta=25º C	P_D			800		mW
Power Dissipation@ Tc=25ºC				5		W
Junction Temperature	T_j			+200		ºC
Storage Temperature	T_{stg}			-65 to +200		ºC
THERMAL RESISTANCE						
Junction to Ambient	$R_{th(j-a)}$			218.7		ºC/W
Junction to Case	$R_{th(j-c)}$			35		ºC/W

ELECTRICAL CHARACTERISTICS (Ta=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL		TEST CONDITION	MIN	MAX	UNITS
Collector Emitter Breakdown Voltage	BV_{CEO} *		I_C=30mA,I_B=0	80		V
Collector Base Breakdown Voltage	BV_{CBO}		I_C=100µA, I_E=0	140		V
Emitter Base Breakdown Voltage	BV_{EBO}		I_E=100µA, I_C =O	7		V
Collector Leakage Current	I_{CBO}		V_{CB}=90V, I_E=0		10	nA
			V_{CB}=90V, I_E=0, Ta=150ºC		10	µA
Emitter Leakage Current	I_{EBO}		V_{EB}=5V, I_C=0		10	nA
Collector Emitter Saturation Voltage	$V_{CE(sat)}$ *		I_C =150mA, I_B =15mA		0.2	V
			I_C =500mA, I_B =50mA		0.5	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$ *		I_C=150mA, I_B =15mA		1.1	V

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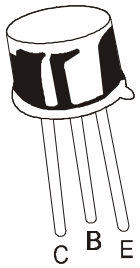


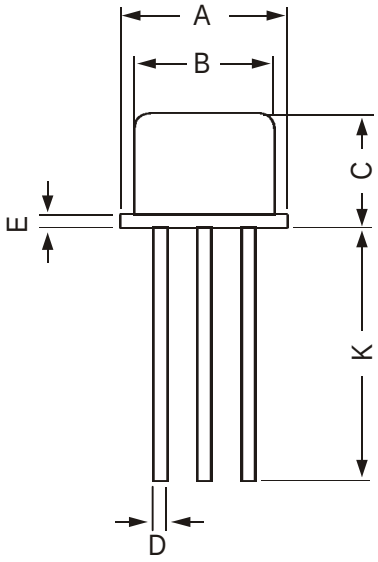
TO-39
Metal Can Package

ELECTRICAL CHARACTERISTICS (Ta=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL		TEST CONDITION	MIN	MAX	UNITS
DC Current Gain	h_{FE}*		I_C=0.1mA,V_{CE}=10V			
2N3019				50		
2N3020				30	100	
	h_{FE}*		I_C=10mA,V_{CE}=10V			
2N3019				90		
2N3020				40	120	
	h_{FE}*		I_C=150mA,V_{CE}=10V			
2N3019				100	300	
2N3020				40	120	
	h_{FE}*		I_C=500mA,V_{CE}=10V			
2N3019				50		
2N3020				30	100	
	h_{FE}*		I_C=1A,V_{CE}=10V			
2N3019				15		
2N3020				15		
	h_{FE}*		I_C=150mA,V_{CE}=10V			
2N3019			Tc= -55ºC	40		
SMALL SIGNAL CHARACTERISTICS						
Small Signal Current Gain	$\lvert h_{fe} \rvert$		I_C=1mA, V_{CE}=5V, f=1KHz			
2N3019				80	400	
2N3020				30	200	
Transition Frequency	f_T		I_C=50mA, V_{CE}=10V			
2N3019			f=20MHz	100		MHz
2N3020				80		MHz
Output Capacitance	C_{ob}		V_{CB}=10V, I_E=0, f=1MHz		12	pF
Input Capacitance	C_{ib}		V_{EB}=0.5V, I_C=0, f=1MHz		60	pF
Noise Figure	NF		I_C=100µA, V_{CE}=10V			
2N3019			R_s=1KΩ,f=1KHz		4	dB
Collector Base Time Constant	rbb'cb'c		I_C=10mA,V_{CB}=10V, f=4MHz		400	ps
			f=1MHz			

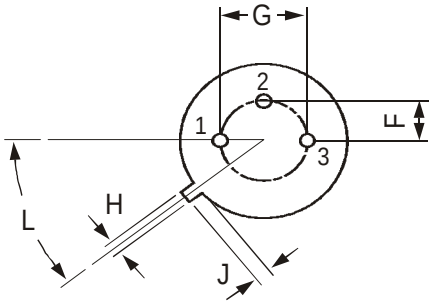
***Pulse Test: Pulse Width ≤300µs, Duty Cycle ≤1.0%**

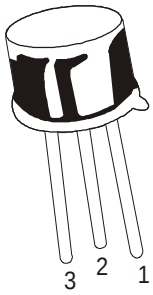
TO-39 Metal Can Package



All dimensions are in mm

DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	—	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	—
L	42 DEG	48 DEG





PIN CONFIGURATION
1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	540 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 15" x 13.5"	32K	40 kgs

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Datasheet and on the CDIL Web Site/CD is believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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